Probability and Statistics (IT302) Lab Program-7

Reg. No 181067181IT102 - 181163181IT121

Implement a Graphical User Interface Multinomial calculator for the following: The complexity of arrivals and departures of planes at an airport is such that computer simulation is often used to model the "ideal" conditions. For a certain airport with three runways, it is known that in the ideal setting the following are the probabilities that the individual runways are accessed by a randomly arriving commercial jet.

Runway-1: p_1 = a,   Runway 2: p_2 = b,   Runway 3: p_3 = c.

What is the probability that N randomly arriving airplanes are distributed in the following fashion?

Runway 1:   A number of airplanes,

Runway 2:   B number of airplanes,

Runway 3:   C number airplanes

Use any one of the programming languages C/Python/Java/C++ for implementation and it should consider only valid runtime inputs. For invalid test case, it should display an error message on the appropriate place in the calculator.

Sample Test Case

Runway 1: p1 = 2/9,   Runway 2: p2 = 1/6,   Runway 3: p3 = 11/18.

Runway 1: 2 airplanes,   Runway 2: 1 airplane,   Runway 3: 3 airplanes

Reg. No 181163181IT122 – 181762181IT141

Implement a Graphical User Interface Binomial calculator for the following: The probability that a patient recovers from a rare blood disease is p=a. If N people are known to have contracted this disease, what is the probability that at least M survive. Use any one of the programming languages C/Python/Java/C++ for implementation and it should consider only valid runtime inputs. For invalid test case, it should display an error message on the appropriate place in the calculator.

Sample Test Case

1.   p =0.4,   N= 15,   M=10

Reg. No 181481181IT143 – 181625181IT209

Implement a Graphical User Interface Binomial calculator for the following: The probability that a patient recovers from a rare blood disease is p=a. If N people are known to have contracted this disease, what is the probability that from A to B survive. Use any one of the programming languages C/Python/Java/C++ for implementation and it should consider only valid runtime inputs. For invalid test case, it should display an error message on the appropriate place in the calculator.

Sample Test Case

1.   p =0.4,   N= 15,   A=3   B=8

Implement a Graphical User Interface Binomial calculator for the following: The probability that a patient recovers from a rare blood disease is p=a. If N people are known to have contracted this disease, what is the probability that exactly M survive. Use any one of the programming languages C/Python/Java/C++ for implementation and it should consider only valid runtime inputs. For invalid test case, it should display an error message on the appropriate place in the calculator.

Sample Test Case

      1.   p =0.4,   N= 15,   M=3

Reg. No 1181579181IT233 - 181047181IT254, 15645415IT206

Implement a Graphical User Interface Binomial calculator for the following: It is conjectured that an impurity exists in A% of all drinking wells in a certain rural community. In order to gain some insight into the true extent of the problem, it is determined that some testing is necessary. It is too expensive to test all of the wells in the area, so N are randomly selected for testing. Using the binomial distribution, what is the probability that exactly B wells have the impurity, assuming that the conjecture is correct? Use any one of the programming languages C/Python/Java/C++ for implementation and it should consider only valid runtime inputs. For invalid test case, it should display an error message on the appropriate place in the calculator.

Sample Test Cases

      1.   A=30%   B=3   N=10

Email subject should be PAS(IT302)-Lab-Program-7-Related-Files

File name of the program   :   RegisterNo_IT302_P7 (P7 indicates Lab Program Number-7)

File name of the screenshot :   RegisterNo_IT302_P7_TCS1

(TCS1 indicates screenshot for the first test case, similarly, for other test cases TCS2, TCS3, TCS4, TCS5, TCS6).

Date of Online Laboratory   :   5th October 2020, Monday

Deadline of Submission   :   5th October 2020, Monday (on or before 6:00PM)

Submit program file and all screenshots to the Email ID mentioned in fourth column of the below Table.

Note:

- Clarify doubt(s) (if any) only on 5th October 2020 Monday at 2:00PM.
- No/Zero marks for incomplete submission/incomplete program.
- Appropriate marks will be deducted for any of the submission instructions violated.
- No/Zero Marks for submission to inappropriate evaluator.
- Only first submission will be considered for evaluation.

- Program should check all types of input conditions and not only restricted to given test case inputs. Otherwise appropriate marks will be deducted.
- Discuss with evaluator only on said date and time if any doubt(s) related to lab evaluation marks. No communication will be entertained on any mode (email/SMS/phone call etc.) on any day/time except give clarification schedule by the evaluator.
- Deduction of marks for late submission (after submission deadline)

6:01PM - 6:30 PM	0.5M
6:31PM - 7:00 PM	1M
7:01PM - 8:00 PM	2M
8:01PM - 9:00 PM	4M

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