ROUND ROBIN CPU SCHEDULING – INTERACTIVE SIMULATION AND VIDEO DEMONSTRATION

TEAM MEMBERS

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INTRODUCTION ABOUT THE CONCEPT

The Round Robin Scheduling Algorithm is one of the most widely used preemptive scheduling techniques, especially in time-sharing systems. It assigns each process a fixed time quantum, allowing every process to get an equal share of CPU time in a cyclic manner.

This project focuses on creating an interactive web-based toolkit and a demonstrative video that visually explain how the Round Robin method works and how process metrics like Completion Time (CT), Turnaround Time (TAT), and Waiting Time (WT) are calculated.

DESCRIPTION ABOUT THE CONCEPT

Algorithm Description

- Each process is placed in a ready queue.
- The CPU executes the first process for a fixed time quantum (q).
- If the process completes before the quantum expires, it is removed from the queue.

- If not, it is preempted and added to the end of the queue for the next cycle.
- This process repeats until all processes are completed.

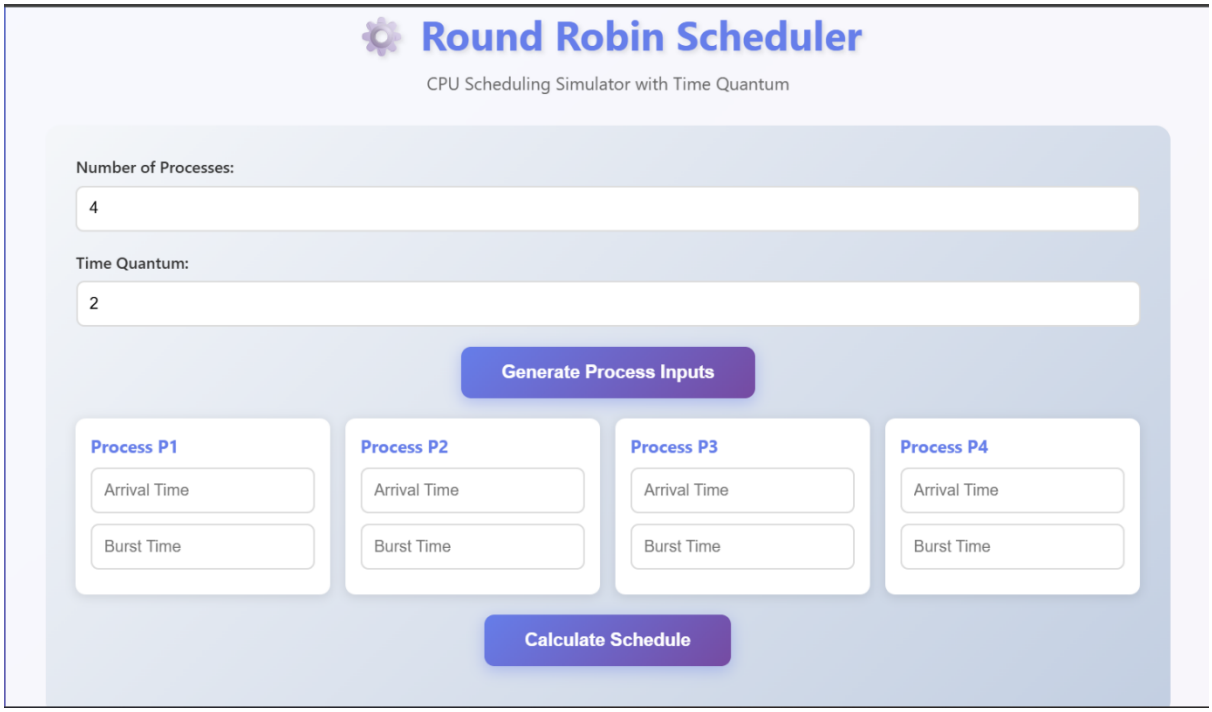
Key Features of Our Toolkit

- User can enter the number of processes, arrival times, burst times, and time quantum.
- The toolkit dynamically computes:
    - Completion Time (CT)
    - Turnaround Time (TAT)
    - Waiting Time (WT)
- Displays results in a tabular form.
- Generates a Gantt Chart showing CPU execution order.

Technology Stack

Frontend	→	HTML
Logic Implementation	→	Integrated In HTML
Presentation	→	PowerPoint + Screen Recording for video demo

SCREENSHOT AND DRIVE LINK OF THE DEMO



LOGICAL IMPLEMENTATION

```
while (1) {
    done = 1;
    for (i = 0; i < n; i++) {
        if (remaining[i] > 0) {
            done = 0; // at least one process is not finished
            if (remaining[i] > time_quantum) {
                t += time_quantum;
                remaining[i] -= time_quantum;
            } else {
                t += remaining[i];
                completion[i] = t;
                remaining[i] = 0;
            }
        }
    }
    if (done) break;
}

// Calculate Turnaround Time and Waiting Time
for (i = 0; i < n; i++) {
    tat[i] = completion[i] - arrival[i];
    wt[i] = tat[i] - burst[i];
}
```

GOOGLE DRIVE LINK FOR VIDEO PRESENTATION AND HTML FILE

https://drive.google.com/drive/folders/1teUlhUxAP7t_qnEu2YIGNeJ0LDDmPh0K?usp=drive_link

CONCLUSION

The Round Robin CPU Scheduling Project provided a clear understanding of how preemptive scheduling works in real systems.
By developing a video explanation and interactive simulation toolkit, we made the concept more visual, engaging, and easy to understand.

The project enhanced our skills in:

- Implementing scheduling logic using C and HTML
- Visualizing real-time process execution
- Presenting technical concepts effectively through video

Overall, this project bridges the gap between theoretical understanding and practical implementation of Round Robin scheduling algorithms.

REFERENCES

1. ChatGPT – For logical and Concept understanding
2. TutorialsPoint – *CPU Scheduling Algorithms* https://www.tutorialspoint.com/operating_system/os_process_scheduling.htm
3. GeeksforGeeks – *Round Robin CPU Scheduling* https://www.geeksforgeeks.org/round-robin-scheduling/