Bar Chart
Bar charts

- In 1917 Henry Gantt developed a method of relating a list of activities to a time scale. Bar charts are simple representation that show how major work activities are scheduled.

- The widespread use of bar charts can be attributed to the ease and its advantages:
  - allows one to grasp schedule information quickly and easily.

Time-scaled
Some times bar charts fail to provide the type of information that is often so valuable for planning and scheduling so the disadvantages of bar charts are:

- Don’t show clear dependencies between activities.
- The actual status of the project cannot be readily determined.
There are two other network modeling technique that were developed independently, but simultaneously:

1- the critical path method (CPM)

2- program evaluation and review technique (PERT)
Critical path method

- In this technique, each activity is assigned a specific duration, and calculations, specific duration for the project as a whole.

- When reviewing CPM data, it is important to recognize the distinction between duration and event.
Some definitions about CPM

- An event: is the point in time or an instant at which the status of completion of project or activity can be defined.

- Starting time: it is the point in time at which an activity can begin.

- CPM’s: those chains of activities in the project that control how long the project will take.
There are two variations of CPM:

1- the traditional technique called Activity-on-Arrow (A-on-A) ➔ arrow diagram.

2- Activity-on-node (A-on-N) referred to as the precedence diagram.
The major difference between the approaches is that PERT assumes that an activity’s duration cannot be precisely predetermined.

It requires the planner to specify three separate duration for each activity:

1- the most likely
2- the optimistic.
3- the pessimistic duration estimates
Work breakdown structure

- The work breakdown structure is a convenient way to group activities in a rational manner into work packages.

- In other words, the work breakdown structure divides and subdivides a project into different components.
Reasons for planning and scheduling in construction

- Examine the trade-off between the time and cost required to carry out a project.

- Monitoring and control the project.