**Programming Assignment 1 (PA-1): Comparing Algorithms** (8% of Final Grade)

* **Release Date:** **January 17** (Friday)
* **Due Date:** **February 4** (Tuesday) @ 11:59 PM, via D2L Dropbox submission

**Student Information:**

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* **Tutorial Section:** T06

**PA-1 Marking Sheet with Rubrics for the REPORT**

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| --- | --- | --- | --- |
| Item | Task | Points Available | Points Received |
| 1. Timing Table | Record execution times for all three algorithms at varying N values: 0,1,2,5,10,20,30,40,50 | **5** |  |
| 2. Performance Chart | Visualize the timing results in a single line chart to compare algorithm performance. | **5** |  |
| 3. Complexity Insights | Relate the observed timing results to the theoretical time complexities of each algorithm. | **5** |  |
| 4. Reflection on AI Tool Use | Mandatory but not graded: Used for accountability and academic integrity purposes. | N/A | N/A |
| TOTAL | | **15** |  |

**Rubric Descriptions**

**1. Timing Table (5 Points)**

* **5 Points:** Accurate timing data recorded for all N values with no errors.
* **4 Points:** Mostly accurate data with minor errors or omissions.
* **3 Points:** Some data missing or inaccurate, but key trends visible.
* **2 Points:** Several N values missing or incorrect, trends unclear.
* **1 Point:** Minimal effort; significant errors or omissions.
* **0 Points:** No effort or irrelevant submission.

**2. Performance Chart (5 Points)**

* **5 Points:** Chart includes all algorithms, properly labeled axes, a title, and insightful trends.
* **4 Points:** Mostly accurate chart; minor issues in labeling or clarity.
* **3 Points:** Chart includes most algorithms but lacks some clarity or labeling.
* **2 Points:** Incomplete or unclear chart; trends hard to discern.
* **1 Point:** Minimal effort; chart is poorly constructed or inaccurate.
* **0 Points:** No chart submitted.

**3. Complexity Insights (5 Points)**

* **5 Points:** Correct theoretical complexities with clear, accurate justifications tied to trends.
* **4 Points:** Mostly correct complexities with minor inaccuracies or vague justifications.
* **3 Points:** Some complexities correct, but justifications unclear or incomplete.
* **2 Points:** Incorrect complexities with weak justifications.
* **1 Point:** Minimal effort; little or no meaningful explanation.
* **0 Points:** No effort or submission.

**4. Reflection on AI Tool Use (Mandatory, Not Graded)**

* **Purpose:** This section is required to ensure accountability and academic integrity. It will not contribute to the final score of the report but must be completed.
* **Task:** Students must respond honestly about their use (or non-use) of AI tools:
  + If **Yes**, briefly explain:
    - **How** the AI tools assisted (e.g., debugging, brainstorming).
    - **Why** and **when** they were used.
    - **Impact** on understanding of the material.
* **Note:** Failure to complete this section will result in the report being considered incomplete.