**Practical 1:** Write a program to simulate CPU Scheduling Algorithms: FCFS, SJF (Preemptive), Priority (Non-Preemptive) and Round Robin (Preemptive).

**Priority:**

#include<stdio.h>

int main() {

int p[20], bt[20], pri[20], wt[20], tat[20], n, i, k, temp;

float wtavg = 0, tatavg = 0;

printf("Onkar lonsane Roll No = 28");

printf("\nEnter the number of processes: ");

scanf("%d", &n);

// Input burst times and priorities for each process

printf("\nEnter Burst Time and Priority for each process:\n");

for(i = 0; i < n; i++) {

p[i] = i + 1; // Process numbers from 1 to n

printf("Process %d: ", p[i]);

scanf("%d %d", &bt[i], &pri[i]);

}

// Sort processes based on priority using Bubble Sort

for(i = 0; i < n - 1; i++) {

for(k = 0; k < n - i - 1; k++) {

if(pri[k] > pri[k + 1]) {

// Swap priorities

temp = pri[k];

pri[k] = pri[k + 1];

pri[k + 1] = temp;

// Swap burst times

temp = bt[k];

bt[k] = bt[k + 1];

bt[k + 1] = temp;

// Swap process numbers accordingly

temp = p[k];

p[k] = p[k + 1];

p[k + 1] = temp;

}

}

}

// Calculate waiting time and turnaround time for each process

wt[0] = 0; // First process has 0 waiting time

for(i = 1; i < n; i++) {

wt[i] = 0;

for(k = 0; k < i; k++) {

wt[i] += bt[k];

}

}

// Calculate turnaround time for each process

for(i = 0; i < n; i++) {

tat[i] = bt[i] + wt[i];

}

// Calculate average waiting time and average turnaround time

for(i = 0; i < n; i++) {

wtavg += wt[i];

tatavg += tat[i];

}

wtavg /= n;

tatavg /= n;

// Display results

printf("\nPROCESS\t\tPRIORITY\tBURST TIME\tWAITING TIME\tTURNAROUND TIME\n");

for(i = 0; i < n; i++) {

printf("P%d\t\t%d\t\t%d\t\t%d\t\t%d\n", p[i], pri[i], bt[i], wt[i], tat[i]);

}

printf("\nAverage Waiting Time: %.2f", wtavg);

printf("\nAverage Turnaround Time: %.2f\n", tatavg);

return 0;

}

**Output:**

/tmp/LHsU2dUcne.o

Onkar lonsane Roll No = 28

Enter the number of processes: 3

Enter Burst Time and Priority for each process:

Process 1: 3

1

Process 2: 4

2

Process 3: 5

3

PROCESS PRIORITY BURST TIME WAITING TIME TURNAROUND TIME

P1 1 3 0 3

P2 2 4 3 7

P3 3 5 7 12

Average Waiting Time: 3.33

Average Turnaround Time: 7.33

=== Code Execution Successful ===