Program_05_2

Requirements

Write a script that will create 10,000 random resistors with a normal distribution, a mean of 100 ohms, and standard deviation of 15 ohms.

Perform the following operations with the resistor data using logical vectors where appropriate.

- Output the total number of resistors created along with their actual mean and standard deviation as they will differ slightly from the values given.
- Output the percentage of resistor with values > mean and < mean.
- Output the percentage of resistors within +/- 1 Standard Deviation of the mean.
- Repeat step 3 for +/- 2 Standard Deviations and +/- 3 Standard Deviations.
- Output the resistor position numbers and the corresponding resistor values for all resistors outside of +/- 3 standard deviations of the mean.

Program

In the code block below, create your program, editing the existing text as necessary.

Tips:

- Keep in mind that the results will vary for each run of your code. Use the "Empirical" or "Three-sigma" rule of statistics.
- The Empirical Rule states that 99.7% of data observed following a normal distribution lies within 3 standard deviations of the mean. Under this rule, 68% of the data falls within one standard deviation, 95% percent within two standard deviations, and 99.7% within three standard deviations from the mean.

Note: If you are using Octave then you will need to create a separate script file, save that separate file as the name **Program_05_02**. It will not conflict with this file of the same name since the extension will be different.

```
% Filename: Program_05_2
% Author:
% Assisted by:

% Program Description:
```

Example Output

Your program output should match the following.

```
Output for Program_05_2 written by Geoff Berl.

A total of 10000 resistors were created.

Actual mean = 100.03 ohms
Actual standard deviation = 14.87 ohms

Percentage of Resistors > mean = 50.28
Percentage of Resistors < mean = 49.72

Percentage of Resistors within + or - 1 Stdev of the mean = 68.51
Percentage of Resistors within + or - 2 Stdev of the mean = 95.50
Percentage of Resistors within + or - 3 Stdev of the mean = 99.70

Rejected Resistors: < mean-3*std or > mean+3*std

Resistor #   Resistor Value (Ohms)
     2           153.68
     5           145.52
   231            54.56
   727            51.52
   839            53.91
   972           152.90
  1530           153.55
  1531           151.11
  1820            53.92
  1860           147.38
  2532           151.99
  2867            47.63
  3006           145.19
  3129           148.99
  4239           146.11
  4988            43.87
  5138           147.49
  5407            46.75
  5790            44.17
  5926           149.88
  6162            55.32
  6754            53.82
  7244           146.35
  7664            53.46
  7720           149.96
  8129            53.07
  9224           145.47
  9447           150.81
  9448           148.19
  9549           145.03
```