**CS4222: Assignment 1 (Group 6)**

**Group Members:**

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**Task 1:**

With the 2569 data samples collected from various locations that fall within either the indoor (1523 samples) or outdoor (1045 samples) categories, we obtained the following graph after plotting the values from the samples of the two differing categories:

As can be seen from the graph, there is an explicitly clear difference between the light level reported by the sensor when indoors and outdoors. Further analysis of the difference between the indoor readings and the outdoor readings such as the averages, standard deviations, variance, minimum and maximum light readings can be found in the excel workbook titled “Summary Analysis” in this folder.

**Task 2:**

See code.

**Task 3:**

(a)  
Limitations of using the light sensor for this purpose:  
  
WHEN INDOORS:

* Certain spots (especially those directly under the lights) will register a higher ambient light reading and this might cause the level of the light to exceed the threshold
* Positions that are near to the windows are susceptible to higher ambient light reading due to the sunlight coming in and falling on the sensor

WHEN OUTDOORS:

* There might be areas/spots where there is shade (be it due to buildings/trees/etc.) with will block sufficient sunlight and cause the ambient light level to fall below the threshold
* The ambient light reading will be mostly below the threshold set during night time even while outside
* If the weather is cloudy or raining, the ambient light reading may also fall below the set threshold while outside

(b)

Yes, there are several limitations in terms of the accuracy of location provided by GPS:

For situations where GPS is not accurate outdoors:

[http://wiki.openstreetmap.org/wiki/Accuracy\_of\_GPS\_data#Factors\_affecting\_accuracy](http://wiki.openstreetmap.org/wiki/Accuracy_of_GPS_data%23Factors_affecting_accuracy)

When indoors, the signals received from the GPS satellites are oftentimes very weak due to the need to penetrate through the walls of the building that the user is located in. Hence, this will lead to either inaccuracy in the location provided by GPS or even failure to locate the user.