

Assignment7

Aravind A Anil

March 4, 2021

Download the python codes from here:

[pythoncode](#)

Download all latex code from here:

[latex](#)

Problem statement:A person plays a game of tossing a coin thrice.For each head,he is given Rs 2 by the organiser of the game and for each tail,he has to give Rs 1.50 to the organiser.Let X denotes the amount gained or lost by the person.show that X is random variable and exhibit it as a function on the sample space of the experiment

When three coins are tossed the possible outcomes are,

$s=\{HHH,HHT,HTH,THH,TTH,THT,HTT,TTT\}$

Let X:amount gained or lose

For each head,he wins Rs.2

& for each tail he loses Rs.1.5

We have to calculate the values of X and have to check if the values are real values

	X
X(HHH)	$2+2+2=6$
X(HHT)	$2+2-1.5=2.5$
X(HTH)	$2-1.5+2=2.5$
X(THH)	$-1.5+2+2=2.5$
X(TTH)	$-1.5-1.5+2=-1$
X(THT)	$-1.5+2-1.5=-1$
X(HTT)	$2-1.5-1.5=-1$
X(TTT)	$-1.5-1.5-1.5=-4.5$

Table 1: Possible values

Here values of X can be 6,2.5,-1,-4.5

All these are real values

Hence, $X=\{6,2.5,-1,-4.5\}$

& X is a **Random Variable**

X	6	2.5	-1	-4.5
P(X)	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$

Table 2: Probability distribution(X)

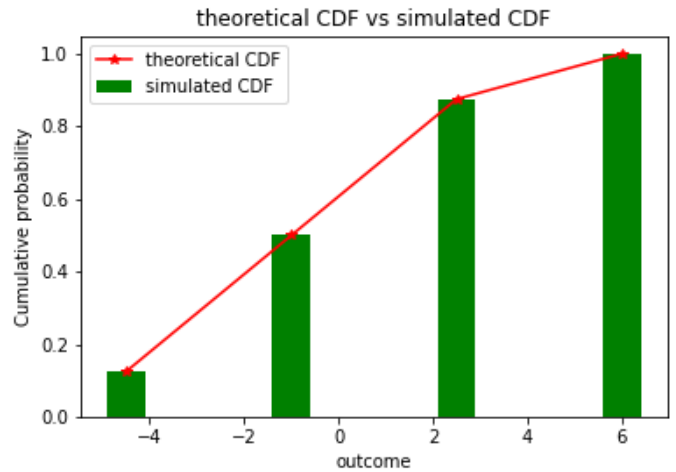


Figure 1: simulated CDF vs theoretical CDF

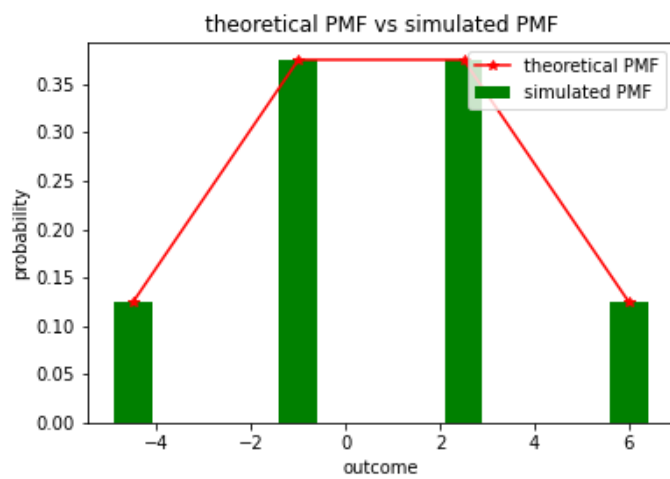


Figure 2: simulated PMF vs theoretical PMF