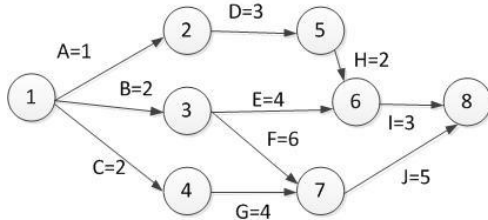


Comp313 - Project Management

Exercise 5

Please answer the following question

1. Calculate the critical path based on the network diagram shown below?



$$ADHI = 1+3+2+3 = 9$$

$$BEI = 2+4+3 = 9$$

$$BFJ = 2+6+5 = 13$$

$$CGJ = 2+4+5 = 11$$

The critical path is BFJ which has a duration of 13 days.

2. What is PERT? According to past experiences and expert judgment, this kind of project may take 5 working days to complete at fastest; 20 working days at a pessimistic estimate; and most likely to be 9 days. Calculate the PERT weighted average.

(find the answers in lecture note)

$$\begin{aligned} & (5 + 4 \times 9 + 20) / 6 \\ & = 61/6 \\ & = 10.2 \text{ days} \end{aligned}$$

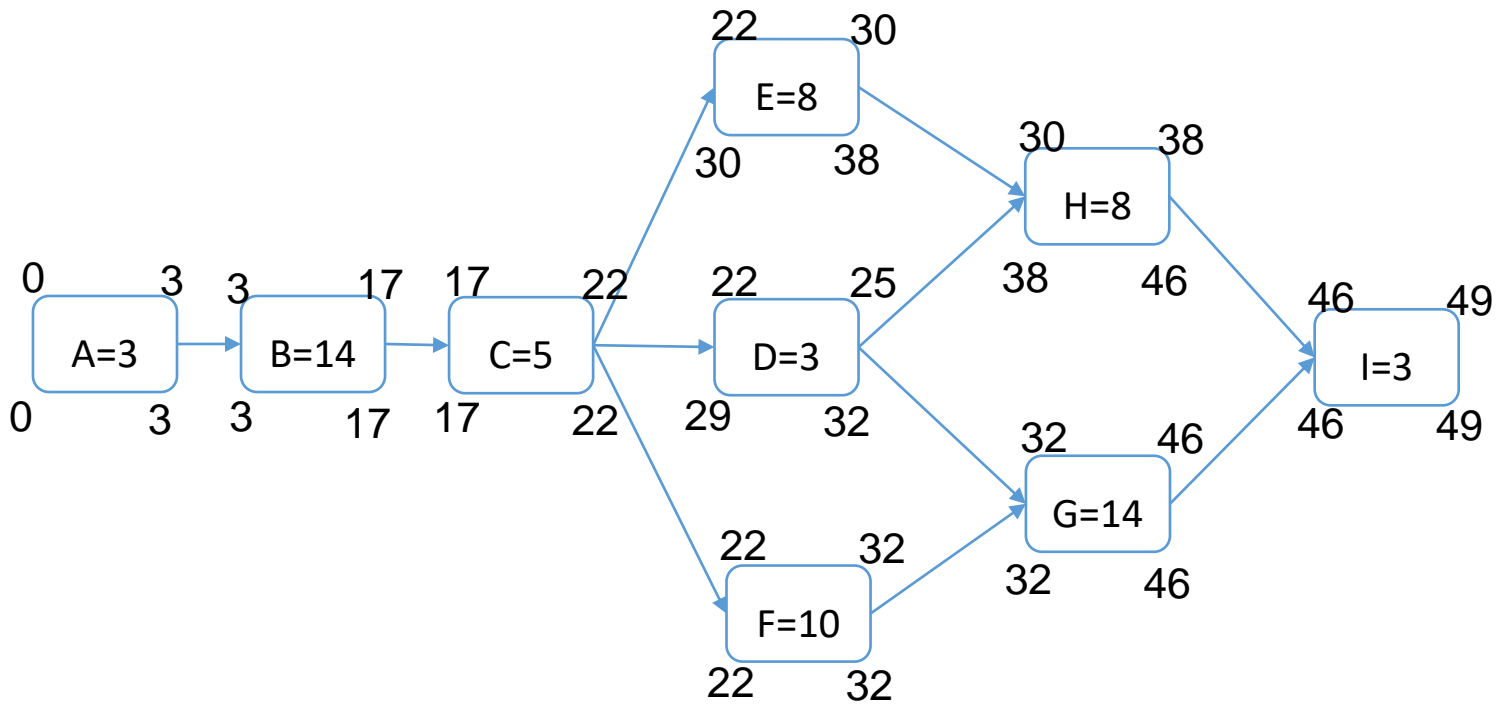
3. Draw PDM network diagram to describe the dependencies of the activities as below:

