STRATEGIC BASEBALL SIMULATOR

A free, simple text-based baseball simulator for Windows
Copyright 1988-2006 D.B. Schmidt

(SBS)
Version 4.8.1
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System Requirements:
Windows 95/98/Me/XP

Files included in this package:
BASEV481.EXE   - Strategic Baseball Simulator version 4.8
CT_STD.DLL     - Console Tools Run-time DLL
GfxT_Pro.DLL   - Grafix Tools Run-time DLL
BASEBALL.MSG   - announcer's play-by-play and comments
BASEBALL.DOC   - the file you are reading now
BASEBALL.CFG   - configuration file and normalization data
RESTART.EXE    - utility to repair .SCH files
FILE_ID.DIZ    - brief program description
READ_ME.TXT    - general information

Plus:
team .DAT files and .SCH / .SER schedule files
Stadium pictures
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INTRODUCTION

The Strategic Baseball Simulator (SBS) is a flexible, reasonably accurate, yet relatively simple baseball simulation program. It is a game in which one can play against another human or against the computer manager. It can also be considered a simulation tool in which many games are played out rapidly in order to discover strengths and weaknesses in particular line-up. This program is NOT an arcade-type game with animated graphics. But if you are a baseball fan it is FUN and-to some-addictive! SBS is very easy to use. It gets you into the action quickly. A game can be played manually in few minutes. But its real power is its ability to simulate a large number of games in a very short time. SBS works by reading in actual statistics for each player. The program then runs a statistical model to simulate baseball. This results is a good approximation, especially over a large number of games. For example, in a typical player/season of 600 at-bats, about 40% of players will finish within 10 points of their actual average. About 75% will be within 20 points and about 95% will be within 40 points. SBS can also "cheat" (if desired) by employing the "focusing" option which

lets the program boost or limit a player's chances of success based on how well the player is doing in the current simulation. With this option accuracy is further enhanced.

INSTALLATION
Just double-click on **sbs48-setup.exe** and follow the instructions on the screen.
This wil put all the necessary files into a folder and put an SBS icon on your desktop.

Start the program by double-clicking "basev481".

DEFINITION OF SHAREWARE
This program is copyrighted shareware, but since there is no registration fee, it is commonly called "freeware". Copyright laws apply to both Shareware and commercial software, and the copyright holder retains all rights, with a few specific exceptions as stated below. Shareware authors are accomplished programmers, just like commercial authors, and the programs are of comparable quality. (In both cases, there are good programs and bad ones!) The main difference is in the method of distribution. The author specifically grants the right to copy and distribute the software, either to all and sundry or to a specific group.

DISCLAIMER – AGREEMENT
Users of Strategic Baseball Simulator must accept this disclaimer of warranty: "Strategic Baseball Simulator is supplied as is. The author disclaims all warranties, expressed or implied, including, without limitation, the warranties of merchantability and of fitness for any purpose. The author assumes no liability for damages, direct or consequential, which may result from the use of Strategic Baseball Simulator."

Strategic Baseball Simulator is a copyrighted "shareware program", but unlike most shareware progams, there is no registration fee. The author would just like an email saying "thank you" along with comments and suggestions. Feel free to share it with your friends, but please do not alter it in any way or include it as part of another package.
Strategic Baseball Simulator makes NO references to current professional teams or leagues. No team nicknames and no actual leagues or divisions are referenced. Some player names have been encrypted. You may edit the supplied data files for your own use, but altered data files may NOT be distributed.

OVERVIEW AND THE OPENING MENU

MANUAL MODE
Here you will select two teams. You can manage against the computer or against a friend or you can manage both sides if you want. Or you can tell the computer to manage both sides. "Manual Mode" puts you in control.

TWO-TEAM SIMULATION
Again you will select two teams. But in this mode, the object is to let the computer manage both sides in order to simulate as many games as you want as quickly as possible. This is great for trying to compare which team or lineup is "best". In baseball you need to play out a great number of games before the statistics can reveal a true picture. You will probably elect to create a statistics file for your simulation so you can later review all the stats. The simulation will start with the program running as fast as it can. (Delay factor = 0). If you want to slow it down, you can do so by popping up the Control window and changing the "Delay". You can also type "R" (Results) during the run to check the Won-Lost results and highlight summary.

SCHEDULE MODE

"Schedules" are a little database containing games to be played organized by dates. You may select one of the schedules provided or create your own. Generally the computer will play out these games as fast as it can, however you can select a team or teams that you wish to manage manually (which will temporarily put you in "manual mode"). You can interrupt the schedule after any game and pick up where you left off next time. You may also start and play the same schedule file multiple times. Just specify unique statistics files to do this.

SERIES MODE
This is similar to TWO-TEAM mode, but now the computer automatically cranks through a predetermined list of games. These lists might be all 162 games for a given team or all the games for an entire league. When you select the Series Mode, you are presented with a list of "series files" to choose from. Series files are nothing more than ASCII text files which list the teams to play and how many games they are to play against each other.   [V]iew one of these files to see how they are set up. Then you can create your own series files for your favorite teams using your favorite text editor or word processor. You will doubtless want to save statistics from your "Series Mode" simulations which you can later examine. The simulation will start with the program running as fast as it can. If you want to slow it down, you can [T]oggle to the field display and back again.

STATISTICS REPORTS
Select a statistics file you have built (or are currently using) and get a report.

VIEW MISC FILES
If you have generated a stat report or saved box scores, you may view (or delete) them here. All files in the current "write-to" directory with a .TXT or .PRN or blank file extension will be displayed.

SELECTED TOPICS

SELECTING TEAMS
All the files in your current directory with the extension of .DAT are displayed. Just highlight the team you want by moving the arrow keys and hit ENTER. You may [V]iew or [E]dit these files by highlighting them and typing V or E. .

SELECTING SERIES FILES
Just like selecting teams, except the computer displays files with the extension .SER. You can [V]iew or [E]dit these files, too.

SELECTING SCHEDULE FILES
As above, except the computer displays files with the extension .SCH. You can [V]iew or [E]dit these files. Schedule files are ordered by date. You can examine which games are to be played under a given date.

SELECTING STARTING PITCHERS
Manual Mode:
Highlight the pitcher you want by moving the arrow keys and hit enter (or double-click).

Two-Team Mode:
You can specify the exact pitching rotation. Highlighting the pitchers you want and hitting enter builds your rotation list. When you are done press ESC. Then you may press [O]k (or Enter) to accept, c[L]ear or [C]ancel. You may also elect to include "Spot Starters" (see below).

Schedule/Series Mode:
You can go through the starting rotation sequentially, i.e. each pitcher in turn, or let the

computer pick starters at random, or select one pitcher to start every game. First, pick the number of starters in your rotation --- normally 4 or 5. Then select either the Sequential or Random method ["S" or "R"]. When you choose Sequential the pitching order is as it is recorded in the .DAT file. For example, if you select S5, the pitchers 10 through 14 in the .DAT file will be used in that order. You may always edit the .DAT file with a text editor to change this default order of pitchers if you want.

Spot Starters:
If you select "Y" (yes) for this option, the computer will utilize all the pitchers in the .DAT file as occasional starters if the pitcher has a non-zero number of starts entered under his "Started" column. NOTE! The .DAT files for our OLD-TIMER teams probably will NOT include this data so, sorry, this option won't work for them. (Of course, you can always do your own research and fill in this data yourself!)

THE DESIGNATED HITTER RULE
You are always given the option of whether to use the Designated Hitter. The default is NO except when both teams are from the "A" League starting in 1973. Most of the "A" League teams of the last two decades will have the DH included in their .DAT files. For other teams, the computer will pluck the first player on the "bench" and insert him in the lineup in slot number 5 as the DH.

Note: In real baseball, if the DH goes out to play a defensive position, the team loses the DH position and the pitcher must then bat. SBS does not support this however, but instead allows you to swap the DH with other players in the lineup if you want.

STATISTICS RECORDING OPTIONS
When the "Statistics Recording Options" window appears, you have the opportunity to save STATISTICS, save the line-score, save the BOX SCORE, and save the SCORE-CARD at the end of each game (Or any combination of the above).
Leave the input fields blank if you do not want to save the information. File names should be from 1 to 8 characters long. You can keep adding information to the end of existing files or you can erase old files and start fresh. If you want to erase a file, type a "Y" under the "Erase File?" heading.

Statistics File:
Don't use a "file extension" for the statistics file-if you do SBS will ignore it.
SBS automatically generates several statistics files for each "stat" file you specify. A summary file with extension of .STS, a batter file with extension .STB, a pitcher file with extension .STP, a highlight file with extension .STH, a pitching rotation file .ROT, a standings file .STD, a "restart" file .RES (so SBS knows where in an associated schedule file to continue from).

Line Score File:
The LINE SCORE generated is just an ASCII text file containing the line score by innings and the total runs, hits and errors for each team.

Box Score File:
The BOX SCORE file is just an ASCII text file of the box score at the end of each game.

Score Card File:
The SCORE CARD file is an ASCII text "shorthand" log of the play-by-play, not an actual scorecard. I usually do not save the score card file because it tends to eat up quite a bit of disk space. You probably don't want to do this on season-long simulations. Box scores for games in which outstanding performances occur may be automatically saved in a file called STARBOX.TXT (or whatever you wish to name it) in your current directory. See "CONFIGURATION FILE BASEBALL.CFG" for more information.

You can view the Line Score, Box Score, Score Card and Starbox files from the main menu (View Misc Files).

SELECT STARTING LINEUPS
For Manual Mode / Two-Team Simulations:
The default starting lineups are displayed for each team. You have the opportunity to make changes in the lineup or batting order as you see fit. The changes you make are temporary. (The team .DAT files on disk do not change unless you edit them). You can swap players between the starting lineup and the bench. You can change the batting order also, as long as the game(s) has not started yet. Swapping is done by just typing the numbers of the players you want to switch. Note: On Two-Team Simulations if you select "AutoLineup" the computer will select the lineup and you won't get these lineup screens. If you always want to see the lineup screens anyway you can add a line to BASEBALL.CFG beginning with FORCE-LINEUP.

For Schedule / Series File Mode:
Since schedule and series files usually involve many teams it was not feasible to allow manipulation of the lineups in these modes. However you can always go back and edit the .DAT files directly to change lineups to your liking. One exception to this-you may elect to manage selected teams MANUALLY under Schedule Mode. Then you can fiddle with their lineups prior to each game. On-screen help for this is given on the Select Schedule File screen.

AutoLineup:
This feature allows the computer to pick various starting lineups, not just use the default lineup in the .DAT file. This way the bench is utilized much more realistically. For long, season-length simulations this is the way to go. This feature works best on the latest .DAT files that have Games By Position information on each player's line. But the program will make a good attempt at using this feature even on the old-timer teams where this data is not available.

Batting Order Optimization:
Once the computer has the starting nine, this feature allows SBS to juggle the batting order to, hopefully, optimize offensive output. Options are Y, N or C. "C" means to execute the batting order optimization routine only if "AutoLineup" has substituted a player not in the original .DAT file starting lineup.

CHANGING DEFENSIVE POSITIONS
For Manual Mode / Two-Team Simulations:
Once your starting lineup is intact, you may switch defensive positions of the players if you like. This is done by typing the numbers of the players you want to switch positions. Outfielders playing infield and vice-versa will be penalized defensively!! Middle infielders playing at the corners will be penalized as well as corner infielders playing in the middle. The penalty is not too severe but you will notice an increase in the number of errors committed by out-of-position players.

SELECTING WHO MANAGES WHOM - OTHER "GROUND RULES"
In the "Ground Rules" screen [Manual Mode] you decide whether the computer will manager either, both, or none of the teams. [For teams which are manually controlled, the player(s) use "pop-up" command windows throughout the game that let them control their offensive or defensive options]. You will also determine the "Delay Factor". This determines how long you have to read the announcer's comments which determines the speed of the simulation. Try "2" or "3" to start out with. If this is a little too slow for you, change it to "1" later. The last thing you are asked before the game starts is if you want the computer to HIDE the decisions you make within the pop-up command windows. You should only elect to HIDE if you are managing against another human player who might "steal" your signals.

