

Problem 2

Table 8-8 shows the information related to a project that involves the merger of two marketing firms (in days).

Table 8-8 Data for Solved Problem 2

Activity	Immediate predecessor(s)	Estimated duration(days)
A	—	10
B	—	15
C	A	5
D	B	12
E	C, D	14
F	B	8
G	D, F	15
H	E	10
I	E, G	6
J	F, I	9

Solution

- The project network is shown in Figure 8-11.
- The project schedule is as follows:

Activity	Earliest Start	Latest Start	Earliest Finish	Latest Finish	Slack
Start	0	0	0	0	0
A	0	13	10	23	13
B	0	0	15	15	0
C	10	23	15	28	13
D	15	15	27	27	0
E	27	28	41	42	1
F	15	19	23	27	4
G	27	27	42	42	0
H	41	47	51	57	6
I	42	42	48	48	0
J	48	48	57	57	0
Finish	57	57	57	57	0

- Draw the project network.
 - Develop the project schedule (EST, EFT, LST, LFT).
 - What are the critical activities?
 - What is the project completion duration?
 - If there is an option to delay one activity without delaying the entire merge project, which activity would you delay and why?
 - Formulate the LP model that would determine the earliest start times of activities.
- The critical activities are: B-D-G-I-J
 - The project completion duration is 57 days.
 - Activity A or C since they have the largest slack times.
 - The LP formulation of the model is as follows, where X_j = earliest start time for activity $j = A, B, C, D, E, F, G, H, I,$ and J .

$$\text{minimize } Z = X_A + X_B + X_C + X_D + X_E + X_F + X_G + X_H + X_I + X_J$$

FIGURE 8-11

Network for Solved Problem 2

