Scheduling Project

Programming Project 3

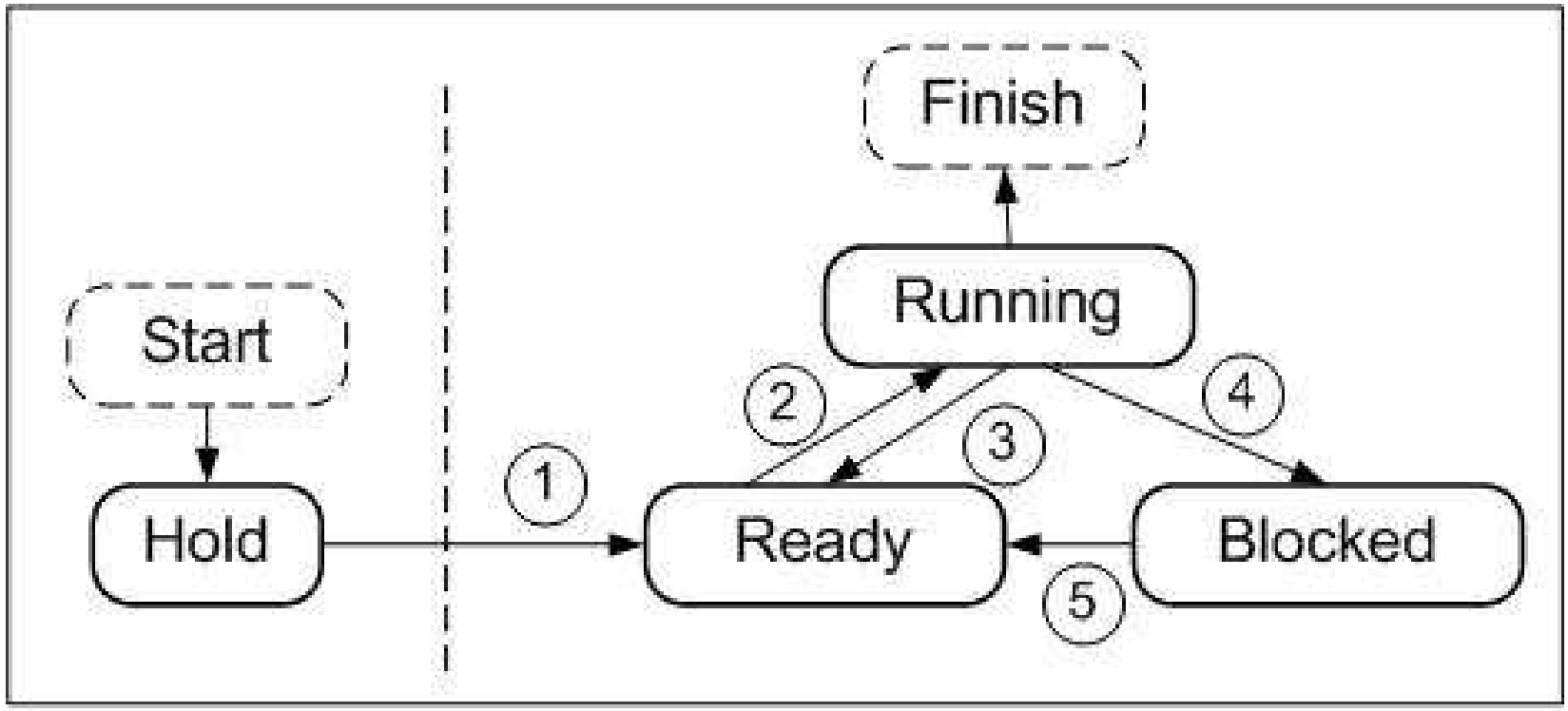

Figure 1: Round Robin State Diagram

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Input file format

- Initialization
  I <memory> <timequantum> <context>
- Job arrival
  A <jobnum> <arrivaltime> <cputime> <memory>
- I/O request
  Q <jobnum> <reqtime> <iotime>
- I/O termination
  L <jobnum> <termtime>
- Display statistics
  D <displaytime>