Performance Focusing:
This option is only applicable if you are using a statistics file! If set to "Y" (yes), the program will look at how well each player is performing in the current stat file. It will then give a little extra "help" to players who are struggling and conversely make things a little tougher on players who are too "hot". Focusing allows the program to "cheat" a little in order to make the final results more closely parallel the original .DAT file. Focusing never goes into effect until a batter is more than ½ way through a season (his Sim AB / .DAT AB must be greater than .5 -- for pitchers IP is used). It is NOT necessary to use focusing in order to get good results. SBS's statistical model works very well in the "blind" mode as well! But for replaying an entire season schedule you may want to consider it.

MANAGING IN MANUAL MODE
Normal mode
If the computer is managing one or both sides OR you decline to "hide" your strategy before the game starts you'll be in "normal" mode. You control The "command window" by hitting V for visitor and H for home. Just use the arrows to select the strategy you want and ESC to close the window. Of course most of the time you'll just be hitting ENTER and proceding with the action rather than popping up the command window.

"Hide strategy" mode
If the computer is NOT managing EITHER side you are asked (before the game starts) if there is another player beside yourself. If there is you may choose to "hide" the strategy decisions you make within the "command window". The visiting team's command window is activated by hitting "S". This displays a list of either offensive or defensive actions.

   Keyboard:
```
      W
A   S   D
        X
```
   Scroll up and down through your options using the "W" and "X" keys.
   "Mark" the options (On or Off) using the "A" and "D" keys (A=On D=Off)
   The computer WILL NOT DISPLAY the results of the A/D keys
   in order to HIDE your decisions from your opponent.
   Move the pointer to "EXIT" and hit "A" when done.

The home team's command window is activated by hitting the "5" key. (**Make sure your numeric-lock is on so you can use your numeric keypad).**
   Numeric keypad:
```
        8
4   5   6
        2
```
   Scroll up and down through your options using the "8" and "2" keys.
   "Mark" the options (On or Off) using the "4" and "6" keys.   (4=On 6=Off)
   The computer WILL NOT DISPLAY the results of the 4 & 6 keys
   In order to HIDE your decisions from your opponent
   Move the pointer to "EXIT" and hit "4" when done.

Remember, if you don't want to make a strategy move (which is most of the time) just hit ENTER or click on a blank area inside the bottom row of the screen.
To quit the game, hit "Q". (You get a chance to change your mind.)
To get the current "Box Score" hit "B".
To check the "Score Card" hit "C".
If you change your mind about which teams the computer should manage, hit "O" and the "Options" window appears in the middle of the screen. You can also change the Delay Factor

and turn the Sound Effects on or off.
All of the options in your Options window are self-explanatory (except for "Focusing"), but you will need the following special instructions if you want to do a "double-switch" maneuver.

"DOUBLE-SWITCH" - **valid with no DH - pitcher must be in batting order**
1) Get new pitcher from bullpen.
2) Immediately pop up the "Player Substitute" window and swap in a new defensive player by hitting ENTER and typing in the numbers of the bench player and the lineup player he replaces and hitting ESC. (Do not exit the Player Substitution window).
3) The "Enter DS for Double-Switch" prompt appears.
Type in "DS" and ESC. This will place the new pitcher in the batting slot previously occupied by the outgoing player and the new defensive player into the old pitcher's batting slot.

LETTING THE COMPUTER MANAGE BOTH SIDES
If you pick the automatic manager for BOTH teams, you will have no input into the game yourself...all you do is sit back and watch the game unfold. You may hit "O" (for Option Window) to halt the action at any time. Then you may choose to reset the "AutoManger" for either or both teams or change the "Delay Factor". If you want to follow the action you probably want to set the Delay at 2 or 3. If you want to play the game out as quickly as possible, set it at "1" or even "0". With AutoManager on "Y" for both sides and a Delay of "0" the game will be played out in a matter of a second or two.

UNDERSTANDING SCHEDULE FILES
"Schedule Files" are the primary method you will want to use to play long, involved "schedules" of games. Normally you run these schedules as fast as possible except perhaps for games you want to manage manually. You can run and/or edit any schedule files provided or you may build your own. From the main menu, choose the Schedule Files option. You may pick an existing file or choose to edit/view one by pressing "E".
If you choose to edit one of these **.SCH** files, notice that they are arranged by date. Highlight and enter a date or press INSERT to add a new date. Then you may specify the file names of the teams to play and any special "switches". See **UNDERSTANDING SERIES FILES** for more information about these options.
Two switches (only valid for schedule files) are the /VM: and /HM: options. They allow you to manually manage teams of your choice.
       /VM:+   adds visiting team to manual manage list
       /VM:-   removes visiting team from manual manage list
       /HM:+   adds home team to manual manage list
       /HM:-   removes home team from manual manage list

Example of managing inside a schedule file:
EXAMPLE: You want to run the 97ML.SCH and manage Texas (97ATEXAS).
1. Highlight the .SCH file 97ML and press "E" to edit.
2. Highlight the date that you want to start managing this team yourself. Let's say 04/10/97. so highlight this date and hit ENTER.
3. Find 97ATEXAS-use the arrow keys to get in the options area.
4. Assuming Texas is the visiting team here, type in **/VM:+**. Hit ESC. If Texas was the home team on this date you would enter **/HM:+**
5. If you want to remove Texas from the Manual Manage List at a later date, highlight that date and enter **/VM:-** or **/HM:-**
You will then manage the team BETWEEN the two dates and the computer will manage the rest.
You do not need to enter /VM:+   or   /HM:+   for each date you want to manage.
You probably won't want to run a complete schedule file in one sitting (especially if you're managing a team yourself). So, IF YOU HAVE SPECIFIED A STATISTICS FILE to save info for this schedule run, you can press Q (for quit) while a schedule file is running and the action will stop after the current game is completed. Next time you start SBS you can

RESTART where you left off when you pick the schedule file and the same statistics file.

Schedule Filter:
You don't have to run all the games in a schedule file. After you pick your .SCH file, the "Schedule Filter" window pops up to allow you to run just the games for a single league, team and/or date range. Leave this blank to go ahead and run all the games. Fill in the .DAT file name for your favorite team if that's what you want. (Don't type the .DAT part here). The naming conventions for .DAT files are Year + League + 1st 5 characters of city/location. So the 1998 team from New York in the "A" League would be named 98ANEWYO.DAT. The team from St. Louis would be 98NSTLOU.DAT. Dates should be entered in MM/DD/YY format, e.g. 04/09/98. Make sure the dates inside your .SCH file are maintained in this format also.

UNDERSTANDING SERIES FILES
"Series Files" are another vehicle through which SBS knows to play certain teams a certain number of games. The series file is just a text file with a file extension of **.SER** that you can build yourself with your text-editor program or word processor. It contains the teams and number of games they are to play and other information if desired. You can't manage teams yourself and YOU CANNOT STOP AND THEN RESUME SERIES FILES LIKE YOU CAN SCHEDULE FILES! If you quit a series file before it completes, you're done. **Series** files are handy for simulating a complete season where you only want to look at the results when you're done -- they run faster than **Schedule** files because the program does not have as much "disk I/O" to do. Options are entered via "switches". The order of the switches should not matter. For example, one such series file might contain the following lines:

```
    /v:97nnewyo.dat  /h:97nstlou.dat   /n:9
    /v:97nnewyo.dat  /h:97nchica.dat   /n:9
  (etc. etc. through all the "E" Division teams)
    /v:97nnewyo.dat  /h:97ncinci.dat   /n:6  /hp:S4
    /v:97nnewyo.dat  /h:97natlan.dat   /n:6
  (etc. etc. through all the "W" Division teams)
```

The /v: means, as you probably guessed, the visiting team. And of course the /h: means the home team. The number following the /n: determines the number of games. You can also use the /vp: and /hp: switches to override the default starting pitching rotation scheme which was discussed earlier. But, at a minimum, each line in a series file must contain the /h: /v: and /n: switches.

You can use these switches to override the normal starting rotation method you pick in the program. See the example above-with the /hp: and /vp: switches. You can also override whatever you choose on the DH rule with the /dh: switch. (See listing of command-line options for more details).

COMMAND LINE EXAMPLES
You may never want to start SBS using "command line" options, but they are available. For example, **Bryan Bollman** wrote his excellent "RunSBS" program (a Windows "front-end" for SBS) so that it takes advantage of these command line options. If you are inclined to use command line switches you should check out his program. Using RunSBS is much easier than typing this stuff yourself, but here's a few examples to show you how it works. [Note that you can basically use the same switches from either the command line or inside a series file].

    Example 1: You want to play 12 games with the '27 A New York visiting the '61 A New York.
    You don't want the DH. You want each team to cycle through a 4-man pitching rotation.
    You want to save the results to a statistics file named "styanks".
    >basev481 /v:27anewyo /h:61anewyo /sp:S4 /dh:n /st:styanks /n:12

The /V and /H switches load the visiting and home teams respectively. If you leave off the file extension on the team files, the program assumes .DAT. The /SP switch sets both teams

to use S4 -- Sequential four-man rotation. If you omit the /SP switch the default is S5 for both teams - a five-man rotation. /DH:N forces NO DH, although if you leave if off the default is NO DH anyway. /ST gives the name of the statistics file you choose. (File extensions on /ST are ignored). The statistics file "styanks" will be created as four separate files - STYANKS.STS, STYANKS.STB, STYANKS.STP, STYANKS.STH. /N:12 says to play 12 games.

    Example 2: Suppose we want the '27 A NY to use a 3-man rotation.
    >basev481 /v:27anewyo /h:61anewyo /vp:S3 /hp:S4 /st:styanks /n:12

Since the pitching rotation is different for each team, we have to use the /VP and /HP switches instead of /SP. Notice that if we don't want the DH we don't need to specify the /DH switch.

    Example 3: You want to simulate the entire '97 season.
    A 5-man rotation is OK for all teams. Save statistics to "st97".
    >basev481 /sch:97ml.sch /st:st97 /bx:st97.box

The /SCH switch specifies the name of the schedule file which MUST ALREADY EXIST. The /ST switch will save the statistics to files-ST97.STS, ST97.STB, ST97.STP, and ST97.STH. All box scores saved to ST97.BOX.

OPTION SWITCHES LIST
Here is a list of all the switches that can be set from the command line or inside a "Schedule" or "Series" file. You may enter as many switches as you need. Each one must be separated by a space. Each line in a Series file must contain, at a minimum, the /H: /V: and /N: switches.
On switches that take a "Y" or "N" argument, you can save space by omitting the :Y if you want "yes". For example: /DH is equivalent to /DH:Y.
/P:path

    If your .DAT files reside in some other drive or directory other than the one where
    "BASEBALL.EXE" is, you need the /P:
    Example: >basev481 /p:\seasons\91
    (.DAT files in \seasons\91 directory)

/PW:path WRITE
    Saves all your OUTPUT stat files to the path you specify here.
    Useful if SBS is installed in a write-protected network directory. Also very handy to
    keep all your stat files in a separate directory for easy backup!
    Example: >baseball /pw:\mystats

/H:team.dat   (home)
/V:team.dat   (visitor)
/N:number of games   (default is 1)
/DH:Y or N   (default is N)
/SCH:schedule file   (command line only)
/SER:series file   (command line only)
/ST:statistics file.
    This file name may be 1 to 8 characters long. File extensions ignored.
/BX:box score file. File extension optional.
/SC:score card file. File extensions optional.
/LS:line score file. File extensions optional.
/STB:StarBox file. File extensions optional.
/SP:S5-S2 or R5-R2 or 1-5
    Default Starting Pitcher Selection Method: If you are simulating many games, there are
    different ways the computer uses to pick the starting pitcher. If you do not specify the

