**(A)**

Thread ti          Tau(ti)  
--------------------------  
0                      60  
1                      20  
2                      20  
3                      40  
4                      40  
5                      40  
6                      20

O 10 20 30 40 50 60 70 80 90

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| T0 | T1 | T2 | T3 | T4 | T5 | T6 | T0 | T1 | T2 |

100 110 120 130 140 150 160 170 180 190

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| T3 | T4 | T5 | T6 | T0 | T3 | T4 | T5 | T0 | T3 |

200 210 220 230 240

|  |  |  |  |
| --- | --- | --- | --- |
| T4 | T5 | T0 | T0 |

**(B)**

Ttrnd(T0) = 240

Ttrnd(T1) = 90

Ttrnd(T2) = 100

Ttrnd(T3) = 200

Ttrnd(T4) = 210

Ttrnd(T5) = 220

Ttrnd(T6) = 140

**(C)**

Average Ttrnd = Ttrnd(T0) + Ttrnd(T1) + Ttrnd(T0) + Ttrnd(T3) + Ttrnd(T3) + Ttrnd(T5) + Ttrnd(T0) / number of process = 1200/7 = 171.

**(D)**

**W(T0) = 0;**

**W(T1) = 10**

**W(T2) = 20;**

**W(T3) = 30;**

**W(T4) = 40;**

**W(T5) = 50;**

**W(T6) = 60;**

**(E)**

**Average Wait Time = W(T0) + W(T1) + W(T2) + W(T3) + W(T4) + W(T5) + W(T6) / Number Of Process =**

**210/7 = 30.**

**(2)**

Thread ti          Tau(ti)  
--------------------------  
0                      60  
1                      20  
2                      20  
3                      40  
4                      40  
5                      40  
6                      20

O 20 40 60 80 100 120 140 160 180

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| T0 | T1 | T2 | T3 | T4 | T5 | T6 | T0 | T3 | T4 |

200 220 240

|  |  |
| --- | --- |
| T5 | T0 |

(2)(B)

Ttrnd(T0) = 240

Ttrnd(T1) = 40

Ttrnd(T2) = 60

Ttrnd(T3) = 180

Ttrnd(T4) = 200

Ttrnd(T5) = 220

Ttrnd(T6) = 140

(2)(C)

Average Ttrnd = Ttrnd(T0) + Ttrnd(T1) + Ttrnd(T0) + Ttrnd(T3) + Ttrnd(T3) + Ttrnd(T5) + Ttrnd(T0) / number of process = 1300/7 = 185.

(2)(D)

**W(T0) = 0;**

**W(T1) = 20**

**W(T2) = 40;**

**W(T3) = 60;**

**W(T4) = 80;**

**W(T5) = 100;**

**W(T6) = 120;**

(2)(E)

**Average Wait Time = W(T0) + W(T1) + W(T2) + W(T3) + W(T4) + W(T5) + W(T6) / Number Of Process =**

**420/7 = 60.**

(3)

Thread ti          Tau(ti)  
--------------------------  
0                      60  
1                      20  
2                      20  
3                      40  
4                      40  
5                      40  
6                      20

Ttrnd(T0) = 240

Ttrnd(T1) = 90

Ttrnd(T2) = 100

Ttrnd(T3) = 200

Ttrnd(T4) = 210

Ttrnd(T5) = 220

Ttrnd(T6) = 140

Ttrnd(T0) = 240

Ttrnd(T1) = 40

Ttrnd(T2) = 60

Ttrnd(T3) = 180

Ttrnd(T4) = 200

Ttrnd(T5) = 220

Ttrnd(T6) = 140

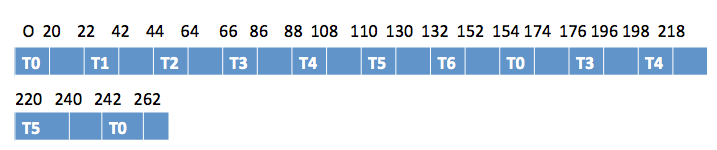
When the quantum increased from10 to 20 time steps, this benefited mostly the threads with smaller Tau(ti) (e.g. Ttrnd(T1) = 90 with 10 time steps.

Ttrnd(T1) = 40 with 20 time steps). However some Threads with bigger Tau(ti) showed little or no noticeable difference in the Turnaround time. (e.g.

Ttrnd(T0) = 240 with 10 time steps. Ttrnd(T0) = 240 with 20 time steps ). When the quantum time step increased, the average Ttrnd also increased.This led me to conclude that in RR, the threads with the biggest Tau(ti) will always have the biggest turnaround time, even if RR is fair with the quantum time step.

(4)

Thread ti          Tau(ti)  
--------------------------  
0                      60  
1                      20  
2                      20  
3                      40  
4                      40  
5                      40  
6                      20

****

**With the model of context switching in place, I have noticed that the turnaround time and the waiting time of the threads has increased. This lead to a higher average turnaround and waiting time for the threads.**