Project Management

Project crashing

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Project crashing

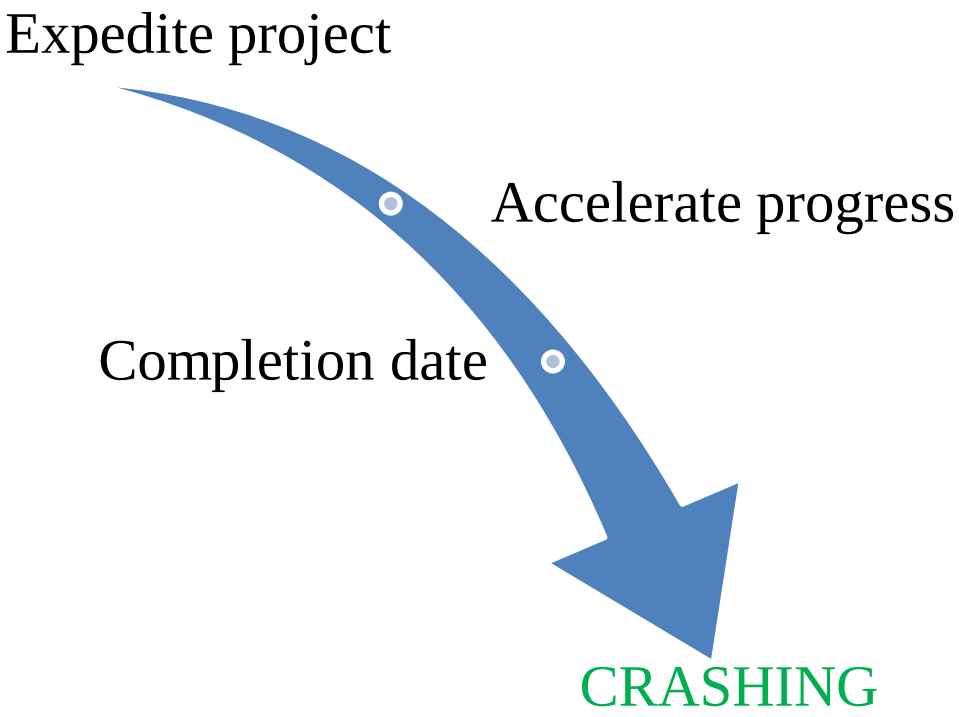
- Aims
  - To understand the concept of project crashing.
- Expected Outcomes
  - Students are able to expedite the project when necessary.
- References

  - William, R.T. 2013. Project Management. Random Exports
  - Heagney, J. 2012. Fundamentals of Project Management. American Management Association.
  - Richardson and Gary, L. 2010. Project Management theory and practice. Taylor and Francis.