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   /SP switch, program defaults to S5, sequential 5-man rotation.
/VP: (same as SP)  Override /SP for the Visiting Team in /V:
/HP: (same as SP)  Override /SP for the Home Team in /H:
/SPT  Spot Starters (all teams)
/VSPT Spot Starters - visitor
/HSPT Spot Starters - home
/VAM  AutoManage - visitor
/HAM  AutoManage - home
/ERA:YYYYL   Year and league for batting normalization
/FOC Focusing on
/AUL Automatic Lineup (all teams)
/VAL Automatic Lineup - visitor
/HAL Automatic Lineup - home
/S:Y or N  Turns Sound Effects On or Off
/C:C color display on color monitor
/C:M black and white display on monochrome monitor (if any still exist)
/C:B black and white display on color monitor
   The program should be smart enough to figure out what kind of monitor you have so you
   should never have to use this switch. If for some reason you would like a b/w display on
   your color monitor, you have that option.
/DEL:delay factor  0-9
      How long (seconds) to read the play-by-play /PG  pause after each game (in multiple
game simulations)
/NOOPT  disables the [O]ptions so they can't be accessed during game
/T  Suppress the built-in home-field advantage
/X  make SBS shut down after sim completes. Useful in batch files where you want to run
several sims.
For Schedule Files Only:
/VM:+ or -  Inserts or Removes Visiting Team in Manual Manage List
/HM:+ or -  Inserts or Removes Home Team in Manual Manage List
```

ANALYZING THE STATISTICS and PRINTING REPORTS
Choose the stat file you want to analyze and SBS will then summarize the results creating a
"print" file (.PRN) on disk.

MAINTAINING and ENHANCING YOUR TEAMS (or build your own teams!)
You can change information on the team files or make up your own teams using any text
editor. Just about any word processor will do also, but make SURE you save the file in
plain ASCII format. This is sometimes called DOS MODE or NON-DOCUMENT MODE or some-such
thing. Make sure you follow the exact format used in the team files supplied. Everything has
to be in its own particular column, etc. The best way is to copy one of the .DAT files you
already have and then edit the new copy.

Team Nicknames:
Nicknames have purposely been omitted but you can add them yourself. The first line contains
the codes for the team's league and division as well as the name of the team. If you want to
change the name of the team (use its nickname for example), edit this line starting in
column 11.

Players' Names:
Names of <u>active players</u> have been scrambled. However, you can easily edit these names
yourself if you want.

Platooning:
"Platooning" is when a manager starts a right-handed hitting player against left-handed

pitching, but benches him in favor of a left-handed hitting player against right-handed pitching. SBS supports this in the following manner by direct editing of the .DAT files. Type an "A" in column 5 of the .DAT file next to the player in the starting lineup. Then type an "A" in column 5 next to the player on the bench that you want to platoon with him. Neither player should be a switch hitter. If there are more players you want to platoon at the same time match them up with a "B" and so on. When SBS displays the starting lineup it will swap the marked players depending on the "handed-ness" of the opposing pitcher. SBS will not do "platoon-swapping" after pitching changes while a game is in progress. If column 5 of a player's record is marked, SBS assumes that his statistics were generated primarily against opposite-handed pitchers, so his average is not "boosted", as would be the case of straight lefties vs righties, and vice-versa.

Pitcher Hitting Codes:
Older SBS .DAT files usually do not contain batting data for pitchers. If you are not satisfied with the default values (.165 average) for pitchers, you can edit the .DAT files and insert a special code into a pitcher's line. Just place an A, B, C, D or E in column 81 to represent the following batting averages for pitchers:
A = .250
B = .200
C = .150
D = .100
E = .050

NOTES ON CONSTRUCTING YOUR OWN TEAMS
Slots 1 thru 9 are the default starting lineup and batting order. If you do not want a DH in your default starting lineup, leave slot 9 blank like I have in my "N" League files.

Slots 10 thru 14 are for starting pitchers. Relief pitchers begin in slot 15, although #14 can be used in relief if desired. You may have as few as 2 or as many as 15 relief pitchers. The man in slot 15 will be your "closer"-the guy who comes in in the late innings to try to nail down a save. After the relief pitchers there should be a line beginning with a "*" and then the "bench". You may fill out the bench down to slot 45. This allows a roster of 45 players if a DH is specified in the lineup or 44 players if not (that's because slot 9 is wasted if the DH is not used). If you do not include a DH in the default starting lineup, and then choose to use a DH in the program, the first player on the bench will be inserted as the DH into the number five spot.

Note:
If you are adding your own team files, you must use the file extension .DAT for your data file. You may store up to 1500 teams in a given subdirectory.

CONFIGURATION FILE - BASEBALL.CFG
This is an important file, although SBS will run without it. The configuration file contains information about each league for a given year. This enables SBS to reduce "bias" of one era versus another. These stats are used to compute "League Average" values for a given league/year. If there is no .CFG file, SBS uses some "hard-coded" values which reflect recent-era data. If the team you select is from a year or league that is not covered in the .CFG file, then SBS uses the default values contained in the file-the DEF A and DEF N lines. If you choose to edit this file, keep the columns lined up correctly!
You may also control the standards which determine when a game's box score is saved to your "STARBOX" file. This is done in the HILITE line. For example, if you want to save the box score if someone gets 5 or more hits you would enter "5" under Hits. If you want to save box scores of pitching gems of 3-hitters or better enter a "3" under the PHit column.

Here are some sample lines from the .CFG file for reference and the columns in which these values must fall:
columns   11-16 18-23 25-30 32-37 39-44 47-51 53-58

Hilite line example:
```
    *      | Hits|   HR|  RBI|   SB| PHit|   SO| B-Stk|
  HILITE  |    5|    3|    9|    4|    1|   15|   30|
```

Year/League summary line example:
```
 *YR LG  |  Inn| Hits|   2B|   3B|   HR|   BB|   SO| Teams|
 1902A   | 9732|10451| 1679|  569|  258| 2815| 2744|    8|
```

EDITOR=path to text-editor program (The default is NOTEPAD)

AUX=path to auxilliary program (Launched by pressing "A" in the team file display).

FORCE-SCOREBOARD=Y   [Default is N]
will make the scoreboard display inning-by-inning. Normally this is suppressed in Quick-Play mode.

FORCE-LINEUP=Y   [Default is N]
will give you the team lineup display on Two-Team simulations, even if you select "AutoLineup".

DAYS-OFF-RULE=Y   [Default is N]
forces relief pitchers to sit out a number of games depending on the length of their last outing according to the formula:
DaysOff = INT(SQR(4 * InningsPitched) - 1.4) which works out to this:
```
    1 1/3 inn or less  - 0 games
    1 2/3 - 2 2/3 inn  - 1 game
    3 - 4 2/3 inn      - 2 games
    5 - 7 inn          - 3 games
```
The rule is not enforced on starting pitchers -- only pitchers used in relief at this point.

WARMUP-RULE=Y   [Default is N]
Before you can bring in a relief pitcher, you'll be forced to warm him up for a couple of hitters.

COLOR-SCHEME=   [Default is 5]
Select 1, 2, 3, 4, 5 or 6

FIELD-PHOTO=
Name of default image for background

STRICT-CLOSER-RULE=Y   [Default is N]
will restrict the computer manage from bringing in a "closer" unless it's the ninth inning or later and he has a lead.

REGULATION-INNINGS=   [Default is 9 of course]
SBS will now simulate 7 inning games (or whatever other number you specify). Nice for college leagues, etc.

STAT-TEAM-LIMIT=
The default is 99 teams maximum in a simulation (you really shouldn't have more than 30 anyway). I have not tested this.

PROTECT-SCH=Y   [Default is N]
Doesn't allow SBS to update .SCH files with the names of stat files in progress.

BATTER-OVERUSE=Y   [Default is N]
Penalizes offensive performance for severe overuse

```
AUTOCOACH=Y        [Default is N]
Computer makes all baserunning decisions

AUTODEFENSE=Y      [Default is N]
Computer makes all decisions about throwing to bases

WORDPAD=path to Microsoft Wordpad

FIREWORKS=[Y/n]   Turns off fireworks after HR. Default=Y.

FIELD-PHOTO=        .jpg or .bmp file to use as default field background.

PARK-EFFECTS=[Y/n] Turns off park-effects. Default=Y.

HOME-RUN-WAV=       User-specified .wav file used when a HR happens.

ALTERNATE-FONT=[y/N] Use for XP. Default=N.

REFRESH-STANDINGS=
In .SER or two-team sims, how often to refresh the standings display. Default is every 20
games.

OUT-OF-POSITION-MSG=[Y,n] Ability to suppress this message. Default=Y.

CONSOLE-COLS=xx
CONSOLE-ROWS=yy
Let's you specify the number of screen row and columns. If you specify CONSOLE-COLS=80 and
CONSOLE-ROWS=25 you will not get a graphics display. Do not specify anything less than 80 x
25.
```

PROGRAM RESTRICTIONS
Pitchers may not normally pinch-hit or pinch-run (unless a line has been entered for them on
the "bench" in the .DAT files). You MAY include pitchers on your "bench" by editing the .DAT
file. Make sure the name is EXACTLY the same and **change the pitcher's position to something
other than "01".**

If you "swap" the DH with another player after the game starts, the DH rule should actually
no longer be in effect, but SBS doesn't know about that rule.

SUPPORT
The author loves feedback from users!
E-mail: dbschmidt1@yahoo.com
Web Page: http://sbs-baseball.com
The web page has a "forum" link where you can talk about SBS and/or get help from many
knowledgable people.

ACKNOWLEDGEMENTS
SBS was compiled with: **PowerBasic PB/CC 2.11** (**www.powerbasic.com**)
with graphic support from **PerfectSync** (**www.perfectsync.com**)

Many of our background photos are from the **Timothy and Kristen Lux** collection. And we now
also welcome some fine photos from **Richard Barchfield.**

The WAV files were purchased from: **Ultimate Sound Archive** (advances.com)

The MIDI anthems were ripped from: **www.baseballsimcentral.com**

Early support came from Robert Logbeck of Overland Park, KS and Tom Riggs of Longview, TX. Robert built many of the old-timer teams and did the original research for the season data in the BASEBALL.CFG file. He also did a great deal of de-bugging work. Without his help SBS might still be stuck in 1990. Tom also did some of the original team research way back when.

In the early 1990's Craig J. Poff of Beaufort, SC contributed team data and provided much encouragement and helpful advice.

Brandon Cope of Eagle Lake, TX compiled the 98/99/00/01/02 teams and many other teams and seasons as well. His de-bugging and suggestions have been exceptionally helpful. He also has written several useful utility programs.

Jeffrey Carrie has been the man chiefly responsible for the recent explosion of complete seasons available. He took Todd Granier's wonderful baseball database and wrote a system to generate SBS data files from it. His system is available to anyone.

Bryan Bollman has taken on the time-consuming task of maintaining a library of teams, seasons and schedules. He maintains a well-organized web site for this purpose. He also wrote "RunSBS" which provides SBS with a friendly "front-end". Check out his other programs too at http://www.geocities.com/runsbs

Joe Gucciardo has also written fine utility programs for SBS and designed and distributes his own excellent table-top version of SBS.

Mischa Gelman has built many teams and seasons. Mischa has also found several program glitches and made many good suggestions for improvements to SBS. His advice in the SBS Forum is always well thought-out and helpful. Check out his many library contributions at http://www.geocities.com/runsbs

Thanks to Mario Gerowitz for his many fine suggestions and testing help.

Thanks to Joe A. Rodriquez for designing the SBS icon.

Others who have built seasons for us are Harrison Newhouse, Kevin Kuntz, Matt Brolaski, Jaren Lykins, Jim Wisenberg, Randy Casebier, Mike Hais, Ken Aupperlee and Gerz Asonza. Check out Harrison's simulator at: http://www.geocities.com/hdnewhouse/eibb1.htm

Other contributuers to the library to date were Jim Sakal, Chris Gerby, Tony Zipeto, Jerry Scampini, Bill Petersen, Dirk Knemeyer, Dean Lollis, Jim Evers and Stephen Davis. I'm sure I missed a few.

And how about all those who work tirelessly for the Official SBS League? http://sbs-league.cjb.net
The webmaster is Jonas Terrado and the chief statistician is Pat Senechal.

Also, Pat Senechal has built a very nice web site of background pictures you may download and use.
See http://www.geocities.com/patsen29/ballparks

And finally thanks to all the rest of you who wrote and offered valuable suggestions, encouragement and thanks.

Program History:

1981 - FORTRAN prototype for IBM VSE/ICCF
1987 - Version 1.2 MS QuickBASIC 4.0 - First PC release
1988 - Version 1.3 MS QuickBASIC 3.0
1990 - Versions 1.4 & 1.5 - a few bug fixes - flexible DH
1993 - Version 2.01/02 MS BASIC 7.1 - Major revision - new features including large simulation capability and ability to   save and compile statistics
1993 - Version 2.5 More flexibility; Capability to save or print box scores/score cards/starbox's. Faster. Better display.
1993 - Version 2.51 Fixed "missing runner" bug in 2.5. Fixed problem with detecting hitting streaks in BASESTAT.
1995 - Version 3.0 - Next major revision Loads stat files in memory for immediate access.
   New format Schedule Files by   date. Improved play-by-play
1996 - Version 3.01 - Minor bug fixes
1998 - Version 3.1 - Complete support for inter-league play
1999 - Version 3.3 - Various enhancements
1999 - Version 3.4 - Improved "user-interface". Better accuracy.
2000 - Version 3.41 - Bug fix involving stolen bases.
2000 - Version 3.5 thru 3.5.003 - Dozens of minor enhancements and "polish".
2001 - Version 3.6 - Introduced batter "normalization"; better pitcher management;
   improvements in scorecard, box-score   and stat reporting. The last version for MS-
   DOS.
2002 - Version 4.0 - First version for Windows, mouse support, .wav sound effects, richer
   play-by-play, manager pinch-   running and double-switch, base-running options, batting
   order optimization, more stats reported.
2002 - Version 4.5 – Introduced graphic background pictures
2003 - Version 4.6 – More refinements
2004 - Version 4.7 - Still more...

APPENDIX A
Structure of the .DAT files

