

6.3.3 Precedence Diagramming Method

WBS 6.4 Chapter 8 Exercises

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Fundamentals of Project Management

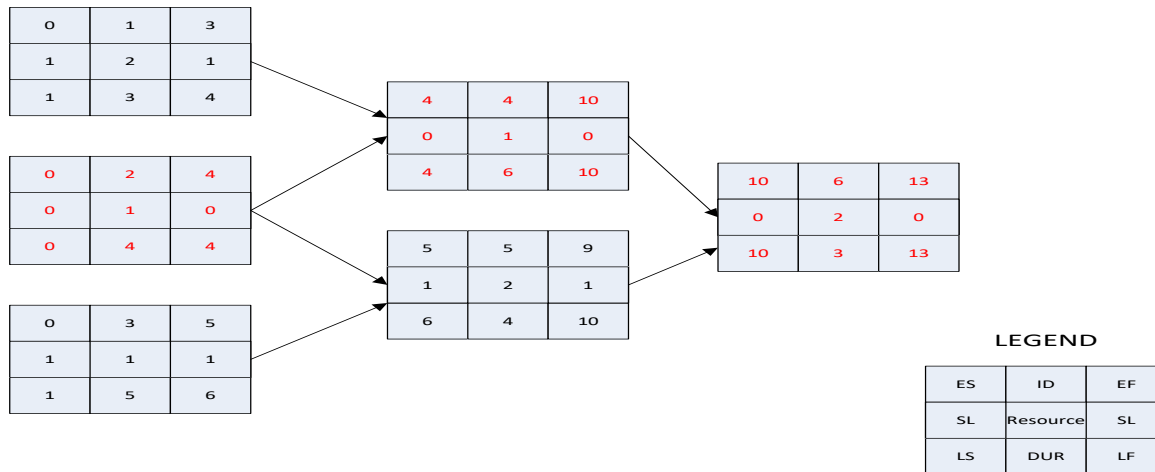
PMGT 690

Robert W. Erickson, Ph.D.

6.4 Deliverable – Team Assignment – Chapter 8 Exercises
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Embry Riddle Aeronautical University – PGMT 501

Pg 281 #3. Compute the early, late, and slack times for the activities in the network that follows, assuming a time-constrained network. Which activities are critical? What is time-constrained project duration?

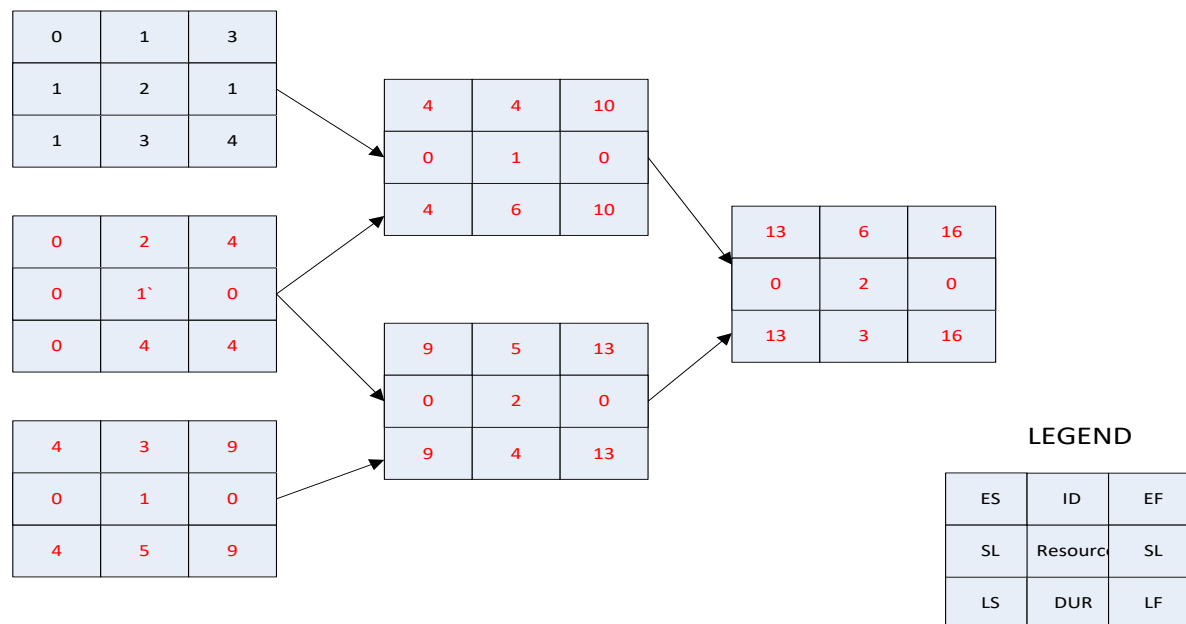


Activities 2,4,and 6 are critical. The time-constrained project duration is 13.

