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GIT HUB Link: https://github.com/Rohitkumarreigns/LRTF-algorithm.git

# Question: Three students (a, b, c) are arriving in the mess at the same time. The id numbers of these students are 2132, 2102, 2453 and the food taken time from the mess table is 2, 4 and 8 minutes. If the two students have same remaining time so it is broken by giving priority to the students with the lowest id number. Consider the longest remaining time first (LRTF) scheduling algorithm and calculate the average turnaround time and waiting time.

**Solution:**

There are 3 students to be served.Since they arrive at the same, we need an algorithm as to how the students are to be served food.Given that

LRTF (Longest Remaining Time Algorithm) is to be used.

Also, the questions states that, if two students have the same remaining time, the student with the lowest id number is served first.

# Theoretical Explanation:

LRTF is to be used. Student C has the longest remaining time. So the serving starts with C.

After C is served for 4 minutes, the remaining time of B and C are equal. B has the lowest ID number. So the serve moves onto B.

After B is served for 2 minutes, the reaming time of A and B are equal. But still, B has the lowest ID number. So B is served.

Since his “food taken time” is 4 minutes, he is done with the job.

Comparing the remaining students A and C, C has a longer waiting time i.e., 4 min (he was already served 4 minutes, total time being 8 min). So, C is continued with the service.

After serving him for 2 minutes, the remaining time of C and A are equal. A has the lowest ID number. So the serve moves onto A.

After serving A for 2 minutes, he is done with the job since his “food taken time” is 2 minutes.

The serve moves onto C again to process the remaining 2 min of his “food taken time”.

0    1    2    3    4    5    6    7    8    9    10    11    12    13    14

  c    c    c    c     b    b    b    b    c     c     a      a      c      c

Turn Around Time(TAT) = Completion Time(CT) - Arrival Time(AT)

Wait Time (WT) = Turn Around Time(TAT) - Burst Time(BT)

A completes the job in 12 min, arrival time is 0.

B completes the job in 8 min, arrival time is 0.

C completes the job in 14 min, arrival time is 0.

🡪Turn Around Time(TAT) = Completion Time(CT) - Arrival Time(AT)

TAT(A) = 12 - 0 = 12 min

TAT(B) =  8 - 0  =  8 min

TAT(C) = 14 - 0 = 14 min

Given;

A’s Burst Time(BT) = 2 min

B’s Burst Time(BT) = 4 min

C’s Burst Time(BT) = 8 min

Here, Burst Time(BT) = Food Taken Time

🡪Wait Time (WT) = Turn Around Time(TAT) - Burst Time(BT)

WT(A) = 12 - 2 = 10

WT(B) =   8 - 4 =   4

WT(C) = 14 - 8 =   6

Therefore,

The required Average Turn Around Time = (12+8+14)/3 = 11.33 minutes

The required Average Wait Time   = (10+4+6)/3    =  6.67 minutes.

CODE IS IN TXT FILE