Network Crashing Example2

You are managing a construction project with the following activities on the critical path:
Activities: X → Y → Z

Activity	Normal Time(Days)	Crash Time(Days)	Normal Cost($)	Crash Cost($)
X	6	4	1200	1600
Y	8	6	1800	2100
Z	10	8	2500	3100

Goal:

Reduce total project duration by **3 days**, with **minimum cost**.

Step 1: Calculate Crash Cost per Day

Using the formula:

Crash Cost per Day=(Crash Cost−Normal Cost)/(Normal Time-Crash Time)

Activity	Crash Cost per Day
X	(1600 - 1200) / (6 - 4) = **200**
Y	(2100 - 1800) / (8 - 6) = **150**
Z	(3100 - 2500) / (10 - 8) = **300**

Step 2: Select Activities to Crash (cheapest first)

- Start with **Activity Y (cheapest crash cost: $150/day)** → Reduce by 2 days
    - Cost = 2 × $150 = **$300**
- Then crash **Activity X (next cheapest: $200/day)** → Reduce by 1 day
    - Cost = 1 × $200 = **$200**

- **Final Summary:**

	Before Crashing	**After Crashing**
X	6 days	5 days
Y	8 days	6 days
Z	10 days	10 days
Total Duration	6 + 8 + 10 = **24 days**	5 + 6 + 10 = **21 days**
Time Saved	—	**3 days**
Total Extra Cost	—	**$500**

By crashing the **cheapest activities on the critical path**, we reduced the project duration by **3 days** at a cost of **$500**. Activities with higher crash cost (like Z) are avoided to save money.