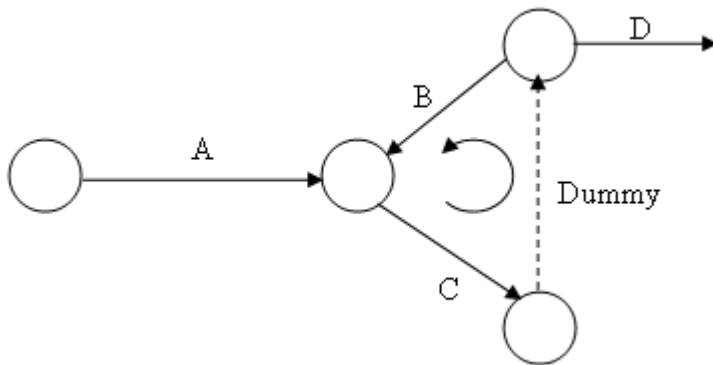
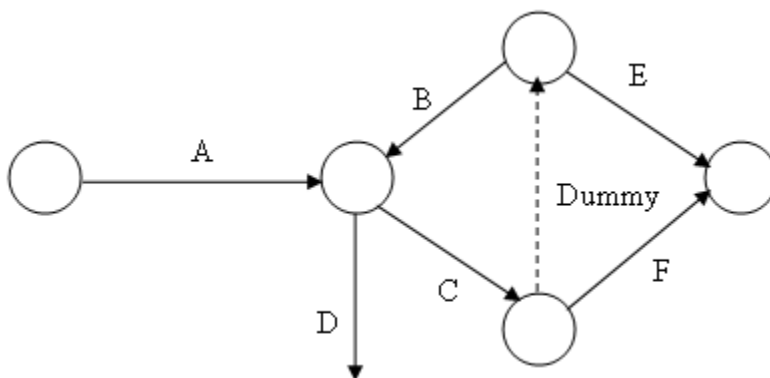


Following are the three common errors in a network construction:

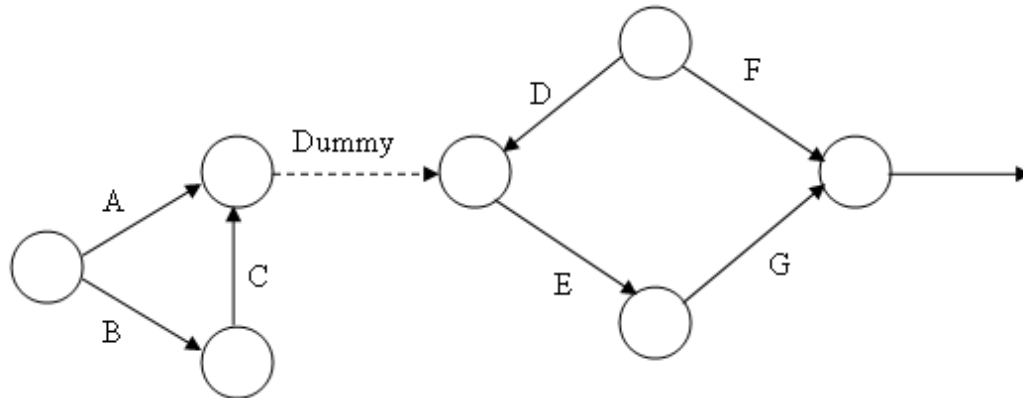
Looping (cycling) In a network diagram looping error is also known as cycling error. Drawing an endless loop in a network is known as error of looping. A loop can be formed if an activity were represented as going back in line.



Dangling To disconnect an activity before the completion of all the activities in a network diagram is known as Dangling.



Redundancy If a dummy activity is the only activity emanating from an event and which can be eliminated is known as redundancy.



Numbering the Events

After the network is drawn in a logical sequence every event is assigned a number. The number sequence must be such so as to reflect the flow of the network. In numbering the events the following rules should be observed.

- (i) Event numbers should be unique.
- (ii) Event numbering should be carried out on a sequential basis from left to right.
- (iii) The initial event which has all outgoing arrows with no incoming arrow is numbered as 1.
- (iv) Delete all arrows emerging from all the numbered events. This will create at least one new start event out of the preceding events.
- (v) Number all new start events 2,3 and so on. Repeat this process until all the terminal event without any successor activity is reached, number the terminal node suitably.

