

Deliverable: Assignment - Chapter 7 Exercises .On pages 246 - 247 of your textbook, locate the exercises section and complete Numbers 1 and 2. In a Word Document, respond to all questions and sub-questions pertaining to this exercise.

When you have completed this assignment, submit your response using the link above.

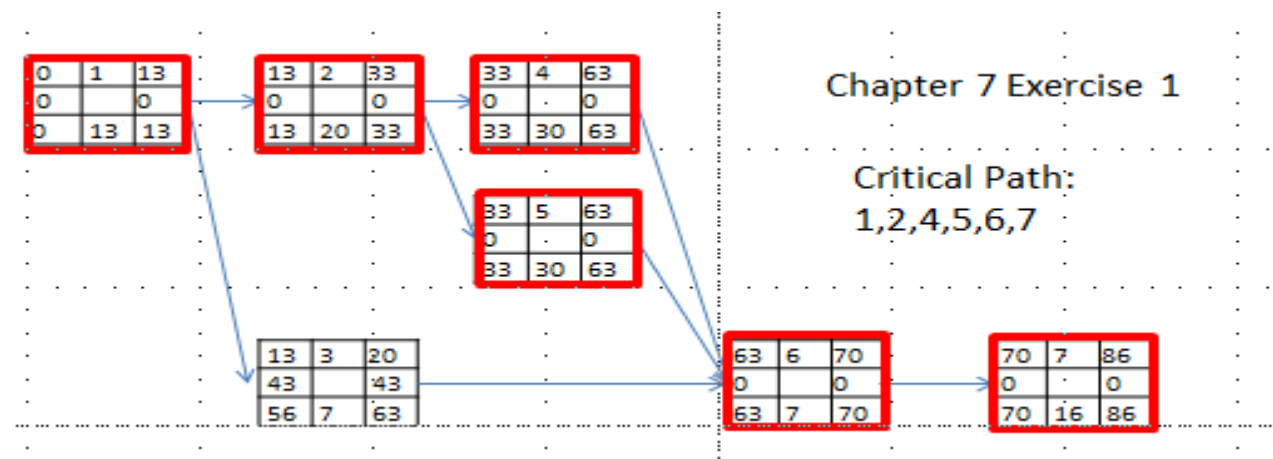
Assignments are late after midnight ET on Friday, May 3.

EXERCISES

- Given the project information below, what is the probability of completing the National Holiday Toy project in 93 time units?

Act. ID	Description	Predecessor	Optm. (a)	Most likely (m)	Pess. (b)	Act time t_e	Variance $[(b-a)/6]^2$	Critical
1	Design package	None	6	12	24			
2	Design product	1	16	19	28			
3	Build package	1	4	7	10			
4	Secure patent	2	21	30	39			
5	Build product	2	17	29	47			
6	Paint	3, 4, 5	4	7	10			
7	Test market	6	13	16	19			

	Activity	Predecessor	a	m	b	Acc time $t_e=(a+4m+b)/6$	Variance $\sigma^2=((b-a)/6)^2$	Critical
1	Design package	None	6	12	24	13	9	Y
2	design product	1	16	19	28	20	4	Y
3	Build package	1	4	7	10	7	1	N
4	Secure patent	2	21	30	39	30	9	Y
5	Build product	2	17	29	47	30	25	Y
6	Paint	3,4,5	4	7	10	7	1	Y
7	Test Market	6	13	16	19	16	1	Y



Two critical paths for this question: 1,2,4,6,7 and 1,2,5,6,7, however the longest path is the same (86) for both, so I calculated the probability just once instead of for each critical path.

$$\frac{T_s - T_E}{\sqrt{\sum \sigma_{t_e}^2}} = \frac{93 - 86}{\sqrt{9 + 4 + 9 + 25 + 1 + 1}} = \frac{+7}{\sqrt{49}} = \frac{+7}{7} = +1.0 \quad P \approx .840$$

2. The Global Tea and Organic Juice companies have merged. The following information has been collected for the “Consolidation Project.”