Activity	Description	duration	predecessor
A	Collecting user requirements	3	
B	Writing requirement specification	14	A
C	High level architectural design	5	B
D	Database design	3	C
E	Interface design	8	C
F	Module design	10	C
G	Coding (Modules 1, 2) + Unit testing	14	D, F
H	Coding (Modules 3) + Unit testing	8	D, E
I	User Acceptance Test	3	G, H

How many days the project needs to take in total?

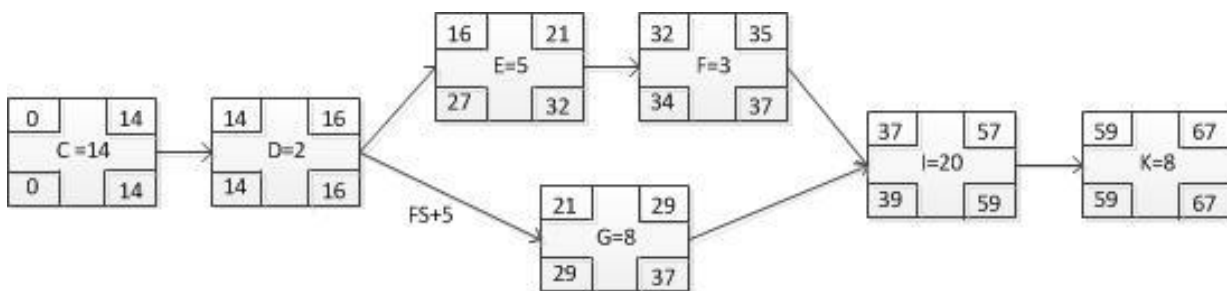
49 days

Use *Forward pass* and *Backward pass* to determine the late starts and late finishes for all the activities in the PDM.



4. Determine the Total Slacks and Free Slacks for the following activities C,D,E,F,G,I,K.

Activity	Free slack	Total slack
C	0	0
D	0	8
E	11	13
F	2	4
G	8	10
I	2	2
K	0	0



5. When the project needs to rush for a completeness to an earlier date without changing the scope, you need to speed up the process through either Fast-tracking or Crashing methods. How do they manage to expedite the project? Compare the two in terms of their pros and cons.

Fast-tracking method involves overlapping activities which were originally planned to be done in sequence, whereas Crashing involves reallocating existing resources or assigning additional resources to the project.

Fast-tracking expedites the process without increasing costs, but resulting in lower quality and higher risk.

Crashing expedites the process by increasing the cost without compromising the quality and risk.

6. Describe all the types of dependencies.

There are a series of activities. Show the dependencies between the activities.

I am now planning a trip to the US from Macao. I will do the following:

- a) Buy a flight ticket online
- b) Buy travel issuance
- c) Apply leave (may not be approved)
- d) Book hotel rooms
- e) Apply a credit card
- f) Apply a US visa

- Mandatory dependency - inherent in the nature of the work being performed on a project, sometimes referred to as hard logic.

- Discretionary dependency - defined by the project team; sometimes referred to as soft logic

- External dependency - involve relationships between project and non-project activities.

<The other part of the answer is not provided.>

7. What does the Schedule Baselines contain? What is the purpose of it?

Schedule baseline contains Gantt Charts, Schedule network diagram and Milestone list.

It is used as a reference or criteria for controlling the schedule of a project.