Period	Action
0-1	Activity 1, 2, and 3 are eligible with slacks of 1, 0, and 1. Load activity 2 into schedule (rule 1). Activities 1 and 3 have same slack of 1, but activity 1 has smallest duration. Load activity 1 into schedule (rule 2). Activity 3 is eligible but exceeds limit of resources. Delay activity 3. Update ES=1, SL=0
1-2	Activity 3 is eligible but exceeds limit of 3 resources in pool. Delay activity 3. Update ES=2, LF=7, SL=-1
2-3	Activity 3 is eligible but exceeds limit of 3 resources in pool. Delay activity 3. Update ES=3, LF=8, SL=-2
3-4	Activity 3 is eligible with slack of -2. Load activity 3 into schedule.
4-5	Activity 4 is eligible with slacks of 0. Load activity 4 (rule 1).
5-6	No Activities are eligible to be scheduled.
6-7	No Activities are eligible to be scheduled.
7-8	No Activities are eligible to be scheduled.
8-9	Activity 5 is next eligible activity with a slack of 1 Load Activity 5 (rule 1).
9-10	No Activities are eligible to be scheduled.
10-11	No Activities are eligible to be scheduled.

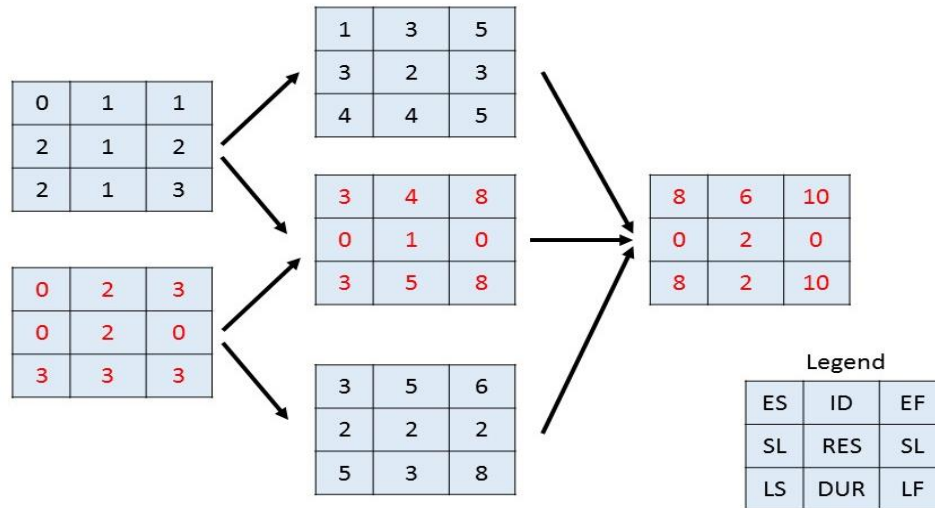
11-12	No Activities are eligible to be scheduled.
12-13	Activity 6 is next eligible with slack of 0. Load activity 6 into schedule (rule 1).
13-14	No Activities are eligible to be scheduled.
14-15	No Activities are eligible to be scheduled.

ID	RES	DUR	ES	LF	SL	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	2	3	0	4	1	2	2	2													
2	1	4	0	4	0	1	1	1	1												
3	1	5	4	9	-3	X	X	X	1	1	1	1									
4	1	6	4	10	0					1	1	1	1	1	1						
5	2	4	9	13	-3						X	X	X	2	2	2	2				
6	2	3	13	16	-3											X	X	2	2	2	2
Resources Scheduled						3	3	3	2	2	2	2	2	3	3	2	2	2	2	2	2
Resources Available						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3



The activities that are now critical are 2,3,4,5,6. The new slack for 1=1, 4=0, 5=-3

PG 284 # 5. Develop a resource schedule in the loading chart that follows. Use the parallel method and heuristics given. Be sure to update each period as the computer would do. Note: activities 2, 3, 5, and 6 use two of the resource skills. Three of the resource skills are available. How has slack changed for each activity? Has the risk of being late changed? How?