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Example 1 (No resources)

- Input file

I 48 10 5

A 1 00 30 16

A 2 20 30 8

A 3 35 20 8

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Example 1 (…continued)

Time	Event	HoldQ	Ready	Run	MM	Time left
00	1 A,H->Re	-	1	-	16	1 30
05	1 Re->Ru	-	-	1	16	1 30
15	CX	-	1	OS	16	1 20
20	1 Re->Ru	-	-	1	16	1 20
	2 A,H->Re	-	2	1	8	1 20,2 30
30	CX	-	2,1	OS	8	1 10,2 30
35	2 Re->Ru	-	1	2	8	1 10,2 30
	3 A, H->Re	-	1, 3	2	0	1 10,2 30, 3 20
45	CX	-	1, 3, 2	OS	0	1 10,2 20, 3 20
50	1 Re->Ru	-	3, 2	1	0	1 10, 2 20, 3 20

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Example 1 (… continued)

Time	Event	HoldQ	Ready	Run	MM	Time left
60	CX	-	3, 2, 1	OS	0	1 0, 2 20, 3 20
	1F	-	3, 2	OS	16	2 20, 3 20
65	3 Re->Ru	-	2	3	16	2 20, 3 20
75	CX	-	2, 3	OS	16	2 20, 3 10
80	2 Re->Ru	-	3	2	16	2 20, 3 10
90	CX	-	3, 2	OS	16	2 10, 3 10
95	3 Re->Ru	-	2	3	16	2 10, 3 10
105	CX	-	2,3	OS	16	2 10, 3 0
	3F	-	2	OS	24	2 10
110	2 Re->Ru	-	-	2	24	2 10
120	2F	-	-	-	32	-

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W and T for Example 1

Job #	**Ai**	**Fi**	**Wi**	**Trnd**	**Wt. Trnd**
1	0	60	5	60	2.0
2	20	120	15	100	3.33
3	35	105	30	70	3.5
Sum			50	230	8.83
Avg.			16.67	76.67	2.94

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Example 2

- Input file

I 48 10 5

A 1 00 40 16

A 2 10 30 8

A 3 40 20 8

A 4 50 10 8

A 5 60 10 8

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Example 2 (… continued)

Time	Event	HoldQ	Ready	Run	MM	Time left
00	1 A,H->Re	-	1	-	16	1 40
05	1 Re->Ru	-	-	1	16	1 40
10	2 A,H->Re	-	2	1	8	1 35,2 30
15	CX	-	2, 1	OS	8	1 30,2 30
20	2 Re->Ru	-	1	2	8	1 30,2 30
30	CX	-	1, 2	OS	8	1 30,2 20
35	1 Re->Ru	-	2	1	8	1 30,2 20
40	3 A,H->Re	-	2, 3	1	0	1 25,2 20,3 20
45	CX	-	2, 3, 1	OS	0	1 20,2 20,3 20
50	2 Re->Ru	-	3, 1	2	0	1 20,2 20,3 20
	4 A,H	4	3, 1	2	0	1 20,2 20,3 20,4 10

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Example 2 (… continued)

Time	Event	HoldQ	Ready	Run	MM	Time left
60	CX	4	3, 1, 2	OS	0	1 20, 2 10,3 20, 4 10,5 10
	5 A,H	4, 5	3, 1,2	OS	0	1 20, 2 10,3 20, 4 10,5 10
65	3 Re->Ru	4, 5	1, 2	3	0	1 20, 2 10,3 20, 4 10,5 10
75	CX	4, 5	1, 2, 3	OS	0	1 20, 2 10,3 10, 4 10,5 10
80	1 Re->Ru	4, 5	2, 3	1	0	1 20, 2 10,3 10, 4 10,5 10
90	CX	4, 5	2, 3, 1	OS	0	1 10, 2 10,3 10, 4 10,5 10
95	2 Re->Ru	4, 5	3, 1	2	0	1 10, 2 10,3 10, 4 10,5 10

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Example 2 (… continued)