Content

- Project crashing

Project crashing



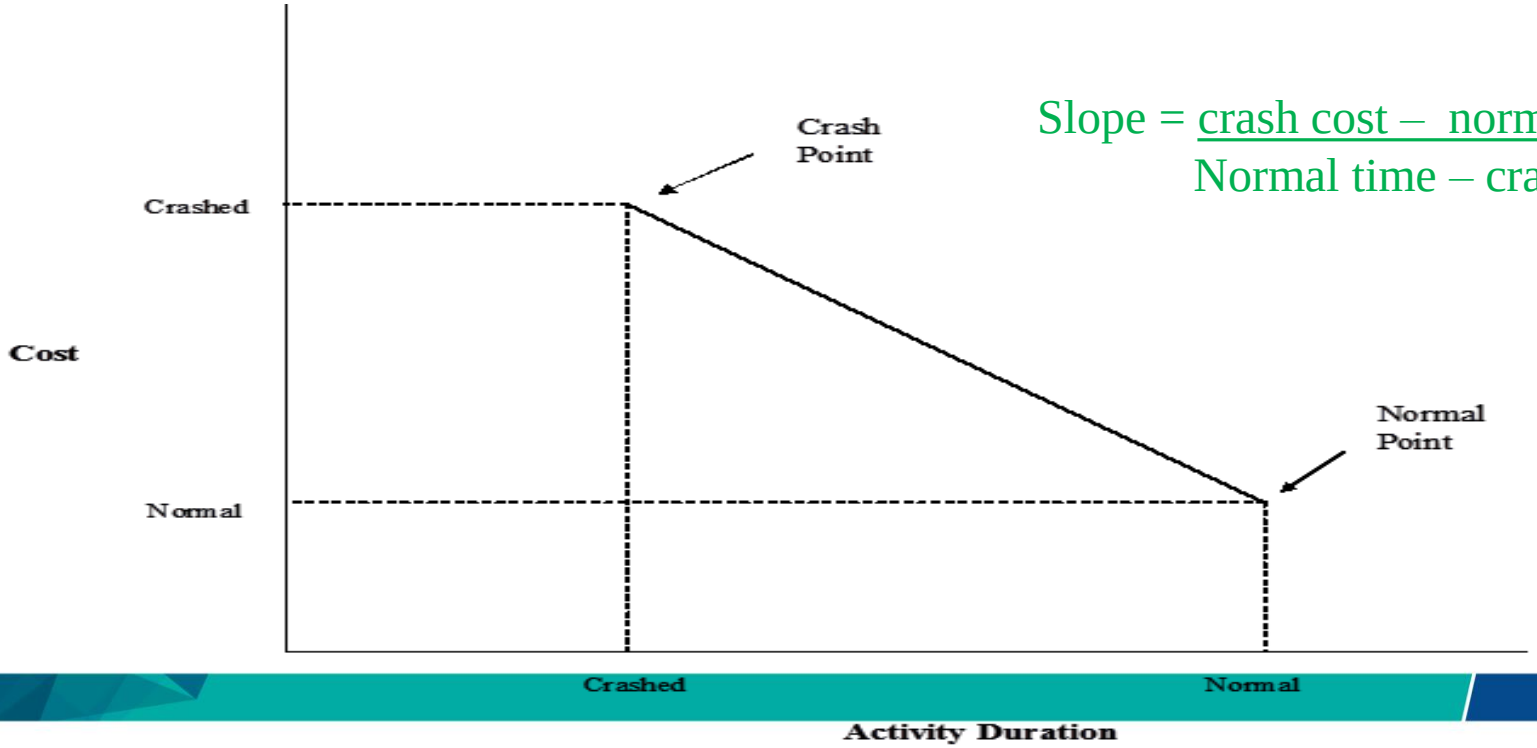
Project crashing

Reasons for crashing:

1. The initial scheduling is too aggressive.
2. Market suddenly changed and the project is in demand earlier than anticipated.
3. The project was behind the schedule.
4. The contractual situation provides even more incentive to avoid schedule slippage.

To determine the usefulness of crashing project activities, we must first be able to determine the actual cost associated with each activity in the project. Let us assume that we have reasonable method to estimating the total cost of project activities, both in terms of their normal time and under crashed alternative.

Figure 1 illustrates the relationship between activity costs and duration. Note that the normal length of the duration for an activity reflects a calculated resource cost in order to accomplish that task.



$$\text{Slope} = \frac{\text{crash cost} - \text{normal cost}}{\text{Normal time} - \text{crash time}}$$

EXAMPLE

Let say a project has eight activities, as illustrated in table below with estimated normal activity duration and costs and crashed duration and costs. We wish to determine which activity are the optimal candidate for crashing.

	Normal		Crashed	
Activity	Duration (days)	Cost (RM)	Duration (days)	Cost (RM)
A	5	1,000	3	1,500
B	7	700	6	1,000
C	3	2,500	2	4,000
D	5	1,500	5	1,500
E	9	3,750	6	9,000
F	4	1,600	3	2,500
G	6	2,400	4	3,000
H	8	9,000	5	15,000