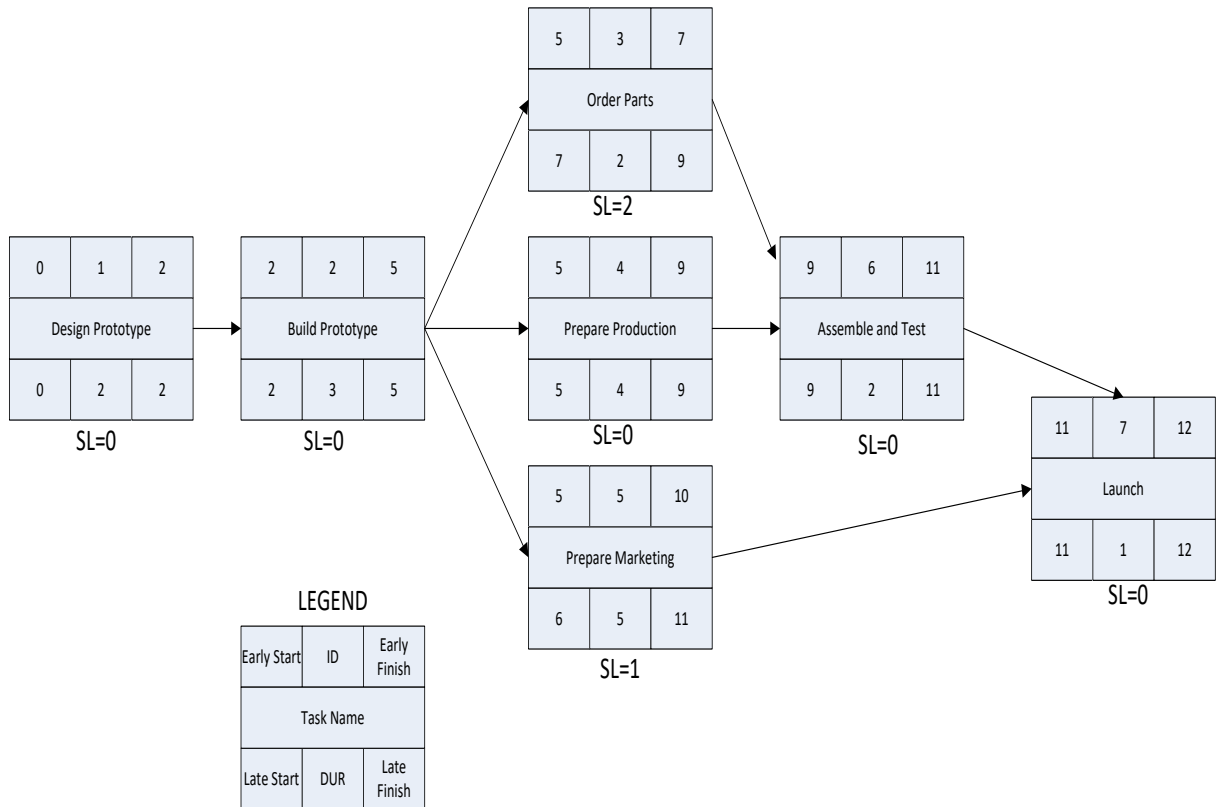
Activities 2, 4, and 6 are critical and the project duration is 10 time units.

Period	Action
0-1	Activity 1 and 2 are eligible with slacks of 2 and 0. Load activities 1 and 2 into schedule. No conflict of resources with 3 total available.
1-2	Activity 1, 2, and 3 are eligible with slacks of 2, 0, and 3. Load activity 1 and 2 into schedule (rule 1). Activity 3 has a slack of 3. Activity 3 is eligible but exceeds limit of resources. Delay activity 3. Update ES=2, LF=9, SL=2
2-3	Activity 1, 2, and 3 are eligible with slacks of 2, 0, and 2. Load activities 1 and 2 into schedule (rule 1). Activity 3 has a slack of 2. Activity 3 is eligible but exceeds limit of resources. Delay activity 3. Update Activity 3 ES=3, LF=10, SL=1
3-4	Activity 1, 2, 3, 4, and 5 are eligible with slacks of 2, 0, 2, 0, and 2. Load activity 1 and 2 into schedule (rule 1). Activity 3, 4, and 5 have slacks of 1, 0, and 2. Activity 3, 4, and 5 are eligible but exceed limit of resources. Delay activity 3, 4, and 5. Update Activity 3 ES=4, LF=11, SL=0. Update Activity 4 ES=4, LF=9, SL=-1. Update Activity 5 ES=4, LF=9, SL=1.
4-5	Activity 3, 4, and 5 are eligible with slacks of 0, -1, and 1. Load activity 4 into schedule (rule 1). Activity 3 and 5 have slacks of 0 and 1. Load activity 3 into schedule (rule 1). Activity 5 is eligible but exceeds limits of resources. Delay Activity 5. Update Activity 5 ES=5, LF=10, SL=0
5-6	Activity 3, 4, and 5 are eligible with slacks of 0, -1, and 0.