Time	Event	HoldQ	Ready	Run	MM	Time left
105	CX	4,5	3, 1, 2	OS	0	1 10, 3 10,4 10,5 10
	2F	4, 5	3, 1	OS	8	1 10, 3 10,4 10,5 10
	4 H->Re	5	3, 1, 4	OS	0	1 10, 3 10,4 10,5 10
110	3 Re->Ru	5	1, 4	3	0	1 10, 3 10,4 10,5 10
120	CX	5	1, 4, 3	OS	0	1 10,4 10,5 10
	3F	5	1, 4	OS	8	1 10,4 10,5 10
	5 H->Re	-	1, 4, 5	OS	0	1 10,4 10,5 10
125	1 Re->Ru	-	4, 5	1	0	1 10,4 10,5 10
135	CX	-	4, 5, 1	OS	o	4 10,5 10
	1F	-	4, 5	OS	16	4 10,5 10
140	4 Re->Ru	-	5	4	16	4 10,5 10
150	CX	-	5,4	OS	16	5 10
	4F	-	5	OS	24	5 10
155	5 Re->Ru	-	-	5	24	5 10
165	5F	-	-	-	32	-

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W and T for Example 2

Job #	**Ai**	**Fi**	**Wi**	**Trnd**	**Wt. Trnd**
1	0	135	5	135	3.375
2	10	105	10	95	3.17
3	40	120	25	80	4
4	50	150	35	45	4.5
5	60	165	35	45	4.5
Sum			110	400	19.545
Avg.			22	80	3.909

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Example 3

- Input file

I 48 10 5

A 1 00 30 16

A 2 20 30 8

Q 1 25 20

A 3 40 20 8

Q 2 50 20

L 2 60

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Example 3 (… continued)

Time	Event	Blocked	Ready	Run	MM	Time left
00	1 A, H->Re	-	-	1	16	1 30
05	1 Re->Ru	-	-	1	16	1 30
15	CX	-	1	OS	16	1 20
20	1 Re->Ru	-	-	1	16	1 20
	2 A, H->Re	-	2	1	8	1 20,2 30
25	1 Q	1	2	-	8	1 15,2 30
	CX	1	2	OS	8	1 15, 2 30
30	2 Re->Ru	1	-	2	8	1 15, 2 30
40	CX	1	2	OS	8	1 15, 2 20
	3 A, H->Re	1	2,3	OS	0	1 15, 2 20, 3 20
45	2 Re->Ru	1	3	2	0	1 15, 2 20, 3 20
	1 B->Re	-	3, 1	2	0	1 15, 2 20, 3 20
50	2 Q	2	3, 1	OS	0	1 15, 2 15, 3 20

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Example 3 (… continued)

Time	Event	Blocked	Ready	Run	MM	Time left
55	CX 3 Re->Ru	2	1	3	0	1 15,2 15, 3 20
60	2 L, B->Re	-	1, 2	3	0	1 15,2 15, 3 15
65	CX	-	1,2,3	OS	0	1 15,2 15, 3 10
70	1 Re->Ru	-	2,3	1	0	1 15,2 15, 3 10
80	CX	-	2,3,1	OS	0	1 05,2 15, 3 10
85	2 Re->Ru	-	3,1	2	0	1 05,2 15, 3 10
95	CX	-	3,1,2	OS	0	1 05,2 05, 3 10
100	3 Re->Ru	-	1,2	3	0	1 05,2 05, 3,10
110	3 F, CX	-	1,2	OS	0	1 05,2 05
115	1 Re->Ru	-	2	1	8	1 05,2 05
120	1 F, CX	-	2	OS	24	2 05
125	2 Re->Ru	-	-	2	24	2 05
130	2 F	-	-	OS	32	-

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W and T for Example 3

Job #	**Ai**	**Fi**	**Wi**	**Trnd**	**Wt. Trnd**
1	0	120	05	120	4.0
2	20	130	10	110	3.67
3	40	110	15	70	3.5
Sum			30	150	11.17
Avg.			10.00	50	3.273

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