HW6

Adrian Law

* 1. RMS: (Ci / Ti) <= N(2^(1/N) – 1)

(1 / Ti) + 0.2 + 0.3333 = 3(2^(1/3) – 1)

Ti = 4.058



|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| T1 | X |  |  |  | DX |  |  |  | DX |  |  |  | DX |  |  |  | DX |  |  |
| T2 |  | X |  |  |  | DX |  |  |  |  | DX |  |  |  |  | DX |  |  |  |
| T3 |  |  | X | X |  |  | D  X | X |  |  |  |  | D | X | X |  |  |  | D |

* 1. EDF: (Ci / Ti) <= 1

(1 / Ti) + 0.2 + 0.3333 = 1

Ti = 2.1429

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| T1 | 1 |  | D  .9 | .1 | D  .8 | .2 | D  .7 | .3 | D  .6 | .4 | D | 1 | D  .4 | .6 | D  .3 | .7 | D |  |  |
| T2 |  | 1 |  |  |  | D | .3 | .7 |  |  | D |  | .6 | .4 |  | D |  |  |  |
| T3 |  |  | .1 | .9 | .2 | .8 | D |  | .4 | .6 | 1 |  | D |  | .7 | .3 | 1 |  | D |



1. 1. Assuming turn = 0 at start

|  |  |
| --- | --- |
| P0  Flag[0] = True;  If(flag[1]){  If(turn == 1){} 🡨 False  }  Enters CS | P1  Flag[1] = True;  If(flag[0]{} 🡨 False  Enters CS |

* 1. Process Pi:

Repeat:

flag[i]:=true;

while(flag[j]){

if (turn==j) {

flag[i]:=false;

while (turn==j) {};

flag[0]:=true;

}

}

Critical Section

turn:=j;

flag[i]:=false;

Remainder Section

Forever

1. 1. See code myProcess

0 - Starting iteration 1

0 - We hold these truths to be self-evident, that all men are created equal,

1 - Starting iteration 1

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 1

0 - Done iteration 1

1 - Starting iteration 2

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 2

0 - Starting iteration 2

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 2

0 - Starting iteration 3

1 - Starting iteration 3

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 3

1 - Done iteration 3

1 - Starting iteration 4

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 4

0 - Starting iteration 4

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 4

1 - Starting iteration 5

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 5

0 - Starting iteration 5

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 5

* 1. See code myProcessDekker (Fairness = 0)

0 start entry protocol

1 start entry protocol

0 - Starting iteration 1

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 1

1 - Starting iteration 1

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 1

0 start entry protocol

0 - Starting iteration 2

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 2

1 start entry protocol

1 - Starting iteration 2

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 2

0 start entry protocol

0 - Starting iteration 3

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 3

0 start entry protocol

0 - Starting iteration 4

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 4

1 start entry protocol

1 - Starting iteration 3

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 3

0 start entry protocol

0 - Starting iteration 5

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 5

1 start entry protocol

1 - Starting iteration 4

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 4

1 start entry protocol

1 - Starting iteration 5

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 5

* 1. See code myProcessDekker (fairness = 1)

0 start entry protocol

1 start entry protocol

1 - Starting iteration 1

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 1

1 start entry protocol

1 - Starting iteration 2

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 2

1 start entry protocol

1 - Starting iteration 3

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 3

1 start entry protocol

1 - Starting iteration 4

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 4

1 start entry protocol

1 - Starting iteration 5

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 5

0 - Starting iteration 1

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 1

0 start entry protocol

0 - Starting iteration 2

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 2

0 start entry protocol

0 - Starting iteration 3

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 3

0 start entry protocol

0 - Starting iteration 4

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 4

0 start entry protocol

0 - Starting iteration 5

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 5

* 1. See code myProcessPeterson (fairness = 1)

1 start entry protocol

1 - Starting iteration 1

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 1

1 start entry protocol

1 - Starting iteration 2

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 2

1 start entry protocol

1 - Starting iteration 3

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 3

1 start entry protocol

1 - Starting iteration 4

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 4

1 start entry protocol

1 - Starting iteration 5

1 - We hold these truths to be self-evident, that all men are created equal,

1 - that they are endowed by their Creator with certain unalienable Rights,

1 - that among these are Life, Liberty and the pursuit of Happiness.

1 - Done iteration 5

0 start entry protocol

0 - Starting iteration 1

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 1

0 start entry protocol

0 - Starting iteration 2

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 2

0 start entry protocol

0 - Starting iteration 3

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 3

0 start entry protocol

0 - Starting iteration 4

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 4

0 start entry protocol

0 - Starting iteration 5

0 - We hold these truths to be self-evident, that all men are created equal,

0 - that they are endowed by their Creator with certain unalienable Rights,

0 - that among these are Life, Liberty and the pursuit of Happiness.

0 - Done iteration 5

1. N = 70, Standard Deviation = 116342.447, Mean = 103058

Z = 1.96

E = 1.96 \* ( 116342.447/70^.5)

E = 27254.9

103058 +- 27254.9 = 95% CI of the number of busy waiting loops

This value is undercounted as the time it takes to increment a counter is slightly more than simply executing an empty while loop, thus the true mean should be above this confidence interval