	<p>Load activity 3 and 4 into schedule (rule 1).</p> <p>Activity 5 is eligible but exceeds limits of resources.</p> <p>Delay Activity 5. Update Activity 5 ES=6, LF=11, SL=-1</p>
6-7	<p>Activity 3, 4, and 5 are eligible with slacks of 0, -1, and -1.</p> <p>Load activity 3 and 4 into schedule (rule 1).</p> <p>Activity 5 is eligible but exceeds limits of resources.</p> <p>Delay Activity 5. Update Activity 5 ES=7, LF=12, SL=-2</p>
7-8	<p>Activity 3, 4, and 5 are eligible with slacks of 0, -1, and -2.</p> <p>Load activity 3 and 4 into schedule (rule 1).</p> <p>Activity 5 is eligible but exceeds limits of resources.</p> <p>Delay Activity 5. Update Activity 5 ES=8, LF=13, SL=-3</p>
8-9	<p>Activity 3, 4, 5, and 6 are eligible with slacks of 0, -1, -3, and 0.</p> <p>Load activity 3 and 4 into schedule (rule 1).</p> <p>Activity 5 and 6 are eligible but exceed limits of resources.</p> <p>Delay Activity 5 and 6.</p> <p>Update Activity 5 ES=9, LF=14, SL=-4.</p> <p>Update Activity 6 ES=9, LF=11, SL=-1</p>
9-10	<p>Activity 3, 5, and 6 are eligible with slacks of 0, -4, and -1.</p> <p>Load activity 3 into schedule (rule 1).</p> <p>Activity 5 and 6 are eligible but each needs 2 resources and the schedule only has 1 available.</p> <p>Delay Activity 5 and 6.</p> <p>Update Activity 5 ES=10, LF=15, SL=-5.</p> <p>Update Activity 6 ES=10, LF=12, SL=-2.</p>
10-11	<p>Activity 3, 5, and 6 are eligible with slacks of 0, -5, and -2.</p> <p>Load activity 3 into schedule (rule 1).</p> <p>Activity 5 and 6 are eligible but each needs 2 resources and the schedule only has 1 available.</p> <p>Delay Activity 5 and 6.</p> <p>Update Activity 5 ES=11, LF=16, SL=-6.</p> <p>Update Activity 6 ES=11, LF=13, SL=-3.</p>
11-12	<p>Activity 5 and 6 are eligible with slacks of -6, and -3.</p> <p>Load activity 6 into schedule (rule 1).</p> <p>Activity 5 is eligible but needs 2 resources and the schedule only has 1 available.</p> <p>Delay Activity 5.</p> <p>Update Activity 5 ES=12, LF=17, SL=-7.</p>
12-13	<p>Activity 5 and 6 are eligible with slacks of -7 and -3.</p> <p>Load activity 6 into schedule (rule 1).</p> <p>Activity 5 is eligible but needs 2 resources and the schedule only has 1 available.</p> <p>Delay Activity 5.</p> <p>Update Activity 5 ES=13, LF=18, SL=-8.</p>
13-14	<p>Activity 5 is eligible with a slack of -8.</p> <p>Load activity 5 into schedule (rule 1).</p>
14-15	<p>Activity 5 is eligible with a slack of -8.</p> <p>Load activity 5 into schedule (rule 1).</p>
15-16	<p>Activity 5 is eligible with a slack of -8.</p>

Total	31	4	3	7	4	2	2	3	3	2	1	
Cumulative		4	7	14	18	20	22	25	28	30	31	

PG 289 #11. Given the time-phased work packages and network, complete the baseline budget form for the project.



Task	Budg.	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Design	24	12	12												
Build	30			10	10	10									
Order	10						5	5							
Prepare Prod.	64						16	10	22	16					
Prepare Mark.	30						6	6	0	6	12				
Assem & Test	36										18	18			
Launch	12												12		
Total	206	12	12	10	10	10	27	21	22	22	30	18	12		
Cumulative		12	24	34	44	54	81	102	124	146	176	194	206		