homework-2

PURPOSE

For this assignment, you will explore deadlocks by solving a programming problem. Demonstrate your understanding of deadlock prevention.

TASK

Implement the Banker's algorithm to identify potential deadlocks.

(a) You should test your algorithm using the information below:

5 processes P_0 through P_4;

3 resource types:

A (10 instances), B (5instances), and C (7 instances)

Snapshot at time S_0:

	Allocation	Max	Available
	A B C	A B C	A B C
P_0	0 1 0	7 5 3	3 3 2
P_1	2 0 0	3 2 2	
P_2	3 0 2	9 0 2	
P_3	2 1 1	2 2 2	
P_4	0 0 2	4 3 3	

(b) The algorithm should find a sequence of processes in order of execution to maintain a safe state. For example: the sequence < P1, P3, P4, P2, P0> satisfies safety criteria.

CRITERIA

Deliverable:
Please submit a single text file (Word, PDF, or TXT) containing the following sections:

Section 1: Code Implementations

- Copy and paste all your codes to this section in the text document.

Section 2: Outputs

- Display the results of testing the algorithm using the provided process information.
- Include screenshots of the output.
- Ensure that your test input consists only of the process information given above.

Section 3: Implementation Details

- Describe your thought process for implementing the algorithm.
- Explain any challenges you encountered and detail how you addressed them.
- Share any valuable observations or insights gained during the implementation process.

Evaluation Criteria:
Your submission will be assessed using the following criteria:

1. **Correct Implementation (10 pts):** Properly implementing the algorithm.
2. **Outputs (5 pts):** Clear program output screenshots
3. **Implementation details (5 pts):** Clearly explain the thought process, challenges, and insights.

Please don't hesitate to reach out if you have any questions or require further clarification.

Plagiarism and AI-generated text are strictly checked and prohibited. Always attribute sources and ensure your submission truly reflects your understanding and effort.