Assignment 4

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Python code link : `https://github.com/ParvezAlam123/Assignment-4/tree/main/code`

1 Prob. Sec 3, 7 :

Let X represents the difference between the number of the heads and the number of the tails obtained when a coin is tossed 6 times. What are possible value of X ?

Solution: Let X_1, X_2 is a binomial random variable

X_1	For getting head
X_2	For getting tail

$X_1, X_2 \in \{0,1,2,3,4,5,6\}$

$X = X_1 - X_2$
Possible values of X are

$X = 6$, for$X_1 = 6$ and $X_2 = 0$

$X = 4$, for $X_1 = 5$ and $X_2 = 1$

$X = 2$, for $X_1 = 4$ and $X_2 = 2$

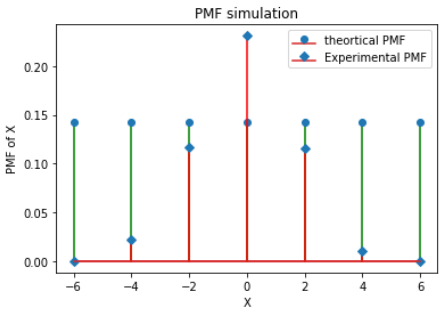
$X = 0$, for $X_1 = 3$ and $X_2 = 3$

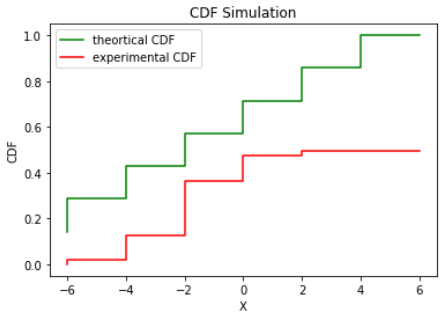
$X = -2$, for $X_1 = 2$ and $X_2 = 4$

$X = -4$, for $X_1 = 1$ and $X_2 = 5$

$X = -6$, for $X_1 = 0$ and $X_2 = 6$

$X \in \{6, 4, 2, 0, -2, -4, -6\}$





If the coin is tossed n times then:
X $\in$ {n,n-2,n-4,...4,2,0,-2,-4,.....-(n-2), -n}