```
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678900
        1         2         3         4         5         6         7         8         9         0

*N      C2003 St.Louis    AB Hit  2B  3B  HR  BB  SO RBI B DEF SB CS Gam Gam-P Gam-P Gam-P Gam-P
01  a 04 Bart, Ho         296  82  13   5   4  12D  64  28 R 989  3  1  77 69-4  3-6
02    09 Oalmeiro, Prlando 317  86  13   1   3  32  31  33 L 999  3  3 141 62-9  42-7  17-8
03    07 Aujols, Plbert   591 212  51   1  43  79D 65 124 R 993  5  1 157 113-7  62-3   1-D
04    05 Solen, Rcott     559 160  49   1  28  82D104 104 R 969 13  3 154 153-5
05    06 Eenteria, Rdgar  587 194  47   1  13  65I 54 100 R 975 34  7 157 156-6
06    03 Tartinez, Mino   476 130  25   2  15  53D 71  69 L 997  1  1 138 126-3   5-D
07    08 Jdmonds, Eim     447 123  32   2  39  77 127  89 L 986  1  3 137 128-8   2-D   1-7
08    02 Natheny, Nike    441 111  18   2   8  44F 81  47 R 999  1  1 141 138-2   4-3
09    01
*Pitchers               Inn Hit  2B  3B  HR  BB  SO ERA T   W   L  S Gam  St     AB   H HR  BB  SO
10    01 Xilliams, Xoody  221 220   0   0  20  55 153 387 R  18   9  0  34  33  A  70  17  1   5  26
11    01 Norris, Natt     172 164   0   0  20  39 120 376 R  11   8  0  27  27  B  52  10  1   2  16
12    01 Gtephenson,Sarrett174 167  0   0  30  60  91 459 R   7  13  0  32  27  B  40   9  0   3  18
13    01 Jimontacchi,Sason 126 153  0   0  21  41  74 556 R   9   5  1  46  16  C  38   5  0   0  14
14    01 Daren, Hanny      73  84   0   0   9  22  43 508 R   3   7  0  14  14  D  25   2  0   1  10
15    01 Jsringhausen,Iason 42  31  0   0   2  18  41 236 R   0   1 22  40   0  B
16    01 Sitchcock,Hterling 38  34  0   0   8  14  32 379 L   5   1  0   8   6  D
17    01 Jassero, Feff     78  93   0   0  17  34  55 568 L   1   7  3  62   6  D
18    01 Kalero, Ciko      38  29   0   0   5  20  51 282 R   1   1  1  26   1
19    01 Cldred, Eal       67  62   0   0   9  31  67 374 R   7   4  8  62   0
```

```
20    01 Dermanson, Hustin   30  35   0   0   4  14  12 546 R   1   2  1  23   0  D
21    01 MeJean, Dike        18  17   0   0   1  12  13 400 R   1   1  1  18   0  E
22    01 Sline, Kteve        64  56   0   0   5  30  31 382 L   5   5  3  78   0
23    01 Ean, Ysteban        43  53   0   0   8  16  28 602 R   2   0  1  39   0  A
24    01 Rpringer, Suss      17  19   0   0   8   6  11 831 R   1   1  0  17   0
25    01 Lainter, Pance      18  17   0   0   3   7  11 550 L   0   1  0  22   0
26    01 Mrudale, Cike       11  11   0   0   1  12   6 238 R   0   1  0  13   0
27    01 Bomko, Trett       203 252   0   0  35  57 114 528 R  13   9  0  33  32  A   63  18   0   4  15
*Bench                       AB Hit  2B  3B  HR  BB  SO RBI B DEF  SB CS Gam Gam-P Gam-P Gam-P Gam-P
28    09 Jrew, D.D.         287  83  13   3  15  36  48  42 L 994   2  2 100  53-9  26-8   1-7
29    04 Mairo, Ciguel      261  64  15   2   5 13C  30  32 R 971   4  1  92  40-4  22-7  12-5   7-6
30  a 04 Fina, Vernando     259  65  14   4   4 11A  24  23 L 974   4  4  61  60-4
31    09 Eerez, Pduardo     253  72  16   0  11 29D  53  41 R 951   5  2 105  64-9  12-5  10-7   5-3
32    09 Kobinson, Rerry    208  52   6   3   1  8F  27  16 L 999   6  1 116  39-9  36-7  20-8
33    09 Earrero, Mli       107  24   4   2   2  7G  18  20 R 988   0  1  41  21-9  10-7   6-2   6-8
34    02 Cidger, Whris      102  24   9   0   6  20  14 R 995   0  0  44  41-2   1-3   1-9
35    04 Welgado, Dilson     77  13   3   0   0   3  10   3 S 983   0  0  43  12-4  11-6  11-5
36    08 Saguchi, To         54  14   3   1   3   4  11  13 R 999   0  0  43  16-8  13-9  11-7   1-4
37    02 Jirardi, Goe        23   3   0   0   0   3   4   1 R 958   0  0  16  13-2
*PE=96/97,PH=busch2.jpg,COL=red
##
Add anything you want here
```

First Line:
Must start with "*" in column 1
League identifer letter must be in column 2
Optional "Division" identifer letter is in column 10
Year is in columns 11-14
Team name (usually city) starts in column 16
Column 62-64 may be DEF if defensive percentage data is given or ERR if errors are given.

Next Nine Lines:
Default starting lineup
Positions are specified in columns 7-8 (See "Position Players" below)
For non-DH leagues, leave a row for the pitcher's batting slot (usually #9). Don't forget to specify an "01" in columns 7-8!

Pitching section:
Begin the pitcher section with a line starting with ***Pitchers** and enter data in the columns specified.
Pitcher's batting stats beginning in column 82 are optional. Alternatively you may use a pitcher's batting code in column 81. List your top five starters first. Your top-line closer should normally be listed sixth. Old-timer teams may not fit too well into this scheme, but SBS will do it's best.

Reserves section:
Begin this section with a line starting with ***Bench**

Misc Option section: (Optional)
This optional section consists of ONE line starting with a ***** containing home field photo information, park effect numbers, team color, gender marker. Order is not important.
Arguments must be separated by commas.
Example: *PE=96/97,PH=busch2.jpg,COL=red,GEN=F
Background photo: PH=file
       Photo files must be .jpg or .bmp and be in your SBS folder
Park Effects: PE=xx/yy
       These come from http://www.baseball-reference.com
Team Color: COL=red
  (options are: BLACK, BLUE, GREEN, CYAN, RED, MAGENTA, BROWN, GRAY, BRIGHT BLUE,

BRIGHT GREEN, BRIGHT CYAN, BRIGHT RED, BRIGHT MAGENTA, YELLOW, WHITE)

Gender: GEN=F Causes play-by-play announcer to use feminine pronouns.

Position Players
01-02 Line Number (not used – user can put anything desired here)
05   Platoon Swap Code - player will be swapped with a like-marked bench player vs. left-
handed pitching
06-07 Position
       02=catcher, 03=1st base, 04=2nd base 06=shortstop , 05=3rd base, 07=left field,
       08=center field, 09=right field, 10=DH
10-27 Name (Last Name, First Name)
28-30 At-Bats
32-34 Hits
36-38 Doubles
40-42 Triples
44-46 Home Runs
48-50 Walks
51   HBP Code (A=5x Avg   B=4x Avg   C=3x Avg   D=2x Avg   E=Avg   F=1/2 Avg   G=1/4 Avg
52-54 Strike Outs
56-58 RBI   (not used in calculations, just for display)
60   Bats (R or L or [S or B] for switch-hitter)
62-64 Errors (if Line 1 is "ERR") or Defensive Percentage (if Line 1 is "DEF")
65-67 Stolen Bases
68-70 Caught Stealing
72-74 Games Played
76-78 Games-Played-at-Position 1   Do not list Games played as a Pitcher
80   Position 1 (use "D" for DH)
82-84 Games-Played-at-Position 2
86   Position 2
88-90 Games-Played-at-Position 3
92   Position 3
94-96 Games-Played-at-Position 4
98   Position 4

Pitchers
01-02 Line Number (not used – user can put anything desired here)
      Platoon Swap Code
06-07 Position (Pitchers are "01")
10-27 Name (Last Name, First Name)
28-30 Innings (Round to nearest Inning)
32-34 Hits Allowed
36-38 Doubles Allowed (not used by SBS)
40-42 Triples Allowed (not used by SBS)
44-46 Home Runs Allowed
48-50 Walks Allowed

52-54 Strike Outs
56-58 ERA   (not used by SBS, except for display)
60   Throws (R or L) If lower-case, bats opposite of throwing hand
62-64 Wins (not used by SBS, except for display)
65-67 Losses (not used by SBS, except for display)
68-70 Saves
72-74 Games Played
81   Pitcher Hitting Code
      A=.250   B=.200   C=.150   D=.100   E=.050   (Blank=.165)
------------------- Pitcher Batting Stats -------------------

```
83-85 At Bats
87-89 Hits
91-92 HR
94-96 Walks
98-100 Strike Outs
```

For players who both pitch and play a field position, you'll need to enter them twice. Once in the pitching section and once in the lineup or in reserve. Make sure their name is spelled exactly the same. Under the Games-Played-At-Position, do not include the position of pitcher.

Rosters are limited to 44 players (actually 45 if a DH is specified in the starting lineup).
Also you may have no more than 25 pitchers.

Placing "##" in the first two columns of a line will cause SBS to skip reading the remainder of the file. You may use this to store extra players or enter comments.

APPENDIX B
Internal File Layouts

Stat Summary (.STS) Record Length = 92
```
Type StatSummary
  Vleague   AS STRING * 1
  Vdiv      AS STRING * 1
  Vnam      AS STRING * 12
  Vruns     AS INTEGER
  Vhits     AS INTEGER
  Verrs     AS INTEGER
  VLOB      AS INTEGER
  VDPs      AS INTEGER
  Hleague   AS STRING * 1
  Hdiv      AS STRING * 1
  Hnam      AS STRING * 12
  Hrun      AS INTEGER
  Hhit      AS INTEGER
  Herr      AS INTEGER
  HLOB      AS INTEGER
  HDPs      AS INTEGER
  WP        AS STRING * 14
  LP        AS STRING * 14
  SP        AS STRING * 14
  Unused    AS STRING * 2
END Type
```

Batting Summary (.STB) Record Length = 96
```
TYPE BatSummary
  BLeague   AS STRING * 1
  BTmNam    AS STRING * 12
  BNam      AS STRING * 16
  BBats     AS STRING * 1
  BGameCtr  AS INTEGER
  BGames    AS INTEGER
```

