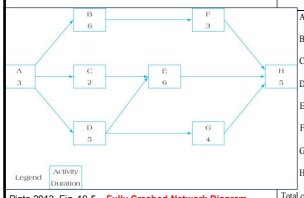
Exercise 1

- Activity X has a normal duration of 5 weeks and a budgeted cost of $12,000. The crash time for this activity is 3 weeks with a cost of $32,000.
- What is the crashing cost per week?
- How would you decide:
  a) If this is a good task to crash?
  b) If it should be crashed?

Exercise 2

- Consider the following project.
  a) In what order would you crash tasks
  b) What is the additional cost to complete the project in 19 days?



Pinto 2012, Fig. 10-5 – Fully Crashed Network Diagram

	Normal		Crashed	
Activity	Duration	Cost	Duration	Cost
A	5 days	$ 1,000	3 days	$ 1,500
B	7 days	700	6 days	1,000
C	3 days	2,500	2 days	4,000
D	5 days	1,500	5 days	1,500
E	9 days	3,750	6 days	9,000
F	4 days	1,600	3 days	2,500
G	6 days	2,400	4 days	3,000
H	8 days	9,000	5 days	15,000
Total costs =		$22,450		$37,500

Pinto 2012, Table. 10-1

Ex 2 - Solution

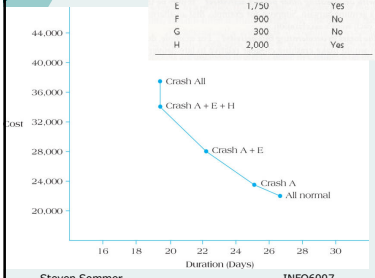
Pinto 2012, Table. 10-2, 10-3

TABLE 10.2 Costs of Crashing Each Activity

Activity	Crashing Costs (per day)	On Critical Path?
A	$ 250	Yes
B	300	No
C	1,500	No
D	—	Yes
E	1,750	Yes
F	900	No
G	300	No
H	2,000	Yes

TABLE 10.3 Project Costs by Duration

Duration	Total Costs
27 days	$22,450
26 days	22,700
25 days	22,950
24 days	24,700
23 days	26,450
22 days	28,200
21 days	30,200
20 days	32,200
19 days	34,200



- A then E then H
- (1500-1000)+(9000-3750)+(15000-9000) = 11,750
- Or: 2*250+3*1750+3*2000 = 11,750

Tute Question (Pinto 2012, p360, adapted)

- When deciding on whether or not to crash project activities, a project manager was faced with the following information. Activities of the critical path are highlighted with an asterisk:

	Normal		Crashed	
Activity	Cost	Duration	Extra Cost	Duration
A	5,000	4 weeks	4,000	3 weeks
B*	10,000	5 weeks	3,000	4 weeks
C	3,500	2 weeks	3,500	1 week
D*	4,500	6 weeks	4,000	5 weeks
E*	1,500	3 weeks	2,500	2 weeks
F	7,500	8 weeks	5,000	7 weeks
G*	3,000	7 weeks	2,500	6 weeks
H	2,500	6 weeks	3,000	5 weeks

Tute Q, part 2

a) What order should tasks be crashed. Why?
b) What is the project's initial duration? After four iterations involving crashing project activities, what it its new duration? (Assume all non-critical paths are longer than a crashed critical path)
c) Suppose (i) project overhead costs accrued at a fixed rate of $500 per week and (ii) a project penalty clause kicks in after 19 weeks. The penalty charged is $5,000 per week after 19 weeks.
Determine the direct costs, penalties, overhead and total costs for completing the project at each possible time. How far should the project be crashed
d) If there were no penalty payments accruing to the project, would it make sense to crash any project activities?

Tute Answer

Duration	Direct Costs	Penalties	Overhead	Total
21 weeks	37,500	10,000	10,500	58,000
20 weeks	40,000	5,000	10,000	55,000
19 weeks	42,500	- 0 -	9,500	52,000
18 weeks	45,500	- 0 -	9,000	54,500
17 weeks	49,500	- 0 -	8,500	58,000