AI1110 : Probability And Random Variables
Assignment 1

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Question :

12.13.1.7 : Two coins are tossed once, where
1) E : Tail appears on one coin, F : One coin shows head.
2) E : No tail appears, F : No head appears.

Answers :

1) (i) $\frac{2}{3}$
2) (ii) 0

Solutions :

Sample Space :

HH, HT, TH, TT

Where,
1) H - Heads
2) T - Tails

Formulae :

$$P(E|F) = \frac{P(E \cap F)}{P(F)} \tag{1}$$

Part 1 :

From the sample space, We can see that the probability of the concerned events is :
1) P($E \cap F$) i.e P(Tail appears on one coin and One coin shows head) : $\frac{2}{4}$
2) P(F) i.e P(One coin shows head) : $\frac{3}{4}$

Plugging the values in Equation 1 :
P(E|F) = $\frac{2}{3}$

Part 2 :

From the sample space, We can see that the probability of the concerned events is :
1) P($E \cap F$) i.e P(No tail appears and No head appears) : 0
2) P(F) i.e P(No head appears) : $\frac{1}{4}$

Plugging the values in Equation 1 :
P(E|F) = 0