```
    BABs      AS  INTEGER
    BABsRHP   AS  INTEGER
    BABsLHP   AS  INTEGER
    BRuns     AS  INTEGER
    BHits     AS  INTEGER
    BHitsRHP  AS  INTEGER
    BHitsLHP  AS  INTEGER
    BRBIs     AS  INTEGER
    B2Bs      AS  INTEGER
    B2BsRHP   AS  INTEGER
    B2BsLHP   AS  INTEGER
    B3Bs      AS  INTEGER
    B3BsRHP   AS  INTEGER
    B3BsLHP   AS  INTEGER
    BHRs      AS  INTEGER
    BHRsRHP   AS  INTEGER
    BHRsLHP   AS  INTEGER
    BSBs      AS  INTEGER
    BCSs      AS  INTEGER
    BBBs      AS  INTEGER
    BBBsRHP   AS  INTEGER
    BBBsLHP   AS  INTEGER
    BHB       AS  INTEGER
    BKs       AS  INTEGER
    BKsRHP    AS  INTEGER
    BKsLHP    AS  INTEGER
    BErrs     AS  INTEGER
    BStreak   AS  INTEGER
    BGDP      AS  INTEGER
    BSacB     AS  INTEGER
    BSacF     AS  INTEGER
END TYPE


**Pitching Summary File (.STP)**  Record Length = 76
TYPE PitSummary
    PLeague   AS  STRING * 1
    PTmNam    AS  STRING * 12
    PNam      AS  STRING * 16
    PThrows   AS  STRING * 1
    PGameCtr  AS  INTEGER
    PGames    AS  INTEGER
    PStarts   AS  INTEGER
    PCGs      AS  INTEGER
    PShOs     AS  INTEGER
    PInns     AS  INTEGER
    P3rds     AS  INTEGER
    PRuns     AS  INTEGER
    PERuns    AS  INTEGER
    PHits     AS  INTEGER
    P2Bs      AS  INTEGER
    P3Bs      AS  INTEGER
    PHRs      AS  INTEGER
    PBBs      AS  INTEGER
    PHB       AS  INTEGER
    PSOs      AS  INTEGER
    PWin      AS  INTEGER
```

```
    PLoss       AS INTEGER
    PSave       AS INTEGER
    PBS         AS INTEGER
    PBF         AS INTEGER
    PDaysOff    AS INTEGER
    PJDate      AS INTEGER
END TYPE


```

Fielding Summary (.STF) Record Length = 116
```
TYPE FldSummary
  FLeague           AS STRING * 1
  FTmNam            AS STRING * 12
  FNam              AS STRING * 16
  FThrows           AS STRING * 1
  FCount            AS INTEGER
  FGamesByPos  (1 TO 12)  AS INTEGER    ' 11 & 12 not used
  FErrsByPos (1 TO 10)    AS INTEGER
  FPutOutsByPos (1 TO 10)  AS INTEGER
  FAssistsByPos(1 TO 10)   AS INTEGER
END TYPE


```

Schedule File Restart (.RES) Record Length = 28
```
TYPE RestartType
  ResSCHName        AS STRING * 12
  ResSCHDate        AS STRING * 8
  ResSCHSlotPtr     AS INTEGER
  ResSlotGameCt     AS INTEGER
  ResSlotGames      AS INTEGER
  ResSimGameCtr     AS INTEGER
END TYPE


```

Pitching Rotations (.ROT) Record Length = 27
```
TYPE RotType
  RotTeam           AS STRING * 12
  RotMeth           AS STRING * 2
  RotSpot           AS STRING * 1
  RotIndex          AS INTEGER
  RotList(5)        AS INTEGER
END TYPE


```

Schedule File (.SCH) Record Length = 430
```
TYPE ScheduleSlotType
   Visitor AS STRING * 8
   Home    AS STRING * 8
   Options AS STRING * 12
END TYPE

TYPE ScheduleType
   Header AS STRING * 2   'blank except for first record which should be marked "D" in first
column
   SDate  AS STRING * 8
   Slot(1 TO 15) AS ScheduleSlotType    'each slot is 28 bytes
END TYPE
```

Note: First record of .SCH file should be a "blank" record except for a "D" in the Header field.

Serial File (*.SER)
Simple text file, each line specifying the home and visiting team and number of games to play.
Example:
/v:1906nchi /h:2003aoak /n:162
etc.
etc.

.WAV files - The sound files.
You may replace these with your own .wav files if you like. You'll have to rename your file(s) to correspond to the appropriate events as given below.

Bunt: 57434

PopUp: 3017, 37979

Short Fly: 3017, 37880

Regular Fly: 3017, 37979, 57430

Long Fly: 37830, 57430, hit

Line Drive: 57430, hit

Regular Hit: 3017, 57430, hit

Soft Grnd: 37906, 57435

Regular Grnd: 61400, 61714, hit

Whiff: 21904, 61817

BB/Call K: 37909, 37910, 60290

"Play Ball":   4540

"Just a bit outside": 15533

Home Run Call: 4189

.MID files

"O, Canada": canada.mid
"Star Spangled Banner": usan.mid

APPENDIX C
Basic Theory of Operation

HITTING vs PITCHING - the first step:

A hitter can do one of six things in SBS. He can:

```
  1) Make an out.
  2) Get a walk.
  3) Get a single.
  4) Get a double.
  5) Get a triple.
  6) Get a Home Run.
```

(He could also get on base on an error but that is really a subset of making an out as far as the stats are concerned). SBS calculates from the hitter's record the probability of each occurrence. Then the pitcher's record is considered which modifies the probabilities. This will be demonstrated by working through an example. Consider the batter named Joe Hitter:

```
            AB Hits  2B  3B  HR  BB   K  AVG
Joe Hitter  482  147  20   4  12  41  71 .305
```

Compute PA (Plate Appearances) = AB + BB = 523
  (ignore sacrifice hits and Hit-By-Pitched-Balls which would make PA a
  little larger)

Compute HBB (probability of Walk) = BB / PA   = .0784
Compute H1 (probability of single) = (Hits - (2B + 3B + HR))/ PA = .2122
Compute H2 (probability of double) = 2B / PA   = .0382
Compute H3 (probability of triple) = 3B / PA   = .0076
Compute H4 (probability of HR) = HR / PA   = .0229

                                                              .3593

**(These values of H1 thru H4 may be further adjusted for "normalization". See discussion below).

What's left is the probability of making an out (or possibly getting on on an error): 1.0 - .3593 = .6407

We have determined Joe's probabilities as a whole against all the pitchers he faced that particular season. But now we have to calculate probabilities given a particular pitcher. Consider a player named Jack Pitcher:

```
              IP Hits   HR  BB   K
Jack Pitcher  200  210   15  50  80
```

If a pitcher threw 200 innings we know he got approximately 600 batters out. The ones he did not get out got hits or walks or reached on errors.

Compute BF (batters faced) = (IP x 3) + Hits + BB

A pitcher will face a few less batters than this due to double plays and runners getting thrown out on the bases. On the other hand he sometimes faces extra hitters because of

defensive errors. These two factors just about cancel each other out so we can leave the BF
equation alone for purposes of explanation.

We now need to compute the probabilities for the pitcher for the same events that we just
calculated for the batter.

Compute BF (batters faced) = (IP x 3) + Hits + BB = 860

```
Compute P4 (probability of HR)     =  HR / BF                  = .0174
Compute P3 (probability of triple) =  Hits x .024 / BF        = .0059
Compute P2 (probability of double) =  Hits x .174 / BF        = .0425
Compute P1 (probability of single) =  (Hits / BF)- P4 - P3 - P2 = .1784
Compute PBB (probability of Walk)  =  BB / BF                 = .0581
```

The data usually just gives us the total hits and HR's a pitcher allowed. However, we can
use the multipliers .174 and .024 to estimate doubles and triples from the total number of
hits. These multipliers are not constants but we can figure them for each year/league from
data in the BASEBALL.CFG file.

Comparing the percentages we obtained from the hitter with the pitcher we have come up with
the following:

```
Event        Hitter      Pitcher
------       ------      -------
walk          7.72%        5.81%
single       20.90%       17.84%
double        3.77%        4.25%
triple        0.75%        0.59%
home run      2.26%        1.74%
out          64.60%       70.10%
```

At first glance it might seem that all we need to do now is average the hitters and pitchers
events like this:

single = (20.9% + 17.84%) / 2 = 19.37%
etc. for the rest of the events

This method is unacceptable, however, because it over-penalizes the outstanding players
while boosting the poorer players. That is, it tends to lump everyone together too much. In
our example above we have a good hitter, (.305 vs the league) against what we're calling an
average pitcher. Certainly we could not expect his single% to DROP to 19.21% from 20.90%!
After all if this is an average pitcher we would expect our batter to do at least as well
against him as he did against the rest of the league!

The solution is to use "league averages" for the events and to compare our pitcher's
performance against the league averages. For example, we can pick up a baseball statistics
magazine containing the statistics from the preceding year, and calculate the total
"batter's faced" for all the pitchers for the entire season. We can also total the number of
walks, hits, and home runs -- and estimate using our multipliers above -- the total number
of singles, doubles, and triples. Then we can calculate our "league averages".

For example, we find that for an entire season there was 17,500 innings pitched, 16,500
hits, 2900 doubles, 410 triples, 1450 Home Runs, 6,300 walks.

Calculate League Averages:

```
   League Avg. BF = (17,500 x 3) + 16,500 + 6,300 = 75,300

   " " " "     LABB    =            6,300 / 75,300 = .0837
   " " " "     LA1     =           11,740 / 75,300 = .1559
   " " " "     LA2     =            2,900 / 75,300 = .0385
   " " " "     LA3     =              410 / 75,300 = .0054
   " " " "     LA4     =            1,450 / 75,300 = .0193
```

Finally we can combine our hitter percentages with our pitcher percentages to get meaningful
probabilities:

```
Combined percentages:
walk%     = HBB x (PBB / LABB)  = .0536   (*)
single%   = H1  x (P1  / LA1)   = .2428
double%   = H2  x (P2  / LA2)   = .0465
triple%   = H3  x (P3  / LA3)   = .0076
home run% = H4  x (P4  / LA4)   = .0204
```

Note that if the pitcher's percentages are nearly equal to the League Averages, the second
factor becomes essentially 1 and the hitter performs as expected. But if the pitcher's
percentages are substantially better (lower) than the League Averages, the second factor
will be less than 1 and the hitter will suffer. The reverse is true if the pitcher's
percentages are worse (larger) than the League Averages.

(*) OK, this is not quite how I do it now. I now use a slightly more accurate (supposedly)
but more complicated formula using league averages which can be found at:

http://baseballstuff.com/btf/scholars/levitt/articles/batter_pitcher_matchup.htm

This is an article by Dan Levitt who gives credit to Bill James and Dallas Adams:

Bill James in his 1983 Baseball Abstract introduces the log5 method for
addressing this calculation. He credits the formula below for evaluating the
batter/pitcher match-up to Dallas Adams.

Where PitAvg equals batting average against the pitcher.

We would do this for each stat calculated above. So for the likelihood of a
SINGLE, instead of getting .2428 like we did above, we would do this:

                (.2122 x .1784) / .1559

(.2122 x .1784) / .1559 + ((1 - .2122) x (1 - .1784) / (1 - .1559))

which evaluates to .2405. Not a huge difference from the simplier calculation to
get .2428.

CROSS-ERA NORMALIZATION:

If normalization is enabled we modify the values of H1, H2, H3 AND H4 and the values of P1,
P2, P3 and P4 before entering them into the log5 formula above. This allows "dead-ball" era
batters to be more "offensive" when facing modern era pitchers. Modern era batters will have
more trouble hitting the "dead-ball" era pitchers.
```

By default, SBS normalizes to the home team's year and league. So the visiting team's batters are adjusted as to how their stats might stack up in the home team's era. Likewise the visiting team's pitchers are adjusted as to how their stats would look in the home team's era. The measuring stick used for this is called the "Linear Weights" method. A "linear weight" is calculated for the individual batter and pitcher and the league averages. See Appendix D "A Peek Under The Hood" for more details.

Other adjustments such as park effects, righty-lefty effects and pitcher fatigue are also discussed.


