Priority SCH

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import java.util.Scanner;

class Process {
    int id, bt, at, pr, wt, ct, tat;
    boolean done;
}

public class PriorityScheduling {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter number of processes: ");
        int n = sc.nextInt();

        Process[] p = new Process[20];
        for (int i = 0; i < n; i++) p[i] = new Process();

        System.out.print("Enter Process IDs: ");
        for (int i = 0; i < n; i++) p[i].id = sc.nextInt();

        System.out.print("Enter Burst Times: ");
        for (int i = 0; i < n; i++) p[i].bt = sc.nextInt();

        System.out.print("Enter Arrival Times: ");
        for (int i = 0; i < n; i++) p[i].at = sc.nextInt();

        System.out.print("Enter Priorities (lower = higher priority): ");
        for (int i = 0; i < n; i++) {
            p[i].pr = sc.nextInt();
            p[i].done = false;
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}

// Sort by Arrival Time (stable for equal AT)
for (int i = 0; i < n - 1; i++) {
   int m = i;
   for (int j = i + 1; j < n; j++) {
      if (p[j].at < p[m].at) m = j;
   }
   if (m != i) {
      Process temp = p[i];
      p[i] = p[m];
      p[m] = temp;
   }
}

int t = 0, finished = 0;
double sumWT = 0, sumTAT = 0;

System.out.println("\n===== Priority Scheduling Simulation =====");

while (finished < n) {
   int idx = -1;
   int bestPr = Integer.MAX_VALUE;

   for (int i = 0; i < n; i++) {
      if (!p[i].done && p[i].at <= t && p[i].pr < bestPr) {
         bestPr = p[i].pr;
         idx = i;
      }
   }
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    if (idx == -1) {
        t++; // CPU idle
        continue;
    }

    t += p[idx].bt; // process completes
    p[idx].ct = t;
    p[idx].tat = p[idx].ct - p[idx].at;
    p[idx].wt = p[idx].tat - p[idx].bt;
    p[idx].done = true;
    finished++;

    sumWT += p[idx].wt;
    sumTAT += p[idx].tat;
}

// Display results
System.out.println("\n================================================");
System.out.println("PID\tAT\tBT\tPR\tCT\tTAT\tWT");
System.out.println("================================================");

for (int i = 0; i < n; i++) {
    System.out.println(p[i].id + "\t" + p[i].at + "\t" + p[i].bt + "\t"
            + p[i].pr + "\t" + p[i].ct + "\t" + p[i].tat + "\t" + p[i].wt);
}

System.out.println("================================================");
System.out.printf("Average Turnaround Time: %.2f\n", (sumTAT / n));
System.out.printf("Average Waiting Time:    %.2f\n", (sumWT / n));

sc.close();
```

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    }
}
```