# Assignment - Probability

**1. A gambler has in his pocket a fair coin and a two-headed coin. He selects one of the coins at random, and he flips it twice. It shows heads both the times. What is the probability that it is a fair Coin?**

**A) ¼**
**B) ⅕**
**C) ½**
**D) ⅛**

**2. A gambler has in his pocket a fair coin and a two-headed coin. He selects one of the coins at random, and he flips it three times. He gets {HHT}. What is the probability that it is a fair coin?**

**Answer?**

**3. Use the below code to generate the students dataset and find out the below probabilities:**

```
import pandas as pd
import numpy as np

Students_data = pd.DataFrame({ 'Grade': ['A']*40 + ['B']*60,
'Extracurricular': ['Yes']*30 + ['No']*10 + ['Yes']*20 + ['No']*40
})
Students_data
```

## Marginal Probability

a) Probability that a student got an "A"?
b) Probability that a student got an "B"?

## Conditional Probability

c) Probability a student got an 'A' given they participate in extracurricular activities.
d) Probability a student got an 'B' given they don't participate in extracurricular activities.