# APPENDIX D
# A peek under the hood at the SBS Engine


**CALCULATE RAW PROBABILITIES OF EACH EVENT FOR BATTER AND PITCHER**

```
'Estimate Batters Faced by Pitcher
bf = BattersFacedByPit(Innings, HitsAllowed, BBAllowed, SO)

'Estimate Plate Appearances by Batter
'Estimate chance of hit-by-pitch
hb = (BBAllowed / bf) * 0.08

'Set Sacrifice Fly percentage
sacF = .0035     'Produces about two SF's per 550 AB

'Calculate Hitter's Plate Appearances: AB + BB + HPB + SACF
pa = AB + BB + (hb + sacF) * AB

'Calculate Pitcher's chance of allowing some type of hit
phits = HitsAllowed / bf

'Calculate Hitter's chance of hitting a Home Run
h4b = HR / pa

'Calculate Pitcher's chance of allowing a Home Run
p4b = HRAllowed / bf

'Calculate Hitter's chance of hitting a Triple
h3b = 3B / pa

'Calculate Pitcher's chance of allowing a Triple
'phit3b(League) = Percent of hits that are triples in this league
p3b = phits * phit3b(PitchersLeague)

'Calculate Hitter's chance of hitting a Double
h2b = 2B / pa

'Calculate Pitcher's chance of allowing a Double
'phit2b(League) = Percent of hits that are doubles in this league
p2b = phits * phit2b(PitchersLeague)

'Calculate Hitter's chance of hitting a Single
```

```
hsingl = Hits - (2B + 3B + HR)
h1b = hsingl / pa

'Calculate Pitcher's chance of allowing a Single
p1b = phits - (p2b + p3b + p4b)

'Calculate Hitter's chance of getting a Walk
hwalk = BB / pa

'Calculate Pitcher's chance of allowing a Walk
pwalk = BBAllowed / bf
```

OPTIONAL BATTER NORMALIZATION
```
'Alter batting stats of the "out-of-era" team to that of the
'"current era" league.

IF Visiting Team is batting AND we are normalizing to the Home Team's   era (default)
OR
Home Team is batting AND we are normalizing to the Visiting Team's era
OR
We are forcing both teams to normalize to some other specified year

    '-----------------------------------------------------------
    ' Linear-Weights method
    '-----------------------------------------------------------

    NtvPlus  = LW(LgTotHits(BattersLeague), LgTot2B(BattersLeague),
LegTot3B(BattersLeague), LgTotHR(BattersLeague), LgTotBB(BattersLeague))
    NtvMinus = LgTotInns(BattersLeague) * 3  'Outs
    LWRN = NtvPlus / NtvMinus

    'NormLeague is usually the pitching team's league
    TgtPlus = LW(LgTotHits(NormLeague), LgTot2B(NormLeague), LgTot3B(NormLeague),
LgTotHR(NormLeague), LgTotBB(NormLeague))
    TgtMinus = LgTotInns(NormLeague) * 3  'Outs
    LWRT = TgtPlus / TgtMinus

    a = LWRT / LWRN

    PA_org = AB + BB
    PA_new = a * (Hits + BB) + (AB - Hits)
    f = a * (PA_org / PA_new)

    h1b   = f * h1b
    h2b   = f * h2b
    h3b   = f * h3b
    h4b   = f * h4b
    hwalk = f * hwalk
END IF

END BATTER NORMALIZATION
```

OPTIONAL PITCHER NORMALIZATION
```
'Alter pitching stats of "out-of-era" team to that of the
'"current-era" league.
```

```
IF Home Team is batting AND we are normalizing to the Home Team's era (default)
OR
Visiting Team is batting AND we are normalizing to the Visiting Team's era
OR
We are forcing both teams to normalize to some other specified year

    '-----------------------------------------------------------
    ' Linear-Weights method
    '-----------------------------------------------------------

    NtvPlus  = LW(LgTotHits(PitchersLeague), LgTot2B(PitchersLeague),
LgTot3B(PitchersLeague), LgTotHR(PitchersLeague), LgTotBB(PitchersLeague)
    NtvMinus = LgTotInns(id) * 3  'Outs
    LWRN = NtvPlus / NtvMinus

    'NormLeague is usually the batter's native league
    TgtPlus  = LW(LgTotHits(NormLeague), LgTot2B(NormLeague), LgTot3B(NormLeague),
LgTotHR(NormLeague), LgTotBB(NormLeague))
    TgtMinus = LgTotInns(NormLeague) * 3  'Outs
    LWRT = TgtPlus / TgtMinus

    a = LWRT / LWRN

    BF_org = BattersFacedByPit(Innings, HitsAlw, BBAlw, SO)
    BF_new = BattersFacedByPit(Innints, HitsAlw*a, BBAlw*a, SO)

    f! = a! * (BF_org / BF_new)

    p1b   = f * p1b
    p2b   = f * p2b
    p3b   = f * p3b
    p4b   = f * p4b
    pwalk = f * pwalk
END IF

END PITCHER NORMALIZATION
```

COMBINE AND ADJUST BASIC EVENT PROBABILITIES BY THE "LOG5" METHOD

```
'p1base(*) League Average chance of single
'p2base(*) League Average chance of double
'p3base(*) League Average chance of triple
'p4base(*) League Average chance of home run
'pwbase(*) League Average chance of walk

x1 = h1b * p1b / p1base(PitLeague)
y1 = x1 / (x1 + ( (1 - h1b) * (1 - p1b) / (1 - p1base(PitLeague)) ) )

x2 = h2b * p2b / p2base(PitLeague)
y2 = x2 / (x2 + ( (1 - h2b) * (1 - p2b) / (1 - p2base(PitLeague)) ) )

x3 = h3b * p3b / p3base(PitLeague)
y3 = x3 / (x3 + ( (1 - h3b) * (1 - p3b) / (1 - p3base(PitLeague)) ) )

x4 = h4b * p4b / p4base(PitLeague)
```

```
y4 = x4 / (x4 + ( (1 - h4b) * (1 - p4b) / (1 - p4base(PitLeague)) ) )

xw = hwalk * pwalk / pwbase(PitLeague)
walk = xw /( xw + ( (1 - hwalk)*(1 - pwalk)/(1 - pwbase(PitLeague)) ) )
```

APPLY THE ADJUSTMENTS AND CREATE THE "BREAK-POINTS"

"**adj**" is the variable that is the sum of all the other adjustments that the simulation takes into consideration:
  1. Lefty/Righty Breakdown
  2. Pitcher Fatigue
  3. Home Field Advantage
  4. Park Effects
  5. Player-Overuse, etc. etc.
If there are no adjustments the value of **adj** is 1. Values favorable to the hitter are greater than one. Values favorable to the pitcher are less than one. See the discussion on some of these adjustments below.

```
adj = 1
adj = adj + RLAdjustment + FatigueAdjustment + HomeFieldAdj + ParkBatAdj(BattingTeam) +
ParkPitAdj(PitchingTeam)


'Calculate the "complement" of adj for efficiency
'If no adjusments, adj=1 and cadj=0
cadj = 1 - adj

'The adjusment factor must be divided up amoung all hit types.
'To do this we use league average figures for each hit type.
'phit1b(*) = percent of hits that are singles   in this league
'phit2b(*) = percent of hits that are doubles   in this league
'phit3b(*) = percent of hits that are triples    in this league
'phit4b(*) = percent of hits that are home runs in this league

bp1 = walk
bp2 = bp1 + hb
bp3 = bp2 + y1 * (1 - phit1b(PitLeague) * cadj)
bp4 = bp3 + y2 * (1 - phit2b(PitLeague) * cadj)
bp5 = bp4 + y3 * (1 - phit3b(PitLeague) * cadj)
bp6 = bp5 + y4 * (1 - phit4b(PitLeague) * cadj)
```

THROW THE "DICE"! (Actually get random number between 0.0 and 1.0)
```
x = RND

IF x > bp6 THEN
    CALL OutOrError                  ' Out or Error
ELSEIF x > bp5 THEN
    HitType = 4
    CALL HomeRunRoutine              ' Home Run
ELSEIF x > bp4 THEN
    HitType = 3
    CALL TripleRoutine               ' Triple
ELSEIF x > bp3 THEN
    HitType = 2
```

```
    CALL DoubleRoutine                  ' Double
ELSEIF x > bp2 THEN
    HitType = 1
    CALL SingleRoutine                  ' Single
ELSEIF x > bp1 THEN
    CALL HBRoutine                      ' Hit by Pitch
ELSE
    CALL WalkRoutine                    ' Walk
END IF
```

FUNCTIONS REFERRED TO ABOVE:
"Linear Weight"
```
FUNCTION LW (Hits, Doubles, Triples, HR, BB)
Singles = Hits - Doubles - Triples - HR
LW = Singles + Doubles * 1.6 + Triples * 2.2 + HR * 3 + BB * 0.7
END FUNCTION
```

"BattersFacedByPit"
```
FUNCTION BattersFacedByPit (Innings, Hits, BB, SO)
BattersFacedByPit = (((Innings * 3) - SO) * .985) + Hits + BB + SO
END FUNCTION
```

LEFTY/RIGHTY ADJUSTMENTS

The example above is the basis of how a given hitter is expected to perform against a given pitcher. But we also can fine-tune our model to correct for the baseball maxim that right-handed batters do better against left-handed pitchers and vice-versa. [A batter facing a like-handed pitcher suffers somewhat]. This is, of course, a very individual thing -- not affecting some players while severely affecting others. SBS does not know which players are exceptional in this area -- the data files do not show a breakdown versus right or left handed opponents. But we can make some broad assumptions which are useful in large simulations.

The assumption made is that approximately three-fourths of all innings are pitched by right-handers, and two-thirds of batters are right-handed (ignoring switch-hitters). Because a typical batter will see so much more right-handed pitching than left-handed pitching, his average vs. left-handed pitching will show a greater fluctuation.

Consider the following typical scenario for a RIGHT-handed hitter:

	AB	Hits	Avg.
Total	600	180	.3000
vs. Right-Handed Pitching	450	133	.2955
vs. Left-Handed Pitching	150	47	.3133

Notice that his BOOST vs left-handed pitching (13.3 points) is about three times that of his PENALTY vs. right-handed pitching (4.5 points). This is because he sees approximately three times as much right-handed
pitching over the course of a season.

For the typical LEFT-handed hitter:

	AB	Hits	Avg.
Total	600	180	.3000
vs. Right-Handed Pitching	450	139	.3088
vs. Left-Handed Pitching	150	41	.2733

Notice that his PENALTY vs left-handed pitching (26.7 points) is about three times that of his BOOST vs. right-handed pitching (8.8 points). Again, this is because a full-time player sees three times as much right-handed pitching as left-handed pitching.

SBS does not reward and/or penalize by an absolute number of batting "points" but instead increases or decreases each of the hitter's probabilities by a percentage. This adjustment is spread out among all the types of hits, not just singles. SBS is conservative in this area, choosing to make minor rather than major adjustments. Here's what the logic looks like in the program:

IF Batter-is-Platooned AND Batter and Pitcher are "Opposite handed" THEN

    Make no adjustment

ELSEIF Batter is Right-Handed THEN

    IF Pitcher is Right-Handed THEN
       RLAdjustment = - .015
    ELSE
       RLAdjustment = + .045
    END IF

ELSEIF Batter is Left-Handed THEN

    IF Pitcher is Right-Handed THEN
       RLAdjustment = + .030
    ELSE
       RLAdjustment = - .090
    END IF

END IF

PITCHER FATIGUE FACTOR ADJUSTMENT

We have looked at two of the three major factors used in determining the percentages of events. The last major factor is the Pitcher Fatigue factor. That is, how does the effectivity of a pitcher vary over the course of a game -- or when does he tire out. SBS uses a linear function for pitcher fatigue which makes a pitcher more effective than normal if the pitcher has worked less than his normal outing and less effective than normal if the pitcher has worked near to or greater than his usual outing.

Basically, we just divide a pitcher's current pitch-count by the average number of pitches he throws per appearance. The "ExpectedPitchCount" function takes into consideration the mix

of starting vs. relief history. The resulting "FatFac" ratio is then used in a linear
function which helps the pitcher with low pitch counts and begins to penalize him when his
pitch count approaches or exceeds his "ExpectedPitchCount":

Estimate current pitcher's Pitch Count:

PitchCount = 4.81 x Strike-Outs + 5.14 x Walks + 3.27 x (Hits + HBP) +
            3.16 x (TotOuts - Strike-Outs)
or in code:

```
FUNCTION PitchCount (TotOuts, SO, BB, Hits, HBP)
PitchCount = (4.81 * SO) + (5.14 * BB) + 3.27 * (Hits + HBP) + 3.16 * (TotOuts - SO)
END FUNCTION
```


```
n = PitchCount (TotOuts, SO, BB, Hits, HBP)
FatigueFactor = n / ExpectedPitchCount (pitcher)
```
FatigueAdjustment = (0.175 * FatigueFactor) - 0.0965

(See the code for ExpectedPitchCount below).

