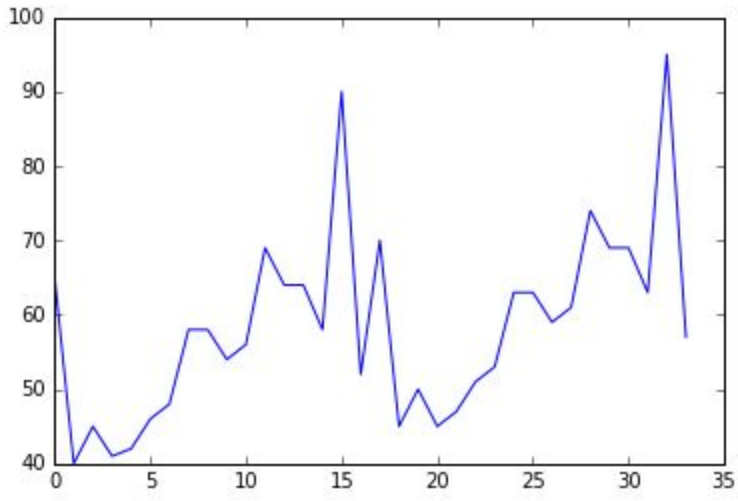
# Sensor Data Analysis v1.5

```
Welcome to Sensor Data Analyzer v1.5

Enter the file to analyze: sensordata.txt
Ignoring out of range temp.: -300.0
Ignoring out of range temp.: 205.0

Searching for spikes...
Detected spike 58.0, 90.0 and 52.0
Detected spike 63.0, 95.0 and 57.0

19 entries are below average temp.
15 entries are above average temp.
```




```
Max. Temp. (1): 40.0
Max. Temp. (2): 41.0
Min. Temp. (1): 95.0
Min. Temp. (2): 90.0
Avg. Temp.: 58.35294117647059
```

Our task is to write a simple python program that would allow us to analyze a given set of temperature sensor data.

The program should first ask for the name of the sensor data file.

The data file contains temperature readings recorded over a period of time. Time to time invalid records are recorded. Your program should ignore any temperature recorded outside the range of -200 to 200, inclusive.

**Feature #1:** Your program should output the spikes in the data. Any temperature reading that is 50% above the average of previous and next readings considered to be a spike.

Let a,b,c be consecutive temperature readings. If b is at least 50% larger than the average of a and c, report b as a spike.

**Feature #2:** your program should find the average temperature and then report how many of the temperature readings are above and how many are below the average.

**Feature #3:** plot the temperature readings graphically. If temps is a list of temperatures you want to plot, you can use the following code to plot the numbers inside temps:

```
import matplotlib.pyplot as plt
plt.plot(temps)
plt.show()
```

**Feature #4:** display the maximum 2 temperatures and minimum 2 temperatures along with the average temperature in the data set.

Make sure that your code is properly commented [**20 points**].