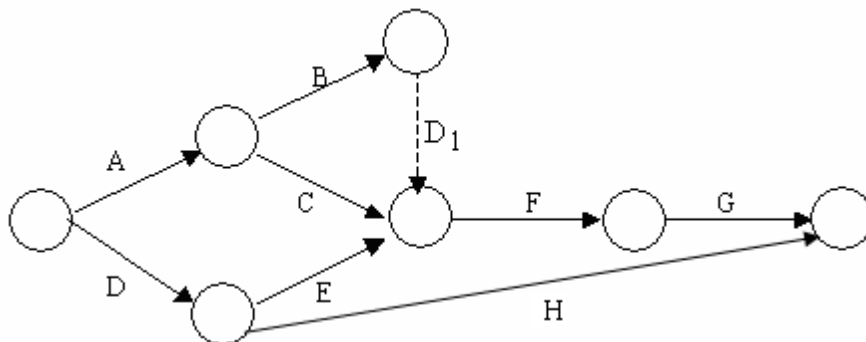
Note: The head of an arrow should always bear a number higher than the one assigned to the tail of the arrow.

EXAMPLE4 : Construct a network for the project whose activities and their precedence relationships

are as given in table :

Activities	A	B	C	D	E	F	G	H	I
Immediate-Predecessor	—	A	A	—	D	B,C,E	F	D	G,H

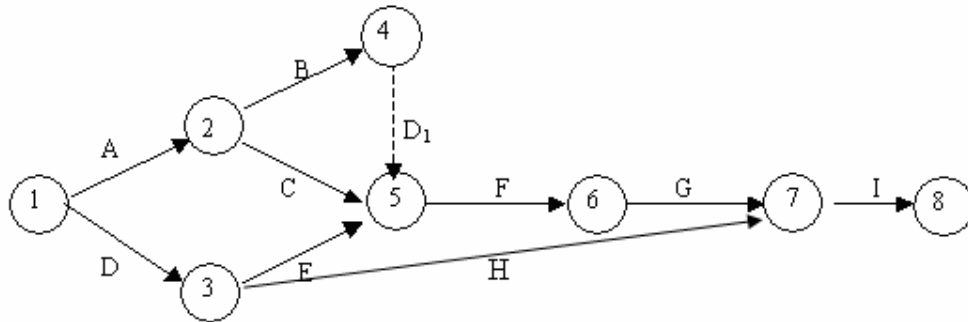
Solution From the given constraints, it is clear that A, D are the starting activity and I the terminal activity. B, C are starting with the same event and are both the predecessors of the activity F. Also E has to be the predecessor of F. Hence, we have to introduce a dummy activity:



D₁ is the dummy activity.
 Finally we have the following network.

