Problem 6: Data Plotting

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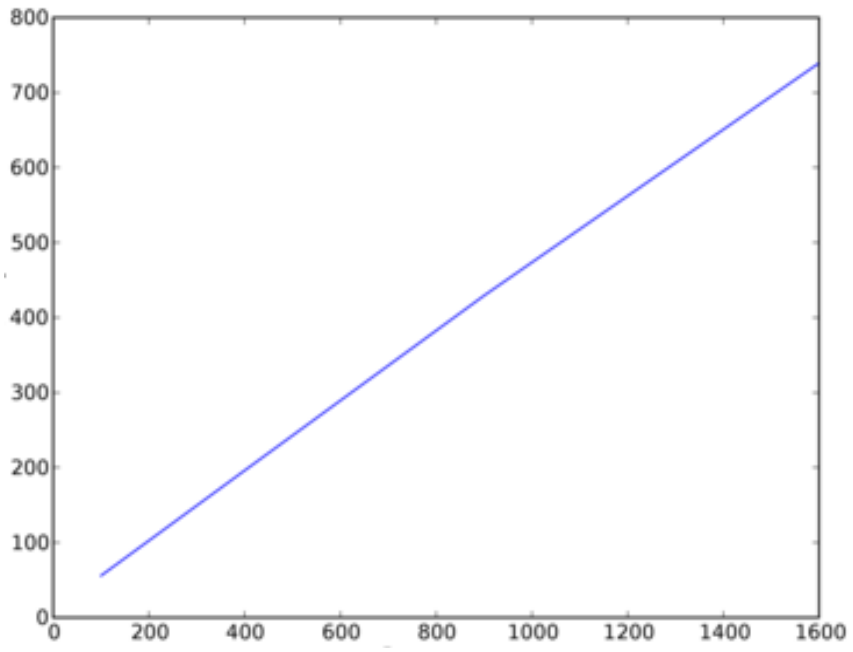
Problem Set due Nov 18, 2022 07:30 +08 Completed

Now, you'll use your simulation to answer some questions about the robots' performance.

In order to do this problem, you will be using a Python tool called PyLab.

Below is an example of a plot. This plot does not use the same axes that your plots will use; it merely serves as an example of the types of images that the PyLab package produces.



Note to those who did the optional visualization: For problem 6, we make calls to `runSimulation()` to get simulation data and plot it. However, you don't want the visualization getting in the way. If you chose to do the visualization exercise, before you get started on problem 6 (and before you submit your code in submission boxes), **make sure to comment the visualization code out of `runSimulation()`**. There should be 3 lines to comment out. If you do not comment these lines, your code will take a REALLY long time to run!!

For the questions below, call the given function with the proper arguments to generate a plot using PyLab.

Problem 6-1

3/3 points (graded)

Examine `showPlot1` in `ps2.py`, which takes in the parameters *title*, *x_label*, and *y_label*. Your job is to examine the code and figure out what the plot produced by the function tells you. Try calling `showPlot1` with appropriate arguments to produce a few plots. Then, answer the following 3 questions.

1. Which of the following would be the best title for the graph?

- ○ Percentage Of Room That A Robot Cleans
- ○ Time It Takes 1 - 10 Robots To Clean 70% Of A Room
- ○ Percentage Of Room That 1 - 10 Robots Clean
- ● Time It Takes 1 - 10 Robots To Clean 80% Of A Room
- ○ Time For Robots To Clean Varying Percentages Of A Room
- ○ Area Of Room That 1 - 10 Robots Clean

✔

2. Which of the following would be the best x-axis label for the graph?

- ○ Time-steps
- ○ Percentage Cleaned
- ○ Aspect Ratio
- ● Number of Robots

Calculator

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✔

3. Which of the following would be the best y-axis label for the graph?

- (●) Time-steps
- ( ) Percentage Cleaned
- ( ) Aspect Ratio
- ( ) Number of Robots
- ( ) Distance Travelled

✔

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Problem 6-2

3/3 points (graded)

Examine `showPlot2` in `ps2.py`, which takes in the parameters *title*, *x_label*, and *y_label*. Your job is to examine the code and figure out what the plot produced by the function tells you. Try calling `showPlot2` with appropriate arguments to produce a few plots. Then, answer the following 3 questions.

1. Which of the following would be the best title for the graph?

- ( ) Percentage Of Room That A Robot Cleans
- ( ) Time It Takes Two Robots To Clean 80% Of Variously Sized Rooms
- (●) Time It Takes Two Robots To Clean 80% Of Variously Shaped Rooms
- ( ) Time It Takes 1 - 10 Robots To Clean 80% Of A Room
- ( ) Percentage Of Variously Sized Rooms That A Robot Cleans
- ( ) Percentage Of Variously Shaped Rooms That A Robot Cleans

✔

Examine **`showPlot2`** in `ps2.py`, which takes in the same parameters as `showPlot1`. Your job is to examine the code and figure out what the plot produced by the function tells you. Try calling `showPlot2` with appropriate arguments to produce a few plots. Then, answer the following 3 questions.

2. Which of the following would be the best x-axis label for the graph?

- ( ) Time-steps
- ( ) Percentage Cleaned
- (●) Aspect Ratio
- ( ) Number of Robots
- ( ) Distance Travelled

Calculator

✔

3. Which of the following would be the best y-axis label for the graph?

- (●) Time-steps
- ( ) Percentage Cleaned
- ( ) Aspect Ratio

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