Probability and Statistics (B)

Assignment 01

Instruction:

Submit your solution to myITSclassroom by the deadline

Deadline: 20 September 2022, 23:59 GMT+7

1. You work in a company's quality control department. You are required to collect samples of three distinct types of components: $types\_1, types\_2,$ and $types\_3$.
    a. List the elements of a sample space S, using the letters D for defect component and N for normal component
    b. List the elements of **S** corresponding to event **E** that at least **two types** of the components are defects.

2. There's a robot between a wall and a cliff. The cliff is 7 meters away from the wall. We don't know for sure what the position of the robot is, but we've received some measures of possible positions in a vector x and the probability that these measures are true in a vector $P(x)$ These positions are:

x	0	1	2	3	4	5	6	7	8	9	10
$P(x)$	0.0	0.04	0.08	0.12	0.16	0.2	0.16	0.12	0.08	0.04	0.0

    a. Draw the probability distribution p
    b. Calculate the expected value, variance, and the standard deviation of these positions
    c. Calculate the probability that the robot doesn't fall off the cliff