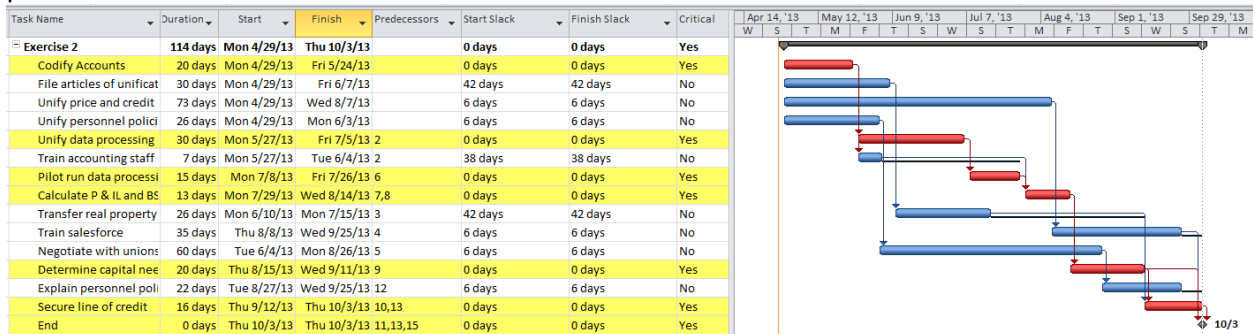
Activity	Description	Predecessor	a opt	m ml	b pess
1	Codify accounts	None	16	19	28
2	File articles of unification	None	30	30	30
3	Unify price and credit policy	None	60	72	90
4	Unify personnel policies	None	18	27	30
5	Unify data processing	1	17	29	47
6	Train accounting staff	1	4	7	10
7	Pilot run data processing	5	12	15	18
8	Calculate P & L and balance sheet	6, 7	6	12	24
9	Transfer real property	2	18	27	30
10	Train salesforce	3	20	35	50
11	Negotiate with unions	4	40	55	100
12	Determine capital needs	8	11	20	29
13	Explain personnel policies	11	14	23	26
14	Secure line of credit	9, 12	13	16	19
15	End	10, 12, 14	0	0	0

1. Compute the expected time for each activity.
2. Compute the variance for each activity.

Activity	Predecessor	a	m	b	Acc time $t_e = (a+4m+b)/6$	Variance $\sigma^2 = [(b-a)/6]^2$	Critical
1 Codify Accounts		16	19	28	20	4	Yes
2 File articles of unification		30	30	30	30	0	No
3 Unify price and credit policy		60	72	90	73	25	No
4 Unify personnel policies		18	27	30	26	4	No
5 Unify data processing	1	17	29	47	30	25	Yes
6 Train accounting staff	1	4	7	10	7	1	No
7 Pilot run data processing	5	12	15	18	15	1	Yes
8 Calculate P & IL and BS	6,7	6	12	24	13	9	Yes
9 Transfer real property	2	18	27	30	26	4	No
10 Train salesforce	3	20	35	50	35	25	No
11 Negotiate with unions	4	40	55	100	60	100	No
12 Determine capital needs	8	11	20	29	20	9	Yes
13 Explain personnel policies	11	14	23	26	22	4	No
14 Secure line of credit	9,12	13	16	19	16	1	Yes
15 End	10,12,14	0	0	0	0	0	Yes

3. Compute the expected project duration. **114 Days**

p



4. What is the probability of completing the project by day 112? Within 116 days?

$$\frac{T_s - T_E}{\sqrt{\sum \sigma_{te}^2}} = \frac{112 - 114}{\sqrt{4 + 25 + 1 + 9 + 9 + 1}} = \frac{-2}{\sqrt{49}} = \frac{-2}{7} = -.28 \quad p \approx .392$$

$$\frac{T_s - T_E}{\sqrt{\sum \sigma_{te}^2}} = \frac{116 - 114}{\sqrt{4 + 25 + 1 + 9 + 9 + 1}} = \frac{+2}{\sqrt{49}} = \frac{+2}{7} = +.28 \quad p \approx .608$$

5. What is the probability of completing “Negotiate with Unions” by day 90?

Critical path duration = 86 Days

$$\frac{T_s - T_E}{\sqrt{\sum \sigma_{te}^2}} = \frac{90 - 86}{\sqrt{4 + 100}} = \frac{+4}{\sqrt{104}} = \frac{+4}{10} = +.40 \quad p \approx .65$$