

```

1  #include <iostream>
2  #include <algorithm>
3  using namespace std;
4
5  // Assignment 1: Priority Scheduling (Non-Preemptive)
6  void priority_scheduling() {
7      const int n = 5;
8      int pid[n] = {1, 2, 3, 4, 5};
9      int bt[n] = {10, 1, 2, 1, 5};
10     int pr[n] = {3, 1, 4, 5, 2};
11     int wt[n], tat[n];
12     int index[n];
13
14     for (int i = 0; i < n; i++) index[i] = i;
15
16     // Sort processes by priority (lower value = higher priority)
17     for (int i = 0; i < n-1; i++) {
18         for (int j = i+1; j < n; j++) {
19             if (pr[index[i]] > pr[index[j]]) {
20                 swap(index[i], index[j]);
21             }
22         }
23     }
24
25     wt[index[0]] = 0;
26     for (int i = 1; i < n; i++) {
27         wt[index[i]] = wt[index[i-1]] + bt[index[i-1]];
28     }
29
30     double total_wt = 0, total_tat = 0;
31     cout << "\n--- Priority Scheduling (Non-Preemptive) ---\n";
32     cout << "PID\tBT\tPriority\tWT\tTAT\n";
33
34     for (int i = 0; i < n; i++) {
35         tat[i] = wt[i] + bt[i];
36         total_wt += wt[i];
37         total_tat += tat[i];
38         cout << pid[i] << "\t" << bt[i] << "\t" << pr[i] << "\t\t" << wt[i] << "\t" << tat[i] << "\n";
39     }
40
41     cout << "Average Waiting Time: " << total_wt / n << "\n";
42     cout << "Average Turnaround Time: " << total_tat / n << "\n";
43 }
44
45 // Assignment 2: Round Robin Scheduling
46 void round_robin() {
47     const int n = 3;
48     int pid[n] = {1, 2, 3};
49     int bt[n] = {24, 13, 9};
50     int rem_bt[n];
51     int wt[n] = {0}, tat[n] = {0};
52     int tq = 4;
53     int time = 0;
54
55     for (int i = 0; i < n; i++) rem_bt[i] = bt[i];
56
57     while (true) {
58

```

```

59     bool done = true;
60     for (int i = 0; i < n; i++) {
61         if (rem_bt[i] > 0) {
62             done = false;
63             if (rem_bt[i] > tq) {
64                 time += tq;
65                 rem_bt[i] -= tq;
66             } else {
67                 time += rem_bt[i];
68                 wt[i] = time - bt[i];
69                 rem_bt[i] = 0;
70                 tat[i] = wt[i] + bt[i];
71             }
72         }
73     }
74     if (done) break;
75 }
76
77 double total_wt = 0, total_tat = 0;
78 cout << "\n--- Round Robin Scheduling (Time Quantum = 4) ---\n";
79 cout << "PID\tBT\tWT\tTAT\n";
80
81 for (int i = 0; i < n; i++) {
82     total_wt += wt[i];
83     total_tat += tat[i];
84     cout << pid[i] << "\t" << bt[i] << "\t" << wt[i] << "\t" << tat[i] << "\n";
85 }
86
87 cout << "Average Waiting Time: " << total_wt / n << "\n";
88 cout << "Average Turnaround Time: " << total_tat / n << "\n";
89 }
90
91 int main() {
92     priority_scheduling();
93     round_robin();
94     return 0;
95 }

```