ROUND –ROBIN (NON – PREMPTION):

CODE :

import java.util.Scanner;

public class RoundRobinNonPreemptive {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter number of processes: ");

int n = sc.nextInt();

int[] burstTime = new int[n];

int[] remainingTime = new int[n];

int[] waitingTime = new int[n];

int[] turnaroundTime = new int[n];

System.out.print("Enter time quantum: ");

int quantum = sc.nextInt();

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

System.out.print("Enter burst time for process " + (i + 1) + ": ");

burstTime[i] = sc.nextInt();

remainingTime[i] = burstTime[i];

}

int time = 0, completed = 0;

String ganttChart = "";

while (completed < n) {

boolean processExecuted = false;

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

if (remainingTime[i] > 0) {

if (remainingTime[i] > quantum) {

time += quantum;

remainingTime[i] -= quantum;

ganttChart += "P" + (i + 1) + " ";

} else {

time += remainingTime[i];

remainingTime[i] = 0;

ganttChart += "P" + (i + 1) + " ";

completed++;

waitingTime[i] = time - burstTime[i];

turnaroundTime[i] = time;

}

processExecuted = true;

}

}

if (!processExecuted) {

ganttChart += "idle ";

time++;

}

}

// Print Gantt Chart

System.out.println("Gantt Chart: " + ganttChart);

// Calculate average waiting time and turnaround time

int totalWT = 0, totalTAT = 0;

System.out.println("Process\tBurst\tWaiting\tTurnaround");

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

totalWT += waitingTime[i];

totalTAT += turnaroundTime[i];

System.out.println("P" + (i + 1) + "\t" + burstTime[i] + "\t" + waitingTime[i] + "\t" + turnaroundTime[i]);

}

System.out.println("Average Waiting Time: " + (totalWT / (float) n));

System.out.println("Average Turnaround Time: " + (totalTAT / (float) n));

sc.close();

}

}

OUTPUT :

Enter number of processes: 5

Enter time quantum: 2

Enter burst time for process 1: 3

Enter burst time for process 2: 5

Enter burst time for process 3: 2

Enter burst time for process 4: 5

Enter burst time for process 5: 5

Gantt Chart: P1 P2 P3 P4 P5 P1 P2 P4 P5 P2 P4 P5

Process Burst Waiting Turnaround

P1 3 8 11

P2 5 13 18

P3 2 4 6

P4 5 14 19

P5 5 15 20

Average Waiting Time: 10.8

Average Turnaround Time: 14.8