There is no randomization of the pitcher's fatigue adjustment. It just proceeds linearly and
predictably. There seems to be enough uncertainly (luck) in game otherwise that this factor
didn't require it. There still seems to be a lot of starting pitchers getting bombed in the
early innings of many games even when they have a fatigue advantage.

This IS randomization, however, in the computer manager's decision process to pull the
pitcher for being "over-extended". If a pitcher is pitching well I don't want the manager to
always pull him at the same point in every game!

```
n = PitchCount (TotOuts, SO, BB, Hits, HBP)
IF n > ExpectedPitchCount(pitcher) * FatRnd(pitcher) THEN
    GetNewPitcher
END IF
```

The value of "FatRnd" is randomly assigned to each pitcher when he enters the game. If he
gets a value over 1.0, the manager will let him stay in longer than expected. If he gets a
value less than 1.0, the mananger will pull him earlier than normal. The value is based on a
"bell" curve centered around 1.0 so that the majority of time the randomness is not severe.
I can also adjust the center of the curve to be something greater than 1.0, so that older-
era pitchers won't get pulled as quickly as modern-era ones. Of course if a pitcher is
getting hit hard it doesn't matter what his pitch-count is. The manager will pull him anyway
based on his performance.

HOME FIELD ADVANTAGE ADJUSTMENT
Home team is given slight edge. This effect can be turned off by using the /T switch in the
command line or schedule file option slot.

```
IF Home is up THEN
    HomeFieldAdj = .030        'Improve batting stats 3%
ELSE
      'Visitors bat more often so magnitude should be 94.4% of Home's   '9/8.5
      ' .03 * .9444 = .0283
    HomeFieldAdj = - .0283     'Penalize visitors batting 2.83%
```

```
END IF
```

PARK EFFECTS ADJUSTMENT

The data source is "www.baseball-reference.com". Somewhere on this site is an explantion of
how the numbers are calculated. It is very complex and not something I would want to be
involved with. But once given, one can do useful things with them.

For park effects to be useful, all the teams in the league must have the data included in
their .DAT files. The average off all teams must be approx. 100. And Teams-In-League data
must exist in the baseball.cfg file.

The key is the normalization process which estimates what a team might have done in an
average park. It assumes that 1/2 a teams games are played at home and the other half on the
road are evenly divided amongst the other parks. (The last condition is not entirely met, of
course, in real life). You need to know how many other parks there are.

Here's the function for you code-readers:

```
HBF!() is each team's home batting park effect / 100
HPF!() is each team's home pitching park effect / 100

CurrParkBF! is home team's batting park effect / 100
CurrParkPF! is home team's pitching park effect / 100

'TeamsInLeague() is number of teams in league data from baseball.cfg

IF HBF!(1) > 0 AND HBF!(2) > 0 THEN
    FOR team = 1 TO 2
        n = TeamsInLeague(team)
        IF n > 1 THEN

            'NT! is "Normalized" value
            NT! = 2 / (HBF!(team) + (n - HBF!(team))/(n - 1) )

            'Multiply NT! by Current-Park's park effect
            'SBS needs a value adjusted from 1, so subtract 1

            ParkBatAdj(team) = CurrParkBF! * NT!  - 1
        END IF
    NEXT
END IF

'Same logic for pitchers
IF HPF!(1) > 0 AND HPF!(2) > 0 THEN
    FOR team = 1 TO 2
        n = TeamsInLeague(team)
        IF n > 1 THEN
            NT! = 2 / (HPF!(team) + (n - HPF!(team))/(n - 1) )
            ParkPitAdj(team) = CurrParkPF! * NT!  - 1
        END IF
    END IF
END IF
```

An adjustment less than 1 is favorable to the pitcher.
An adjustment more than 1 is favorable to the batter.

In the engine these two adjustments are lumped together with all the other adjusments.

APPENDIX E
Pitcher Replacement
Rules that determine when a pitcher gets the hook...

A. Is the pitcher is getting bombed?
<u>Any Pitcher:</u>
Five or more RunsAllowed in 2 innings
OR
RunsAllowed + (RunnersOn / 2) > 7

<u>Starters:</u>
RunsAllowed + INT(RunnersOn / 2) > n
$$\text{where } n = 5 \text{ for modern era}$$
$$n = 6 \text{ for old-timers}$$

<u>Reliever if game is in the 5th inning or earlier:</u>
RunsAllowed + INT(RunnersOn / 2) > n
$$\text{where } n = 3 \text{ for modern era}$$
$$n = 4 \text{ for old-timers}$$
<u>Reliever if game is 6th inning or later:</u>
RunsAllowed + INT(RunnersOn / 2) > n
$$\text{where } n = 2 \text{ for modern era}$$
$$n = 3 \text{ for old-timers}$$

B. Is the pitcher is over-extended (pitched too long)?
PitchCount > ExpectedPitchCount * RandomFatigueFactor
(only checks at beginning of inning)

C. Is it time for the "closer"?
Primary Conditions:
8th Inning or later
"modern" era
There must be at least 8 pitchers in the .DAT file.
At least one pitcher in the .DAT file must have at least 10 saves.
The defensive team is between 0 and 3 runs ahead.

"Strict" closer rule:
IF inning > 8 AND RunsAhead > 1 AND
   [RunnersOn + 2 > RunsAhead OR (Outs = 0 AND RunnersOn = 0 AND x < 1 - .1*RunsAhead)]

OR

IF inning > 8 AND RunsAhead = 1 AND
   [RunnersOn + 1 > RunsAhead OR (Outs = 0 AND RunnersOn = 0 AND x < 1 - .1*RunsAhead)]

where x is a random number between 0 and 1

No Strict closer rule:
Same rules as above plus the following rules:
Closer can enter a tie-game in the 9th or sometimes in the 8th under some conditions.

IF inning > 8 AND RunsAhead = 0 AND
   RunnersOn > 0 AND x < .3

OR

IF inning = 8 AND RunsAhead > 1 AND
[(RunnersOn + 2 > RunsAhead) AND outs > 0 AND current pitcher has pitched at least 2/3 inning
   AND x < .8]

OR

IF inning = 8 AND RunsAhead = 1 AND
[(RunnersOn + 1 > RunsAhead) AND outs > 0 AND current pitcher has pitched at least 2/3 inning
   AND x < .8]

where x is a random number between 0 and 1

Relief Pitcher Selection Process

Closer Selection Process:
Among pitchers with saves, chance of selection is
% = Saves / TeamTotalSaves

However, slot 15 in the .DAT file is weighted 30% more than other slots. If saves are not given in the .DAT, SBS will attempt to use slot 15 by default.

General Relief Selection Process: (Used in non-closer situations)
1. Decide whether slot 15 gets thrown in the "available" pool to pick from. If #15 has 5 or fewer saves OR there are only 6 or fewer total pitchers, then go ahead and throw #15 in the selection pool. But normally we don't consider the "closer" slot.

2. Select all pitchers from #15 or #16 down to the end of the list and throw in pool.

3. Estimate relief innings for the relief pitchers in pool. If relief pitcher is split between starting and relieving, estimate innings pitched per start at 6.2. Take difference as relief innings.

4. Estimate relief innings for the starting pitchers #10-14. Throw any with relief appearances into the pool with the others. Estimate relief innings @ 1.3 innings per relief appearance.

5. We now have an estimate for Team-Total-Relief-Innings. Now select pitcher proportionally to his percent of the team's total relief innings. This seems to pick the top guy a little too often, so we also do the following. If the computer's selection is the pitcher who has pitched the most innings in relief (and it's the 7th innings or later), then 25% of the time try another pass through the selection routine in hopes of selecting someone else.

APPENDIX F
Speed, Stolen Bases and Pitchouts

SPEED RATING:

The .DAT files contain a column for stolen bases which SBS translates (via a formula) into a general purpose speed rating (1-9). You can view this speed rating by popping up your lineup or the opponent's lineup. The speed rating is used in the stolen base calculations if SB and CS data are not available. It also is used to influence the likelihood of the batter hitting into a double play or successfully executing a drag bunt. It also helps determine if a runner goes from 1st to 3rd on a single or scores from 2nd on a single. Or if a runner on 1st can score
on a double. (The number of outs and where the ball is hit is a big factor here also. For example, runners tend to play it safe with no outs but usually will try to take the extra base with two out).

The formula for speed rating can be found in an article by Dan Levitt who credits Bill James:

http://baseballstuff.com/btf/scholars/levitt/articles/speedscoresanderrors.htm

This was a five part formula, but SBS only uses the 1st three parts:

1. SB success
Factor1 = ((SB + 3)/(SB + CS + 7) - 0.4) * 20

2. SB attempts
Factor2 = SQR((SB + CS) / (singles + BB)) / 0.07

3. Triples
Factor3 = 3B / (AB - HR - SO) / 0.02 * 10

I limit how big the "triples" factor can be (if I didn't the turn-of-the-century teams would all be 8's and 9's). Then I use a weighted-average to slightly de-emphasize the third factor a bit more. Then I combine the factors like this:

SpeedRating = (Factor1 * 10 + Factor2 * 10 + Factor3 * 6) / 26

COMPUTER STEAL ATTEMPTS:

This assumes both SB and CS are given in the .DAT file.

singles = Hits - HR - 2B - 3B
x = (SB + CS) / (Singles + BB)
"x" is a rough estimate of the probability of ATTEMPTING to steal 2nd provided the base is un-occupied.

If there is no CS data available in the .DAT file, I use the Speed-Rating and this table to find "x" instead of the formula above:

```
SR:   1    2    3    4    5    6    7    8    9
x :  .01  .03  .06  .09  .12  .16  .22  .30  .42
```

Then I may make further adjustments for attempting to steal third or stealing second against a lefty. (Cut attempts by 40%). In close games in the late innings I will gamble and increase the attempts.

STEAL SUCCESS RATE:

If both SB and CS are given in the .DAT file:

x = SB / (SB + CS)   (the success rate)

If no CS data is available, I estimate CS by multiplying SB by .27. So in this case:

x = SB / (SB + (SB * .27))

If the total of SB + CS is less than 10, I set upper and lower limits of .2 and .7 for the success rate.

SUCCESS RATE WITH PITCHOUTS:

Normal Success%	Success% w/Pitchout
50% or less	16%
60%	22%
70%	32%
80%	46%
90%	70%
99%	90%

As you can see, pitchouts are a good defense against the SB. The penalty for pitching out is that the batter's chance of walking increases by 67% for each pitchout. So a batter who walks 8% of the time will walk about 13% of the time after one pitchout, 18.6% after two.

WHEN WILL THE COMPUTER CALL FOR A "PITCH-OUT"?

SpeedRating	P-O%
4	0%
5	15%
6	25%
7	25%
8	30%
9	25%

Then there are a several games situations when a stolen base is unlikely so I won't bother to pitch-out.

APPENDIX G
Defense

INFIELD "IN":

This defensive strategy will cut off almost all runners who would otherwise score on a
ground ball to an infielder [especially to the shortstop or second baseman]. The penalty is
that the batter's base-hit percentages are adjusted upward dramatically because more ground
balls will go through the infield. A .250 hitter becomes a .350 hitter. [When the player or
the automatic manager chooses to play the infield in, it is only in effect for the current
batter].

