

Memorandum B

To : Daniel Rodríguez Román, PhD
From : Miguel Cruz Robles 802-16-1588
Date : May 14, 2019
Subject : Baseball Game Simulator

This program will simulate a baseball game between two teams and give you a possible outcome of who will win base of each player batting stats and how probable for the player to reach base. Obviously, this is a basic algorithm of what I'm about to compare it to, but a very useful purpose is to determine the odds of winning and losing in sports for gambling purposes. A place like Las Vegas that is associated with gambling, an algorithm of this type will be very useful to have and establish their odds in games around the world.

Steps for the project would be:

1. Get statistics of both teams.
2. Establish rules of the game.
3. Simulate visiting batting and then the same for home team.
4. Repeat the step 3 until game ends.
5. Present the results.

Inputs

Houston Astros								
TPA	AB	Hits	Single	Double	HR	AVG	OBP	error%
620	544	144	96	26	22	0.265	0.346	0.011
595	524	169	125	29	13	0.316	0.389	
702	594	170	87	51	31	0.286	0.394	
566	537	156	109	33	13	0.291	0.323	
457	402	96	60	20	15	0.239	0.323	
443	407	92	50	17	25	0.226	0.284	
484	433	105	73	13	17	0.242	0.318	
545	489	121	77	25	16	0.247	0.324	
402	373	84	56	18	9	0.225	0.276	

Boston Red sox								
TPA	AB	Hits	Single	Double	HR	AVG	OBP	error%
609	520	180	96	47	32	0.346	0.438	0.014
652	579	168	105	41	16	0.29	0.366	
642	569	188	106	37	43	0.33	0.402	
574	513	148	77	45	23	0.288	0.36	
249	215	61	35	14	11	0.284	0.378	
488	450	108	63	24	21	0.24	0.298	
365	321	89	62	18	7	0.277	0.362	
268	251	52	39	10	3	0.207	0.257	
531	474	111	61	33	13	0.234	0.314	

This are the two arrays of the teams being used. Each one contains the statistic for the nine-player roster of each team in 2018. You have total plate appearances, at bat, hits, single, double, home runs, batting average, on base batting average and fielder's probability of making an error. Triple were not needed that's why is left off, even though it might still occur the probability of hitting a triple. At first it might seem as a hard-coded program for some, but you can run this for any team in the major leagues. If you have the statistics, is possible. Maybe we can create a dictionary with all that information and run whatever matchup you one with the click of a button.

Outputs

Program output varies always but you will have who wins, runs score per inning and total runs for both teams. Also, how many innings were played since there could be game with more than 9 innings. This is what is needed to determine who wins, so sometimes you might get home win and other visitor wins.

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In [27]: runfile('C:/Users/Miguel/Documents/Algoritmo/Baseball_Game_Simulation/
Main_Page.py', wdir='C:/Users/Miguel/Documents/Algoritmo/Baseball_Game_Simulation')
Reloaded modules: Baseball
Visitor Team wins the game! In 9 innings played
Vistors team runs per inning were [3, 3, 0, 0, 0, 4, 0, 0, 0]
for a total of 10,
while Home team runs per inning were [0, 0, 0, 0, 0, 0, 0, 1, 3]
for a total of 4.
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