Algorithm Implementation question:

Please note:

1) You must provide a brief and complete report of your code (PDF Format)
2) Any duplicates in the files of the students will result in zero score.
3) You are free to use any of these programming languages: Python – C/C++ - Java
4) Part b doesn't have any specific score in the question; however, your code will be assessed according to several test cases and if it fails. You will maximumly achieve 20% of the score.

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a) Implement Insertion sort algorithm (15%)
b) Test your code for instances with sizes: n = 5, 10, 20, 35, 55, 80, 105, 135, 170, 210
c) Calculate the runtime of your code for the above input sizes. You should store the results in a table like this: (15%)

n									
Runtime									

d) Plot the results. You must do it in your code and not via third party graphing programs (+7.5%)
e) Are the above results matched with the complexity which you know from theoretical analysis? Elaborate your answer (5.5%)
f) Analyze your code and recalculate the time complexity of the algorithm according to your implementation. Explain your approach for doing this task. (7%)
g) Repeat parts a, b, c, d, f for selection sort algorithm (50%)
h) In which cases, Insertion sort has a better time performance than selection sort (Hint: a constraint on the input sequence causes this superiority in performance) (7.5%)
i) Verify your answer for part h by providing an instance with this constraint for both two algorithms and then calculate the runtime of your algorithms. (7.5%)