Vivekanand Education Society's Institute Of Technology

Department Of Information Technology

DSA mini Project

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TOPIC– JOB SCHEDULING USING PRIORITY QUEUE

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

THE GLOBAL GOALS

For Sustainable Development

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE AND JUSTICE STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

Content

1. **Introduction to the Project**
2. **Problem Statement**
3. **Objectives of the Project**
4. **Scope of the Project**
5. **Requirements of the System (Hardware, Software)**
6. **ER Diagram of the Proposed System**
7. **Data Structure & Concepts Used**
8. **Algorithm Explanation**
9. **Time and Space Complexity**
10. **Front End**
11. **Implementation**
12. **Gantt Chart**

13. Test Cases

14.Challenges and Solutions

15. Future Scope

16. Code

17. Output Screenshots

18. Conclusion

19. References (in IEEE Format)

Introduction to Project

JOB SCHEDULING USING PRIORITY QUEUE

Job Scheduling decides the order of task execution. Using a Priority Queue, higher-priority jobs are processed first, improving efficiency and performance.

It’s a smart way to manage multiple tasks effectively in real-time systems.

Problem Statement

NEED OF IDEA–

Multiple jobs are waiting to be executed in a system.

- It is difficult to decide which job should run first.
- The goal is to schedule jobs efficiently using a Priority Queue.
- High-priority tasks should execute earlier to improve performance and reduce waiting time.

Objectives of the project

To execute jobs based on their priority levels.

- To reduce waiting time and improve CPU utilization.
- To ensure important tasks are completed first.
- To manage multiple jobs efficiently and fairly.
- To optimize overall system performance.

Requirements of the system (Hardware, software)

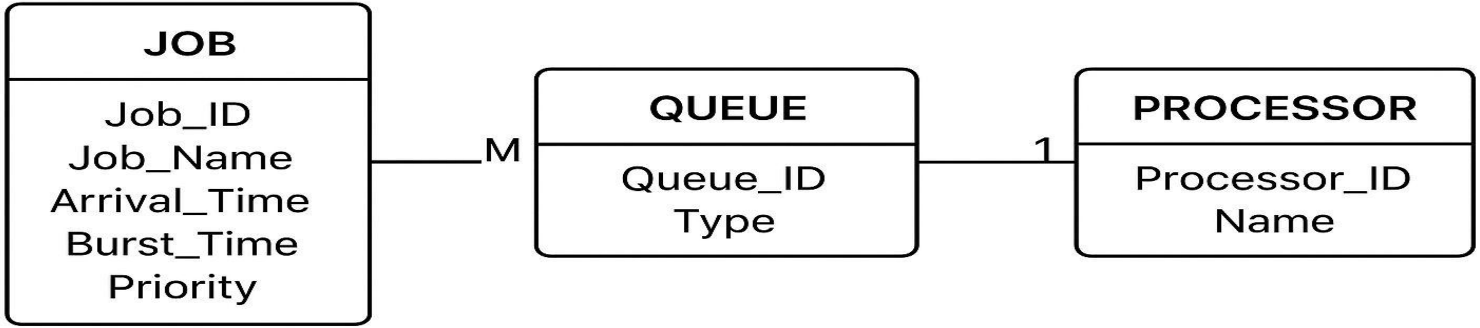
Software Requirements:

- Operating System: Windows / Linux / macOS
- Programming Language: C / C++ / Java / Python
- IDE or Code Editor: Code::Blocks, Dev C++,

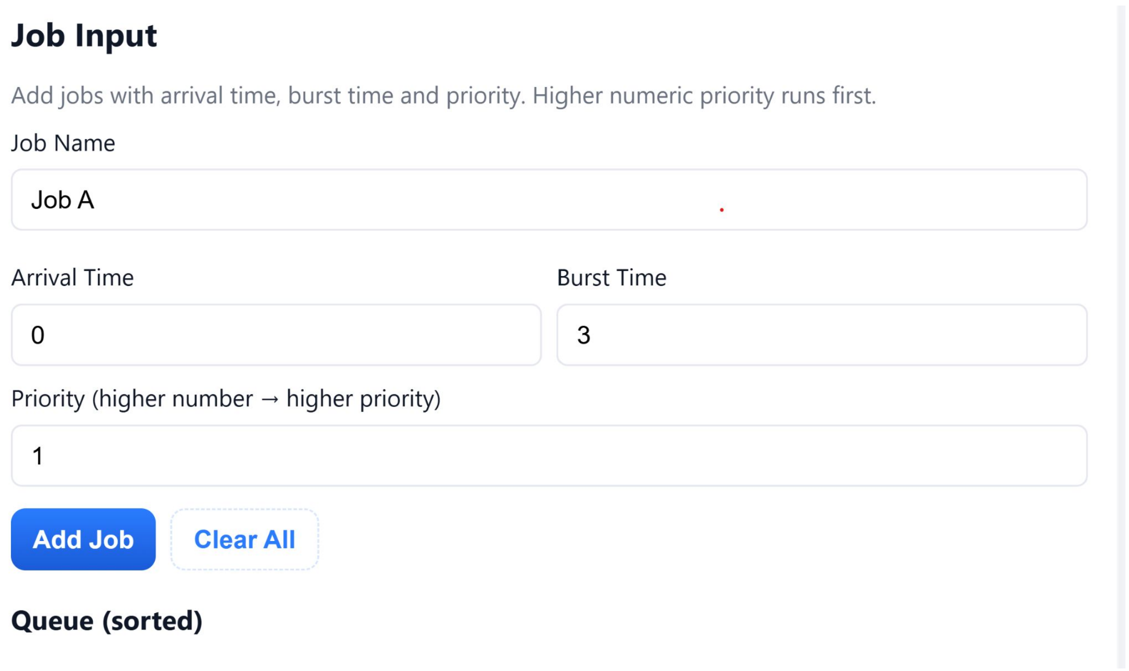
Hardware Requirements:

- Processor: Minimum Dual-core or higher
- RAM: At least 2 GB (4 GB recommended)
- Storage: Minimum 500 MB free space

ER diagram of the proposed system



Front End



Job Input

Add jobs with arrival time, burst time and priority. Higher numeric priority runs first.

Job Name: Job A

Arrival Time: 0

Burst Time: 3

Priority (higher number → higher priority): 1

Queue (sorted)

Implementation

Priority Queue stores and manages job pointers.

- Comparator function arranges jobs by priority.
- Highest priority job is executed first.
- Memory is freed after job execution.
- Output shows execution order based on priority.`

Conclusion

Job scheduling using priority queues efficiently manages tasks by assigning priorities, ensuring that critical jobs are executed first, improving system performance and resource utilization.”

References

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