**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 PROGRAMMING**

**Algorithm 1: Recursive**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Section | Criteria | Points Available | Points Received |  |
| 1. Correctness | *Implementation produces correct outputs.* | **5** |  | |
| 2. Efficiency | *Adheres to expected time complexity.* | **5** |  | |
| 3. Readability | *Code is clean, organized, and well-documented.* | **5** |  | |
| 4. Credit | *Citing external sources properly.* | **4** |  | |
| 5. Accountability for AI Use | *Transparent reflection on  AI tool use (or not).* | **2** |  | |
| TOTAL | | **21** |  | |

**Algorithm 2: Iterative**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Section | Criteria | Points Available | Points Received |  |
| 1. Correctness | *Implementation produces correct outputs.* | **5** |  | |
| 2. Efficiency | *Adheres to expected time complexity.* | **5** |  | |
| 3. Readability | *Code is clean, organized, and well-documented.* | **5** |  | |
| 4. Credit | *Citing external sources properly.* | **4** |  | |
| 5. Accountability for AI Use | *Transparent reflection on  AI tool use (or not).* | **2** |  | |
| TOTAL | | **21** |  | |

**Algorithm 3: Matrix Exponentiation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Section | Criteria | Points Available | Points Received |  |
| 1. Correctness | *Implementation produces correct outputs.* | **5** |  | |
| 2. Efficiency | *Adheres to expected time complexity.* | **5** |  | |
| 3. Readability | *Code is clean, organized, and well-documented.* | **5** |  | |
| 4. Credit | *Citing external sources properly.* | **4** |  | |
| 5. Accountability for AI Use | *Transparent reflection on  AI tool use (or not).* | **2** |  | |
| TOTAL | | **21** |  | |

**RUBRICS**

|  |  |
| --- | --- |
| Item | RUBRICS |
| 1. Correctness | * **5 Points:** Fully correct implementation; all test cases pass. * **4 Points:** Minor errors or edge cases fail. * **3 Points:** Some test cases fail, but core logic is mostly correct. * **2 Points:** Compiles but fails most test cases. * **1 Point:** Minimal effort; attempt made but fails all test cases. * **0 Points:** No effort, irrelevant submission, or plagiarized work. |
| 2. Efficiency | * **5 Points:** Efficient implementation adheres to expected complexity. * **4 Points:** Minor inefficiencies but acceptable. * **3 Points:** Noticeable inefficiencies or redundant calculations. * **2 Points:** Very inefficient, significantly deviates from expected complexity. * **1 Point:** Minimal effort; highly inefficient implementation. * **0 Points:** No effort, irrelevant submission, or plagiarized work. |
| 3. Readability | * **5 Points:** Well-structured, clear variable names, and inline comments. * **4 Points:** Mostly clear but lacks some comments or structure. * **3 Points:** Readable but poorly structured or insufficient documentation. * **2 Points:** Poorly written, hard to follow. * **1 Point:** Minimal effort; disorganized and unclear. * **0 Points:** No effort, irrelevant submission, or plagiarized work. |
| 4. Credit | * **4 Points:** Code proper acknowledgment of external sources (e.g., lectures, textbooks, websites, or papers). Acknowledgment specifies the source and its use (e.g., "Adapted pseudocode from [Textbook Name, Chapter X]"). * **3 Points:** External sources are acknowledged but lack detail or specificity. * **2 Points:** Acknowledgment of external sources is minimal or vague. * **1 Point:** External sources are mentioned without clarity or relevance. * **0 Points:** No acknowledgment of external sources despite clear evidence of use. |
| 5. Accountability for AI Use | * **2 Points:** Proper acknowledgment of AI/tool usage (or not) in code comments and the report. Acknowledgment is specific and aligns with independent effort. * **1 Point:** Incomplete or vague acknowledgment. For example, generic mentions like "External tools were used" without specifying their purpose. * **0 Points:** No acknowledgment of AI/tools (or not), or violations of the prohibited uses policy (e.g., automating solutions or bypassing key objectives). |

**Guidelines for Crediting External Sources:**

1. **Where to Credit:**

* Inline comments in code for specific algorithms, concepts, or logic inspired by external material.
* General acknowledgment in the report for high-level concepts or guidance.

1. **What to Include:**

* Name of the source (e.g., "Fibonacci Algorithm from [Textbook Name, Author, Year]").
* URL or citation for websites and published papers (if applicable).
* A brief explanation of how the source was used (e.g., "Adapted pseudocode for matrix exponentiation").

1. **Examples:**

* Code Comment:  
  // Adapted the iterative Fibonacci approach from [Lecture 3, Slide 10].

**Guidelines for Accountability for AI Use**

**1. Full Credit (2 Points):**

To earn full credit, students must:

* **Explicitly document AI use** in both the Reflection section of the report and as comments in the code.  
  **Examples in Code (comments):**

// Guidance provided by ChatGPT for debugging the recursive algorithm.  
 // Gained clarification on the matrix exponentiation algorithm using external resources.  
 // I confirm that no AI tools were used in the completion of this assignment.

* Ensure the acknowledgment aligns with the **independent effort requirement**, demonstrating that:
  + AI tools were used to support learning, not as substitutes for personal problem-solving or implementation.
* Clearly specify:
  + **Where** tools were used (e.g., debugging recursion, clarifying matrix exponentiation concepts).
  + **What assistance** was provided (e.g., "conceptual guidance" or "debugging").

**2. Partial Credit (1 Point):**

You may earn 1 point if the acknowledgment is **present but incomplete or vague**, such as:

* Mentioning AI tools without specifying their purpose or usage location.
* Providing acknowledgment only in code or the report, but not both.

**Example of vague acknowledgment:**  
"External tools were used" (without explaining what tools were used, their purpose, or where they were applied).

**3. No Credit (0 Points):**

Submissions will receive 0 points if:

* **No acknowledgment** of AI or external tools is provided, despite clear evidence of their use.
* The submission violates the **prohibited uses policy** by:
  + Using AI to directly generate code solutions or significant segments.
  + Automating or bypassing the implementation of core assignment objectives.

**Note:** Violations of academic integrity will be treated seriously and may result in further penalties.

**How to Properly Acknowledge AI Use (in Line with Policy)**

**1. Be Specific:**

* Clearly indicate the purpose of AI usage (or not).  
  **Examples:**
  + "ChatGPT was used to debug conceptual issues in recursion."
  + "External tools provided guidance on optimizing the iterative algorithm."
  + “I confirm that no AI tools were used in the completion of this assignment.”

**2. Document in Code:**

* Add comments in the code to indicate where AI tools were used.  
  **Example:**  
  // This section was debugged with ChatGPT's guidance.

**3. Follow Independent Effort Guidelines:**

* Ensure the majority of the assignment is completed independently.
* Do not use AI for:
  + Direct generation of solutions.
  + Bypassing the implementation of key objectives.

**4. Avoid Prohibited Uses:**

* Do not use AI to generate significant portions of the code or automate key implementation steps.
* Focus on understanding and problem-solving independently.