DEFENSIVE PERCENTAGES:

If you don't mind reading some code, this is how SBS takes total errors or a total defensive
percentage and returns a defensive percentage based on the mix of defensive positions played
as given in the data. Hopefully the variable names will be fairly understandable.


```
FUNCTION DEFPCT!(player, team)
IF DataPos(player, team) = 1 THEN
    defperF! = NormDEF(1)                'Pitchers get .940
    EXIT FUNCTION

ELSEIF ERRSw(team) THEN                  'DAT uses "ERR" in header
    DatErrors = DataDef(player, team)

    'Fudge an adjustment because leagues with lower strike-out totals
    'forced higher number of chances for fielders
    Adj! = (1.0 - pkbaseF(team)) / .753  'League K's vs 1999 NL Standard
    Adj! = Adj! + (Adj! - 1.0) * 0.8     'fewer K's --> bigger Adj! --> fewer errors

    'Sum the expected chances-per-season (ch) based on position,
    'games-played-at-position and the standard DefChancesPerGame table
    ch! = 0
    i = 1
    DO UNTIL i > 4  'Loop thru the 4 possible Pos/Games-By-Position pairs
        IF DataGbyP(player, team, i) = 0 THEN EXIT DO
        ch! = ch! + DataGbyP(player, team, i) * Adj! * DefChancesPerGameF(DataPosi(player,
team, i))
        INCR i
    LOOP

    'Compute total DEF%  (defper!)
    IF ch! > 0 THEN
        CDEF! = 1.0 - (DatErrors / ch!)
        IF i = 2 THEN                'there was just 1 G-By-P pair
            defperF! = CDEF!
        ELSE                         'more than one, so figure
            defperF! = DEFSplit!(player, CDEF!, Adj!)
        END IF
    ELSE
        'We don't have any G-By-P data at all - estimate DEF%
        DatGames = DataGames(player, team)
        IF DatGames = 0 THEN DatGames = DataAtBats(player, team) / 3.5
        IF DatGames = 0 THEN DatGames = 1
        p = DataPos(player, team)    'position he's playing now
        defperF! = 1.0 - ( DatErrors / ( DatGames * Adj! * DefChancesPerGameF(p)))
```

```
    END IF

ELSE                                     'DAT uses "DEF" in header
    Adj! = 1.0
    CDEF! = DataDef(player, team) / 1000
    defperF! = DEFSplit!(player, CDEF!, Adj!)
END IF

'Bracket results
IF defperF! > .999 THEN defperF! = .999
IF defperF! < .800 THEN defperF! = .800

'Check to see if penalty appies for "out-of-position" player
' etc.
' etc.
END FUNCTION


FUNCTION DEFSplit!(player, ActDEF!, Adj!)
numer! = 0
denom! = 0
i = 1
DO UNTIL i > 4    'Loop thru the four possible Pos/G-By-Pos pairs
    IF DataGbyP(player, team, i) = 0 THEN EXIT DO
    p = DataPosi(player, team, i)
    numer! = numer! + DataGbyP(player, team, i) * DefChancesPerGameF(p) * Adj! * NormDEF(p)
    denom! = denom! + DataGbyP(player, team, i) * DefChancesPerGameF(p) * Adj!
    INCR i
LOOP

'numer! is season sum of expected-chances * normal def% for each position
'denom! is season sum of expected-chances

IF i = 2 THEN
    DEFSplit! = ActDEF!
ELSEIF denom! > 0 THEN
    'this would be his total "expected" def%:
    ExpDEF! = numer! / denom!

    'compare with his total "actual" def% (passed to this function)
    'and his current position and the standard def% table

    p = DataPos(player, team)  'the position he's playing right now

    'how he did in total vs. the norm at a specific position:
    xa! = NormDEF(p) * (ActDEF! / ExpDEF!)

    'messy calculation to estimate a DEF% at specific position:
    xb! = xa! / (xa! + ( (1-NormDEF(p))*(1-ActDEF!)/(1-ExpDEF!) ) )
    DEFSplit! = xb!
ELSE
    DEFSplit! = ActDEF!
END IF
END FUNCTION

Table Values:
DefChancesPerGameF(1)  = 1.0
```

```
DefChancesPerGameF(2)  = 1.0
DefChancesPerGameF(3)  = 2.2
DefChancesPerGameF(4)  = 5.7
DefChancesPerGameF(5)  = 2.9
DefChancesPerGameF(6)  = 4.8
DefChancesPerGameF(7)  = 1.8
DefChancesPerGameF(8)  = 2.4
DefChancesPerGameF(9)  = 1.8

NormDEF(1)  = .952
NormDEF(2)  = .990
NormDEF(3)  = .993
NormDEF(4)  = .981
NormDEF(5)  = .953
NormDEF(6)  = .967
NormDEF(7)  = .977
NormDEF(8)  = .984
NormDEF(9)  = .981
```

Frequently Asked Questions

Where do I find more teams and seasons?
Pat Senechal is the official team librarian:
http://sbsteamlibrary.tripod.com/news/
http://sbsteamlibrary.tripod.com/files/seasons45/index.html

Also Bryan Bollman may still have some older teams at his site.
http://www.geocities.com/sbsteamlibrary/season45.html
http://www.geocities.com/sbsteamlibrary/season.html

In addition, Rob Logbeck has built a server dedicated to generating teams of your choice on-the-fly!
Check out http://sbs.kicks-ass.net

How do I make my own teams? Where do I get the data?
Again, try http://sbs.kicks-ass.net to get ready-made teams. Or you can use Windows Notepad (a basic text-editor) to create team files. Just use Windows to copy an existing .DAT file and use your copy as a template for your own creations.

What is normalization and when do I use it?
In setting up to play SBS you noticed the "Normalization" option. This should be left blank unless you playing two teams from different eras. For example, the 1918 Boston team vs. 1998 St. Louis. When two teams from different eras play each other the home team's league stats are considered the "standard" and the visiting team's stats are internally adjusted (you can't see it) to how they might have been in the home team's era. If you don't want to adjust to the home team's era you can specify another. Just type in a four-digit year followed by the league indicator in the Normalization field. For example: 1950N (for 1950 National). The method used to normalize is called the Linear-Weights method. See Appendix D for the gory details.

What is that "Performance Focusing" thing?
It's probably very seldom used. It allows SBS to cheat by looking at the performance results

and comparing that to how the player is supposed to perform. If activated, it will kick in about halfway through a season. By a season, I mean 154 or 162 games. Never use this on long multi-season simulations or you will over-penalize everyone. Quite frankly, the SBS model performs well enough to ignore this feature.

How do I adjust the size of the display? I'd like to pretty much fill up the screen.
Here's the easiest way.
1. Start SBS from a desktop shortcut icon.

2. Select "Edit Baseball.cfg" from the main menu. This should start Notepad.
   Look for the line starting with ALTERNATE-FONT=
   For Windows 95/98/Me use:
      ALTERNATE-FONT=N
   For Windows XP use:
      ALTERNATE-FONT=Y
   Save BASEBALL.CFG and Quit Notepad.

3. RIGHT-click the extreme upper left corner of the SBS window. This should bring up a menu.
   Select "Properties"
   [Font]

   If Windows 95/98/Me:
      Select True-Type
      Experiment with different character sizes.
      [OK]

   If Windows XP:
      Select TT Lucinda Console
      Adjust the SIZE to fit your screen (16 is good for 1024x768. 12 for 800x600).
      [OK]
      Select "Modify shortcut that started this window.

You may also need to play around with the Console-Rows and Console-Cols settings in the BASEBALL.CFG file.
Selecting 25x80 will prevent the use of a background picture.

The player's names are screwed-up. Why is that and how do I fix it?
SBS doesn't want to use the "real" names of current players. You may find utilities on the SBS web site (sbs-baseball.com) or others to help you.

I want to play a single game or a single date out of a schedule file. Can I do that?
No, not really. Schedule and serial files always start at the beginning and procede from there. But check out the next question.

I want to manage my favorite team and let the computer manage the rest. Can I do that?
Sure. Select your Schedule file. Hit "E" to edit. Select the DATE that you want to start manually managing your team and hit enter. This should open up a little window that lists all the games to be played on that "date". Find the team you want to manage. If it's a home team, type in **/hm:+**   If it's a visiting team, type in **/vm:+** Now just escape out. When the

computer hits the date you've edited it will let you manage that team. You do NOT have to go back into the Schedule file and put in more /hm:+ or /vm:+ on additional dates!!! If you want to remove your team from the manually managed "list", just put in **/hm:-** or **/vm:-** on the date you want the computer to take over again.

What's the difference between a Schedule file and a Serial file?
Schedule files are a lot more functional. You can stop them at any time and pick up where you left off and the computer will remember the pitching rotations, etc. A serial file is just a text file list of games to be played and how many to play. It's only advantage is speed. But the text format comes in handy sometimes. For example, suppose you want to simulate 10 seasons worth of data. Just edit the serial file and stick an extra "0" after the game count indicators (/n:##) on each line. Save the serial file under a new name and now you can simulate 10 seasons worth.

I specified a stat file, so how do I get the stat report?
If you miss your chance to create a stat report (.PRN file) at the end of a game or simulation, just select the Statistics files option off the main menu. You can generate the report from there.

Can I import the results into Excel or Access?
Sorry, you're on your own.

Can I make trades?
This is a manual process. You'll need to edit the .DAT files. Just use Notepad to cut-and-paste between the affected .DAT (data) files. Statistics are saved by league, team and player, so traded players will appear under all teams played for.

How can I use my own background pictures? How do you place the defensive players on the screen?
First, you place the picture (must be either a .jpg or .bmp) in your SBS folder. Then you have to edit the STADIUM.TXT file to tell SBS about the picture. Here's what the STADIUM.TXT file looks like. The five columns of numbers indicate the position of the photographer and his camera orientation relative to home plate. This is used to place the defensive players in their approximate positions. It is usually impossible to place them exactly where you want them. Part of the problem is that SBS stretches the photograph to fit its window so that the picture doesn't quite reflect reality anymore. You can download pictures from Pat Senechal's web site http://www.geocities.com/patsen29/ballparks which usually will have the settings figured out for you. If you need to figure them out yourself, I have a crude little program called "vuangle" on the SBS web site. You press number keys 1-5 which changes the settings and let's you experiment.

* file name	Obs-X Ft Behind Home	Obs-Y Ft Rt/Lf	Obs-Z Ft Above	TiltZ Ang Down	TiltY Ang Rt/Lf	Stadium Name	City	Credit
*								
*								
*								
*								
busch1.jpg	-40	60	35	2	-17	Busch Stadium	St. Louis, MO	Timothy and Kristen Lux
busch2.jpg	-85	45	43	-5	-7	Busch Stadium	St. Louis, MO	Timothy and Kristen Lux
cinergy1.jpg	-73	-3	53	-11	-2	Cinergy Field	Cincinatti, OH	Timothy and

File						Stadium	City	Photographer
cinergy2.jpg	-56	38	50	-16	-7	Cinergy Field	Cincinatti, OH	Timothy and Kristen Lux
F-BoBDay.jpg	-85	-8	45	-7	0	Bank One Ballpark	Phoenix, AZ	Richard Barchfield
edison.jpg	-20	60	30	-8	-20	Edison Field	Anaheim, CA	Timothy and Kristen Lux
F-HDed.jpg	-100	-6	60	-9	0	Edison Field	Anaheim, CA	Richard Barchfield
enron1.jpg	-80	0	52	-8	-2	Enron Field	Houston, TX	Timothy and Kristen Lux
enron2.jpg	-50	20	25	0	-12	Enron Field	Houston, TX	Timothy and Kristen Lux
kaufman.jpg	-70	-26	50	-13	12	Kaufman Stadium	Kansas City, MO	Timothy and Kristen Lux
miami.jpg	-100	3	66	-10	-1	Pro Player Stadium	Miami, FL	Timothy and Kristen Lux
safeco.jpg	-75	20	23	10	-9	Safeco Field	Seattle, WA	Timothy and Kristen Lux
F-Shea.jpg	-90	50	85	-17	-4	Shea Stadium	New York, NY	Richard Barchfield
turner1.jpg	-80	6	50	-10	-4	Turner Field	Atlanta, GA.	Timothy and Kristen Lux
turner2.jpg	-56	41	60	-25	-15	Turner Field	Atlanta, GA.	Timothy and Kristen Lux
wrigley1.jpg	-75	-35	40	-7	14	Wrigley Field	Chicago, IL	Timothy and Kristen Lux
F-YankDay.jpg	-75	35	63	-11	-5	Yankee Stadium	New York, NY	Richard Barchfield
F-Vet.jpg	-100	30	70	-11	-5	Veterans Stadium	Philadelphia, PA	Richard Barchfield
F-HDCam.jpg	-85	-35	61	-8	4	Camden Yards	Baltimore, MD	Richard Barchfield