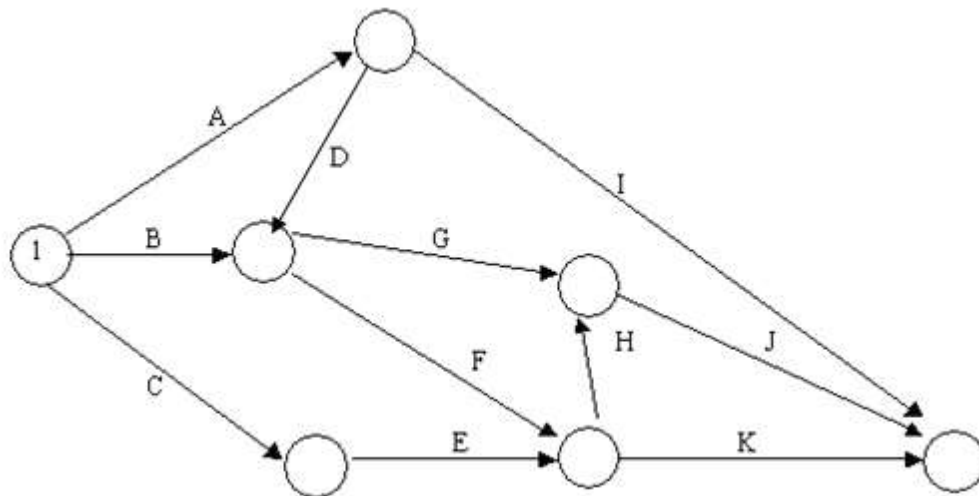


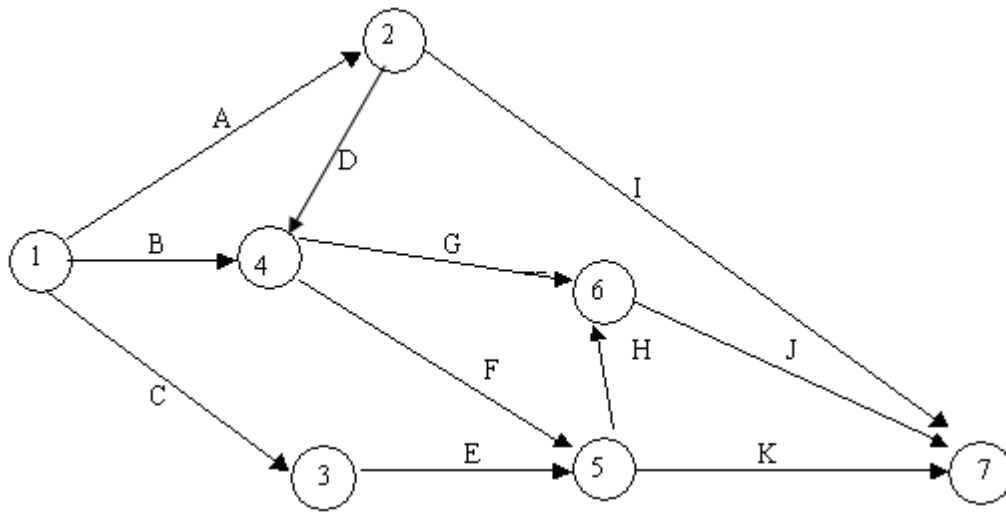
المحاضرة (٢+٣)



EXAMPLE 5 : Construct a network for the project whose activities and their precedence relationships are as given in Table.2.

Activities	A	B	C	D	E	F	G	H	I	J	K
Immediate-Predecessor	—	—	—	A	C	B,D	B,D	E,F	A	G,H	E,F





TIME ANALYSIS

Once the network of a project is constructed the time analysis of the network becomes essential for planning various activities of the project. An activity time is a forecast of the time an activity is expected to take from its starting point to its completion (under normal conditions).

We shall use the following notation for basic scheduling computations.

(i, j) = Activity (i, j) with tail event i and head event j

T_{ij} = Estimated completion time of activity (i, j)

ES_{ij} = Earliest starting time of activity (i, j)

EF_{ij} = Earliest finishing time of activity (i, j)

$(LS)_{ij}$ = Latest starting time of activity (i, j)

$(LF)_{ij}$ = Latest finishing time of activity (i, j)

الجدولة باستخدام اوقات الفعاليه ;

الهدف من الجدولة (scheduling) لاي مشروع هو اعطاء متخذ القرار (Decision Maker) مختلف المعلومات منها ما هو متعلق بالمشروع ككل ومنها ما هو متعلق بالفعاليات المكونه للمشروع وللحصول على المعلومات هناك هناك العديد من العمليات الحسابيه التي يجب تطبيقها على المخطط بعد انتهائه

١- على صعيد المشروع

١- متى سينتهي المشروع كاملاً

ب- ماهي النشاطات الحرجة (Critical Activities) - اي التي تؤثر على نهاية المشروع في حالة تأخرها - وبالتالي يجب احرص على زمن بداية ونهاية هذه الفعاليات

ج- الفعاليات (النشاطات) غير حرجية / اي التي لا تؤثر في نهاية المشروع

تأثيرها لو تأخرت بمقدار زمني معين يتم تحديده

د- في تاريخ زمني محدد هل ينتهي مشروع حسب امددة امددة وفي حالة تأخر مشروع ، ماهي قيمة هذه الفترة الزمنية .

٢- على صعيد الفعاليات

١- اعطاء الزمن لبدء اي فعالية وزمن الانتهاء

٢- بيان لتواريخ التي يمكن ان يسمح لفايتها تاجيل بدايه اي فعالية من خلال حساب قيم ابرونه (Float) لتلك الفعالية

الاقوات الاربعه للفعاليات

Earliest start time (EST) وقتة لبدايه العمل : وهو ابر وقت

للاستعداد فعالية ما بدون مخالفة لفعاليات التي تسبقه . لا يمكن للفعالية ان تبدأ قبل الوقت .

Earliest Finish Time (EFT) وقتة لنهايه العمل : هو ابر وقت

يمكن ان ينتهي عنده لفعالية اذا بدأ في وقت لبدايه العمل . لا يمكن ان تنتهي الفعالية قبل هذا الوقت

Latest Finish Time (LFT) وقتة لنهايه العمل : هو ابر وقت

يمكن ان تنتهي عنده لفعالية دون ان يؤدي في تأخير مشروع ككل