## **Practical No. 6: SJF (Shortest Job First) CPU Scheduling Algorithm**

### **Aim:**

To write a C program to implement the non-preemptive Shortest Job First (SJF) CPU scheduling algorithm to compute waiting time and turnaround time for each process.

### **Key Concepts:**

* **SJF Scheduling:** Selects the process with the smallest burst time from the ready queue.
* **Non-Preemptive:** Once a process starts execution, it runs till completion.
* **Waiting Time (WT):** Time spent waiting in the ready queue.
* **Turnaround Time (TAT):** Total time taken from arrival to completion.

### **Sample Execution:**

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Enter number of processes: 4

Enter arrival time for P1: 0

Enter burst time for P1: 5

Enter arrival time for P2: 1

Enter burst time for P2: 3

Enter arrival time for P3: 2

Enter burst time for P3: 6

Enter arrival time for P4: 4

Enter burst time for P4: 1

Process Arrival Time Burst Time Waiting Time Turnaround Time

P4 4 1 0 1

P2 1 3 4 7

P3 2 6 6 9

P1 0 5 11 16

Average Waiting Time: 5.25

Average Turnaround Time: 8.25

### **Explanation:**

* Processes are sorted by burst time after arrival.
* The scheduler picks the shortest job first after each completion.
* Calculations:  
  + **TAT = Completion Time - Arrival Time**
  + **WT = TAT - Burst Time**

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### **Conclusion:**

The program effectively demonstrates non-preemptive SJF scheduling by sorting processes based on burst time and simulating CPU execution order. It computes accurate turnaround and waiting times, showing optimized average waiting time compared to FCFS.