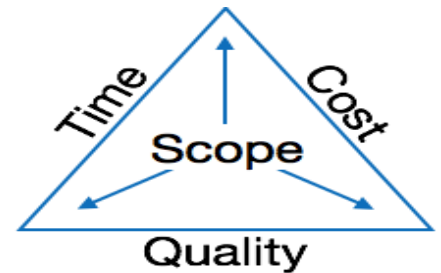# Chapter six

Software project management and quality Assurance

6.1 Software project management

A Software Project is the complete procedure of software development from requirement gathering to testing and maintenance, carried out according to the execution methodologies, in a specified period of time and within budget to achieve intended software product.

Software project management includes many management activities: project planning, project scheduling, risk management, managing people, software cost estimation and quality management.

A **software project manager** is a person who is responsible for control and management all activates involved in producing a software product through all phases of SDLC.

6.2 project planning

The objective of software project planning is to provide a framework that enables the manager to make reasonable estimates of resources, cost, and schedule. These estimates are made within a limited time frame at the beginning of a software project and should be updated regularly as the project progresses. estimates should define best-case and worst-case scenarios so that project outcomes.

6.3 Project Risk Management

Risk management involves all activities pertaining to identification, analyzing and making provision for predictable and non-predictable risks in the project. Risk may include the following:

تنطوي إدارة المخاطر على جميع الأنشطة المتعلقة بتحديد المخاطر التي يمكن التنبؤ بها والتي لا يمكن التنبؤ بها في المشروع وتحليلها

☐ Experienced staff leaving the project and new staff coming in. ☐ Change in organizational management. ☐ Requirement change or misinterpreting requirement. ☐ Under-estimation of required time and resources. ☐ Technological changes, environmental changes, business competition.

There are following activities involved in risk management process:

- ➢ Identification- by note it
- ➢ Categorize - high, medium or low risk intensity.
- ➢ Manage - Make plan to avoid or face risks.
- ➢ Monitor - monitor the potential risks.

6.4 Software Quality Assurance (SQA)

The goal of quality assurance is to provide management with the data necessary to be informed about product quality. SQA consist of auditing and reporting functions of management.

الهدف من ضمان الجودة هو تزويد الإدارة بالبيانات اللازمة لإبلاغها بجودة المنتج. تتكون SQA من وظائف التدقيق وإعداد التقارير للإدارة.
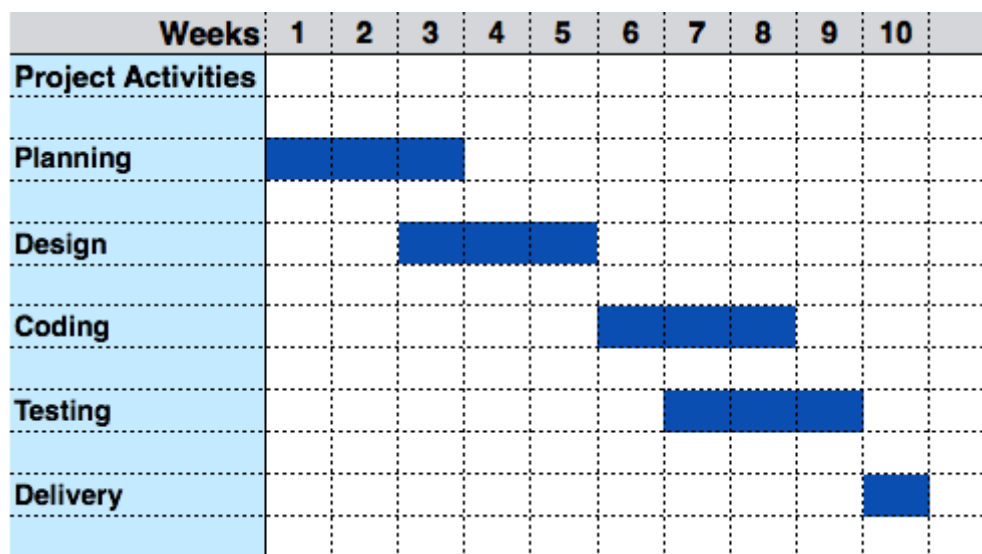
Quality assurance criteria involves:- correctness, efficiency, flexibility, interoperability, maintainability, portability, reliability, usability

6.5 Project management tools

The risk and uncertainty rises multifold بعدة اضعاف with respect to the size of the project, There are tools available for effective project management.
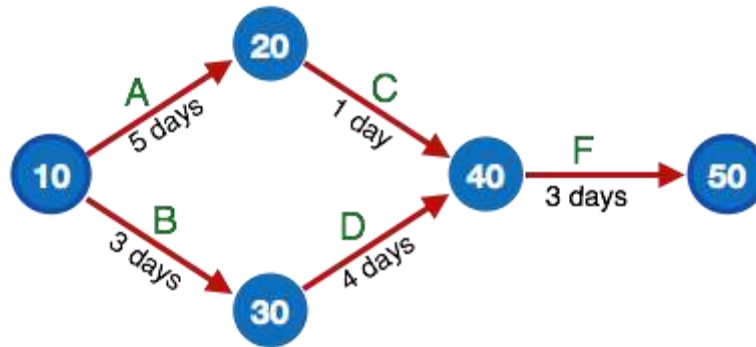
a) Gantt Chart

It represents project schedule with respect to time periods. It is a horizontal bar chart with bars representing activities and time scheduled for the project activities.

b) PERT Chart

PERT (Program Evaluation & Review Technique) chart is a tool that depicts project as network diagram. It is capable of graphically representing main events of project in both parallel and consecutive way. Events, which occur one after another, show dependency of the later event over the previous one.

أداة تصور المشروع على أنه مخطط شبكة. إنه قادر على تمثيل الأحداث event الرئيسية للمشروع بيانيا بطريقة متوازية ومتتالية. حيث تظهر اعتمادية ال event التالي على ال event السابق

Events are shown as numbered nodes. They are connected by labeled arrows depicting sequence of tasks in the project.

c) Resource Histogram

This is a graphical tool that contains bar or chart representing number of resources (usually skilled staff) required over time for a project event (or phase). Resource Histogram is an effective tool for staff planning and coordination.

Staff	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Designer	4	4	3	3	2	2	1
Developer	0	0	1	2	4	4	3
Tester	0	0	0	0	2	2	2
Total	4	4	4	5	8	8	6