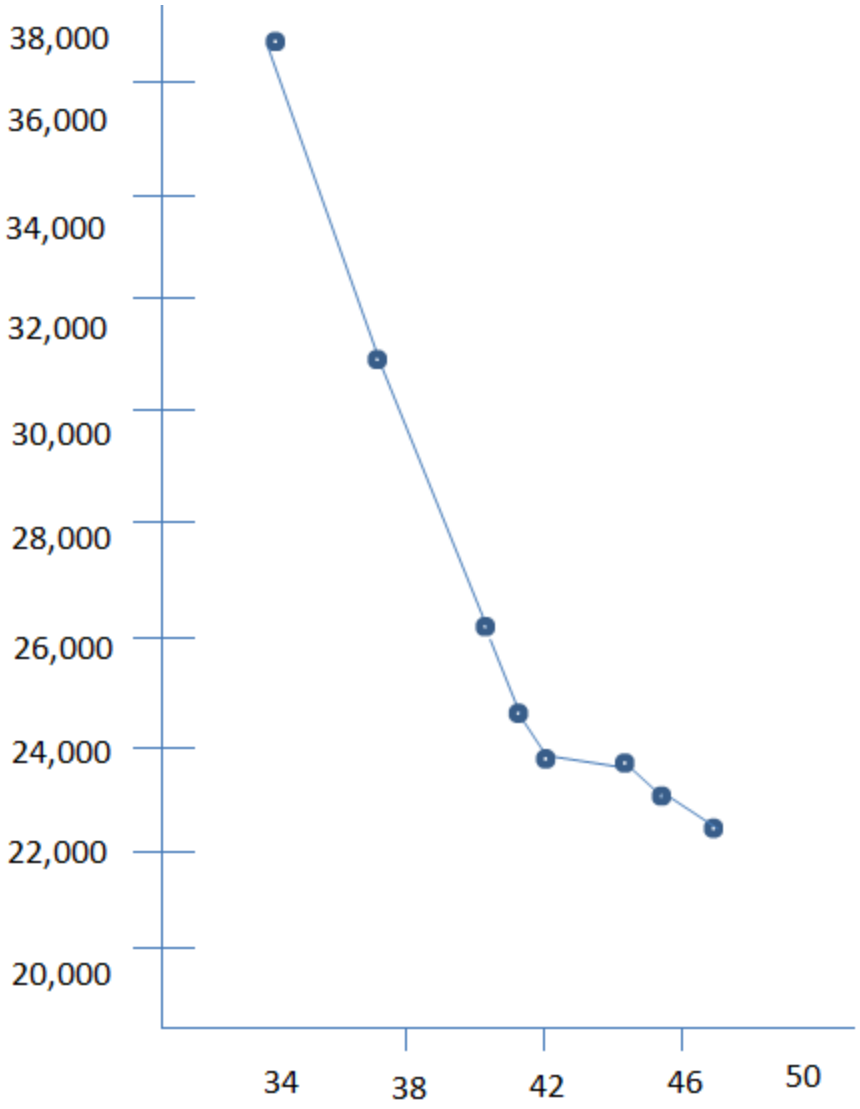
Use the formula provided earlier to calculate the per-unit costs for each activity. These costs are shown in Table 2.

The calculations suggest that the least expensive activities to crash would be first, activity A, followed by B and G. On other hand, the project would incur the greatest cost increases through crashing activities H, E and C. Note that in this example, we are assuming that activity D cannot be shortened, so no crashing cost can be calculated for it.

Activity	Crashing cost (per day)
A	250
B	300
C	1,500
D	-
E	1,750
F	900
G	300
H	2,000

Let us assume that all activities are considered to be on the critical path. We can determine that the initial project cost, using normal activity duration, is RM22,450. Crashing activity A (lowest at RM250) by 1 day will increase the project budget from RM22,450 to 22,700. Fully crashing activity A will shorten the project duration to 45 days while increase the cost to RM22,950. Activities B and G are the next candidates for crashing at RM300 per each day. The total project costs by project duration shown in Table 3. Figure 2 illustrates the relationship between activity costs and duration saved in a crashed project activities.

Activity Crashed	Duration (days)	Total Cost ($)
none crashed	47	22,450
A crashed	45	22,950
A + B crashed	44	23,250
A + B + G crashed	42	23,850
A + B + G + F crashed	41	24,750
A + B + G + F + C crashed	40	26,250
A + B + G + F + C + E crashed	37	31,500
A + B + G + F + C + E + H crashed	34	37,500



Remember !!!

All activities are on the critical path. All point are economically viable to continue crashing project activities.

Conclusion

- Conclusion #1
  - Students are able to expedite the project when necessary.

Project Management

Lecture 8

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