A picture containing text

Description automatically generated



Lab Journal: 06

Date: 16/04/2025

Student Name: Shoaib Akhtar

Enrollment No: 01-131232-067

Department of Software Engineering

Bahria University, Islamabad

Operating System Lab (Spring-2025)

Teacher: Engr. AAMIR SOHAIL

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Task No:** | **Task Wise Marks** | | **Documentation Marks** | | **Total Marks**  **(20)** |
| **Assigned** | **Obtained** | **Assigned** | **Obtained** |
| 1 | 3 |  | 5 |  |  |
| 2 | 3 |  |
| 3 | 3 |  |
| 4 | 3 |  |
| 5 | 3 |  |

**Comments:**

**Signature**

# Lab No: 09 – Open Ended

**TASK 1:**

#include <iostream>

#include <algorithm>

using namespace std;

struct Process {

int id;

int service\_time;

int waiting\_time;

int turnaround\_time;

};

bool compare(Process a, Process b) {

return a.service\_time < b.service\_time;

}

int main() {

int n;

cout << "Shortest Job First Algorithm: " << endl;

cout << "Enter number of processes: ";

cin >> n;

Process processes[20];

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

cout << "Enter Process ID: ";

cin >> processes[i].id;

cout << "Enter Service Time: ";

cin >> processes[i].service\_time;

processes[i].waiting\_time = 0;

}

sort(processes, processes + n, compare);

int total\_waiting\_time = 0;

int total\_turnaround\_time = 0;

processes[0].turnaround\_time = processes[0].service\_time;

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

processes[i].waiting\_time = processes[i - 1].waiting\_time + processes[i - 1].service\_time;

total\_waiting\_time += processes[i].waiting\_time;

processes[i].turnaround\_time = processes[i].waiting\_time + processes[i].service\_time;

total\_turnaround\_time += processes[i].turnaround\_time;

}

total\_turnaround\_time += processes[0].turnaround\_time;

double avg\_waiting\_time = (double)total\_waiting\_time / n;

double avg\_turnaround\_time = (double)total\_turnaround\_time / n;

cout << "\nID\tService\tWait\tTurnaround\n";

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

cout << processes[i].id << "\t" << processes[i].service\_time << "\t"

<< processes[i].waiting\_time << "\t" << processes[i].turnaround\_time << "\n";

}

cout << "\nTotal Waiting Time: " << total\_waiting\_time << endl;

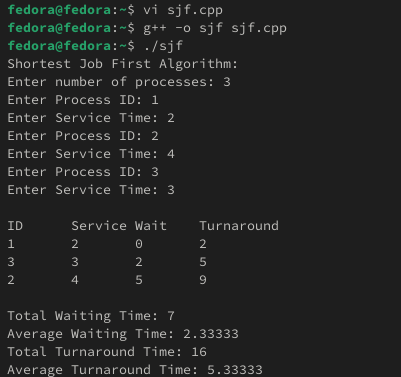
cout << "Average Waiting Time: " << avg\_waiting\_time << endl;

cout << "Total Turnaround Time: " << total\_turnaround\_time << endl;

cout << "Average Turnaround Time: " << avg\_turnaround\_time << endl;

return 0;

}



**TASK 2:**

#include <iostream>

using namespace std;

struct Process {

int id;

int service\_time;

int waiting\_time;

int turnaround\_time;

};

int main() {

int n;

cout << "First Come First Serve Algorithm: " << endl;

cout << "Enter number of processes: ";

cin >> n;

Process processes[20];

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

cout << "Enter Process ID: ";

cin >> processes[i].id;

cout << "Enter Service Time: ";

cin >> processes[i].service\_time;

processes[i].waiting\_time = 0;

}

int total\_waiting\_time = 0;

int total\_turnaround\_time = 0;

processes[0].turnaround\_time = processes[0].service\_time;

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

processes[i].waiting\_time = processes[i - 1].waiting\_time + processes[i - 1].service\_time;

total\_waiting\_time += processes[i].waiting\_time;

processes[i].turnaround\_time = processes[i].waiting\_time + processes[i].service\_time;

total\_turnaround\_time += processes[i].turnaround\_time;

}

total\_turnaround\_time += processes[0].turnaround\_time;

double avg\_waiting\_time = (double)total\_waiting\_time / n;

double avg\_turnaround\_time = (double)total\_turnaround\_time / n;

cout << "\nID\tService\tWait\tTurnaround\n";

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

cout << processes[i].id << "\t" << processes[i].service\_time << "\t"

<< processes[i].waiting\_time << "\t" << processes[i].turnaround\_time << "\n";

}

cout << "\nAverage Waiting Time: " << avg\_waiting\_time << endl;

cout << "Average Turnaround Time: " << avg\_turnaround\_time << endl;

return 0;

}

