Fundamental Data Analysis

Hi, there! Welcome to the hands on experimentation phase of the workshop, on MATLAB. We will be embarking on a short journey that will introduce us to the fundamental procedures in performing data analysis utilising the MATLAB Online platform.

Table of Contents

Dataset and Specifications..... 1
Importing data from the dataset..... 1
Activity 1: Finding mean of body temperature.....2
DIY Activity: Finding mean of heart rate..... 3

Dataset and Specifications

The data set used for the purpose of this experiment was obtained from the Mc. Graw Hill Foundation and has been released by the aforementioned agency under the Visual Statistics trademark. The original dataset and modified datasets used in this experiment can be accessed below.

Original Dataset

ModifiedDataset

Importing data from the dataset

Utilising MATLAB's inbuilt import data option present in the home menu, MATLAB allows import of a variet of datasets regardless of the size. It even permits importing multiple datasets into single variable. Once the appropriate variable name is assigned and the import is complete, the new variable will appear in the workspace. This can be tested by calling that variable to verify the import prcedure. In this case, the variable has been named 'ObsData'.

```
ObsData
```

```
ObsData = 130×3 table
```

	BodyTemp	Gender	HeartRate
1	96.3000	1	70
2	96.7000	1	71
3	96.9000	1	74
4	97.0000	1	80
5	97.1000	1	73
6	97.1000	1	75
7	97.1000	1	82
8	97.2000	1	64
9	97.3000	1	69
10	97.4000	1	70

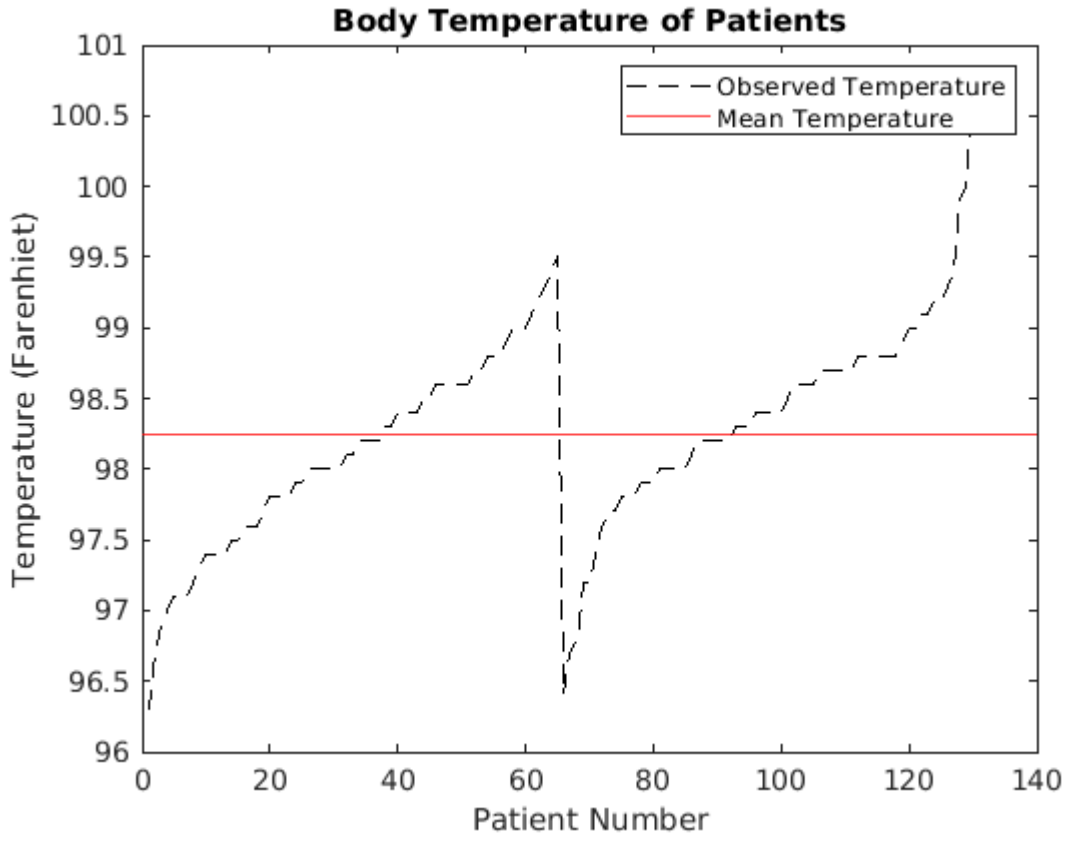
	BodyTemp	Gender	HeartRate
11	97.4000	1	68
12	97.4000	1	72
13	97.4000	1	78
14	97.5000	1	70

⋮

Activity 1: Finding mean of body temperature

From the variable containing our dataset, the temperature data alone is extracted using indexing and assigned to another variable named 'temp'. Utilising the isolated temperature information, the mean is now calculated using the inbuilt MATLAB function and plotted as a constant line on the chart. The mean() function permits the calculation of the mean and can be applied to a variety of data types in MATLAB including matrices and arrays.

```
temp = ObsData{:,"BodyTemp"};
plot(temp, 'k--')
title("Body Temperature of Patients")
xlabel("Patient Number")
ylabel("Temperature (Farenhiet)")
avg_temp = mean(temp);
yline(avg_temp, 'r-')
legend("Observed Temperature", "Mean Temperature")
```



Tip: A semi-colon is used in MATLAB to supress the display of the output. However it must be noted that the statement preceeding the colon is executed.

DIY Activity: Finding mean of heart rate

In this DIY activity, you have now try to do the same with the heart rate of a patient. You can do so applying the same techniques as in the above demonstration.

```
hr = ObsData{:,"HeartRate"};
plot(hr, 'g-')
title("Heart Rate of Patients")
xlabel("Patient Number")
ylabel("Heart Rate (bpm)")
avg_hr = mean(hr);
yline(avg_hr, 'r-')
legend("Observed Heart Rate", "Mean Heart Rate")
```