Probability and Statistics (IT302) Lab Program-9

Reg. No 181067181IT102 - 181163181IT121

Use any one of the programming languages C/C++/Python/Java/R **to show the Normal Approximation of The Binomial Distribution** for the following "*according to an estimate, "X" % of the people in the United States have at least one credit card. If a random sample of "Y" number of persons is selected, what is the probability that "Z" of them will have at least one credit card*". It should consider only valid runtime inputs. For invalid test case, it should display an error message on the terminal and the same should be stored on a separate output file with appropriate file name. For each valid test case it should display intermediate results as well as final output including difference between both of them on terminal and also should store onto a separate output file with appropriate file name. For each test case save the screenshot of the output with appropriate filename.

Intermediate Result   :   Mean, Standard Deviation, Continuity Correction Factor

Sample Test Case   :   X = 50%,   Y=30,   Z=20

Reg. No 181163181IT122 – 181762181IT141

Use any one of the programming languages C/C++/Python/Java/R to compute **Poisson Probability Sums**. Program should include a user-defined function that should compute **Poisson Probability Sum and should plot the corresponding graph**. It should consider only valid runtime inputs r=0, 1, 2, 3…, n. where 'r', and 'n' are positive integer numbers, and "μ". For invalid test case, it should display an error message on the terminal and the same should be stored on a separate output file with appropriate file name. For each valid test case it should display intermediate results as well as final output on terminal and also should store onto a separate output file in a tabular form with appropriate file name and also should plot graph by labeling x-axis name, y-axis name, values on x-axis, values on y-axis. Generated graph should be stored with appropriate file name. For each test case save the screenshot of the output with appropriate filename.

Intermediate Result   : $p(x; \mu)$ Sample Test Case   :   n = 6, $\mu = 2.5$

Reg. No 181481181IT143 – 181625181IT209

Use any one of the programming languages C/C++/Python/Java/R to implement **Binomial Probability Sums**. Program should include a user-defined function that should compute *Binomial Probability Sums and should plot the corresponding graph*. It should consider only valid runtime inputs r=0, 1, 2, 3…, n. where 'r', and 'n' are positive integer numbers, and "p". For invalid test case, it should display an error message on the terminal and the same should be stored on a separate output file with appropriate file name. For each valid test case it should display intermediate results as well as final output on terminal and also should store onto a separate output file in a tabular form with appropriate file name and also should plot graph by labeling x-axis name, y-axis name, values on x-axis, values on y-axis. Graph should be stored with appropriate file name. For each test case save the screenshot of the output with appropriate filename.

Intermediate Result   : $b(x; n, p)$ Sample Test Case   :   n =10,   p=0.10

Use any one of the programming languages C/C++/Python/Java/R to compute **Normal Approximation and Cumulative Binomial Probabilities**. It should consider only valid runtime inputs r=0, 1, 2, 3…, n. where 'r', and 'n' are positive integer numbers, and "p". For invalid test case, it should display an error message on the terminal and the same should be stored on a separate output file with appropriate file name. For each valid test case it should display intermediate results as well as final output on terminal and also should store onto a separate output file in a tabular form with appropriate file name including difference between both of them and also should plot graph by labeling x-axis name, y-axis name, values on x-axis, values on y-axis. Graph should be stored with appropriate file name. For each test case save the screenshot of the output with appropriate filename.

Intermediate Result	:	Mean, Standard Deviation, Continuity Correction Factor
Sample Test Case	:	n =10, p=0.10

Reg. No 1181579181IT233 - 181047181IT254, 15645415IT206

Use any one of the programming languages C/C++/Python/Java/R to compute and plot normal distribution curve and standard normal distribution curve. It should consider only valid runtime input of series of positive integer numbers. For invalid test case, it should display an error message on the terminal and the same should be stored on a separate output file with appropriate file name. For each valid test case it should display intermediate results as well as final output on terminal and also should store onto a separate output file in a tabular form with appropriate file name including difference between both of them and also should plot graph by labeling x-axis name, y-axis name, values on x-axis, values on y-axis. Graph should be stored with appropriate file name. For each test case save the screenshot of the output with appropriate filename.

Intermediate Results	:	Mean, Standard Deviation, Z-score
Sample Test Cases	;	10. 20, 25, 30, 35, 41, 43, 47, 55, 67, 87, 59, 30

Email subject should be PAS(IT302)-Lab-Program-9-Related-Files

File name of the program   :   RegisterNo_IT302_P9 (P9 indicates Lab Program Number-9)

File name of the screenshot   :   RegisterNo_IT302_P9_TCS1

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

File name of the screenshot   :   RegisterNo_IT302_P9_TCG1

(TCG1 indicates graph for the first test case, similarly, for other test cases TCG2, TCG3, TCG4, TCG5, TCG6).

File name of the Output File :   RegisterNo_IT302_P9_Output_TC1.txt

(TC1 indicates output for the first test case, similarly, for other test cases TC2, TC3, TC4, TC5, TC6)

Date of Online Laboratory : 26th October 2020, Monday

Deadline of Submission : 26th October 2020, Monday (on or before 6:00PM)

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

Note:

- Clarify doubt(s) (if any) only on 26th 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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