

## Forward & Backwards Scanning

### Network Example

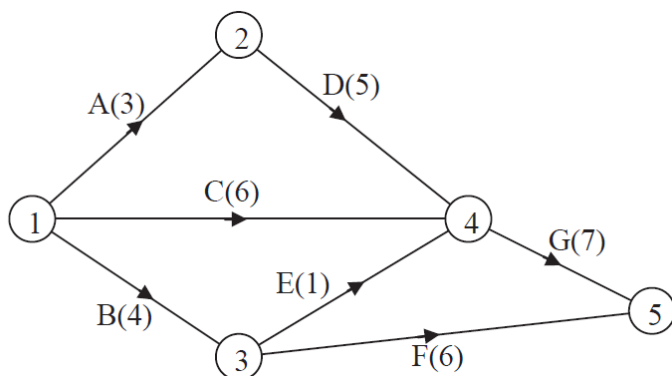
A graph where direction is indicated for every edge is called a directed graph. A **network** is a **connected directed graph with no loops**.

#### Example.1

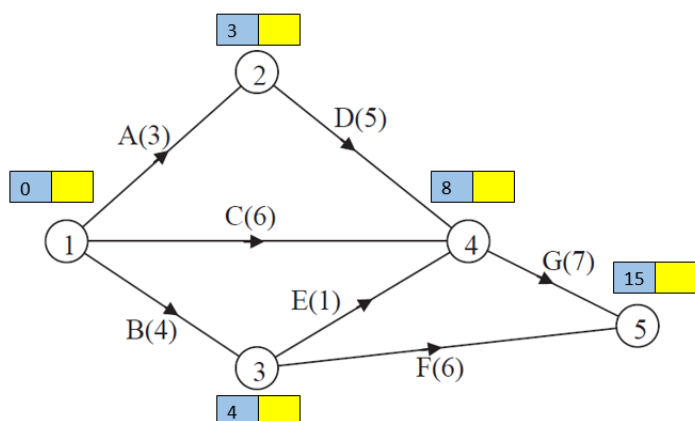
Consider the following **activity chart**:

Activity	Duration (hours)	Immediate predecessors
A	3	-
B	4	-
C	6	-
D	5	A
E	1	B
F	6	B
G	7	C, D, E

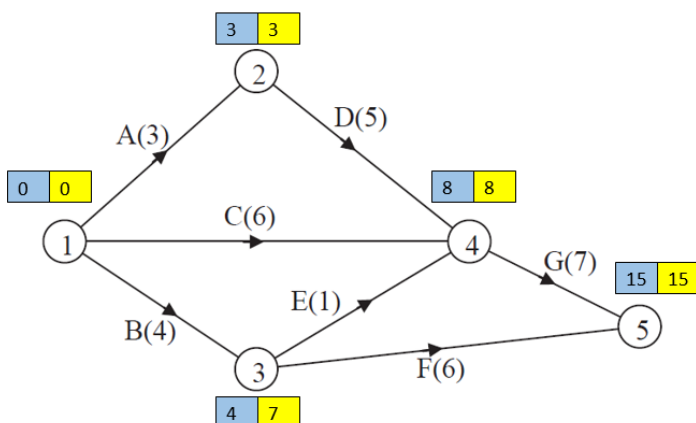
**Task.1** Construct a **network diagram**.



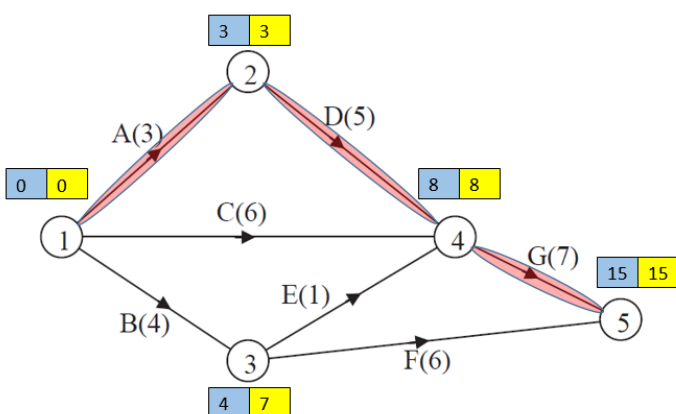
**Task.2** Perform a **forward scan** of the network diagram.



**Task.3** Perform a **backwards scan** of the network diagram.



**Task.4** Identify the **critical path** within the network diagram.



The critical path for this network is **A - D - G**

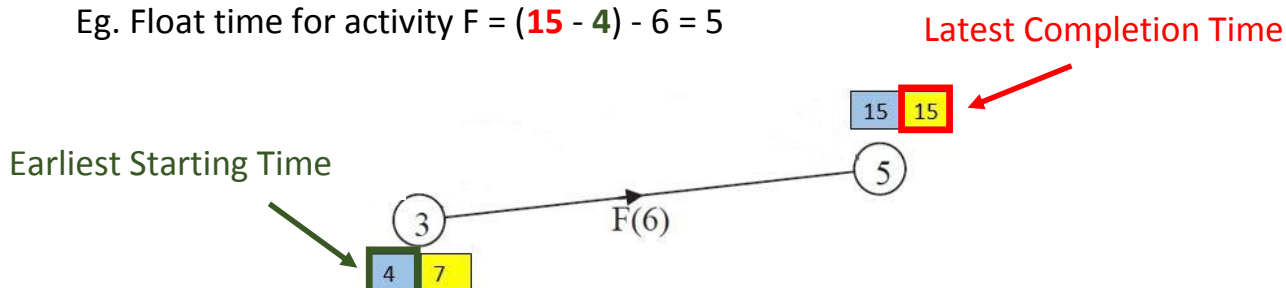
**Task.5** Determine the **float** for each of the above activities.

**NB:** **Float** is the **spare time** associated with an activity.

Step 1 Subtract the earliest starting time for an activity from its latest completion time

Step 2 Subtract the activity duration from the previous value calculated

Eg. Float time for activity F = (15 - 4) - 6 = 5



Activity	Latest Completion Time	Earliest Starting Time	Activity Duration	Float
A	3	0	3	$(3-0)-3 = 0$
B	7	0	4	$(7-0)-4 = 3$
C	8	0	6	$(8-0)-6 = 2$
D	8	3	5	$(8-3)-5 = 0$
E	8	4	1	$(8-4)-1 = 3$
F	15	4	6	$(15-4)-6 = 5$
G	15	8	7	$(15-8)-7 = 0$

**NB:** Activities A, D and G form the critical path and all have a float time of 0.