**Cloud Computing**

Cloud computing is evolved from grid computing and clustering computing. Cloud computing aims at providing computation over internet. Cloud computing depends on upon a technology called the virtualization technology for dynamic creation and provisioning of computing resources.

**The terms from the definition of Cloud Computing:**

**Ubiquitous:** The thing that is available everywhere.

**Convenient:** The thing that can be access or receive easily.

**On-demand Network Access:** Can be access through the network when required without needing to manage physical infrastructure.

**Shared pool of Configurable computing resources:** A store of shared computing resources that can be configured. (That are shared by many people).

**Rapidly provisioned and released:** Can be given (when required) and released (when the work is finished) soon and easily.

**Minimal Management Effort or Service provider interaction:** There must be low interaction from the service provider. They must manage it less.

**Brief History of Cloud Computing**

Computer Scientist John McCarthy is attributed with delivering the idea that computations will be provisioned as utilities in future. This idea was presented in 1961.

In 1960s and 1970s the mainframe computers were leased out by the manufacturers.

The idea of grid computing emerged in 1990s, to use the processing power of networked pcs for scientific calculations during idle times.

In the 1990s (1999) the Salesforce.com started bringing remotely provisioned software services to the enterprisers.

Amazon Web Services (AWS) were launched in 2002.

In 2006, the term “Cloud Computing” emerged that enabled organizations to lease the computing capacity and processing power from the cloud providers.

Cluster Computing: A computer cluster is a collection interconnected standalone computers which cooperate together to work as a single resource pool of computing resources.

**Software Project Management**

**Management Activities**

1. **Planning:** It should clearly describe all the resources, time and budget that are required for the project.
2. **Organizing:** You will see and check the available resources and look forward what other additional resources are required. Check the competence, compatibility and capability as they can meet our requirements. You may require to replace or add some more resources.
3. **Staffing:** It is very necessary. You should select the right people for the right job. If you select the right people for the job, your job has been done by 50%.
4. **Directing:** If the project is long term and the outputs are versatile in nature, that nature required some guidance. As a project manager, you are responsible that what kind of guidance and directions are required to be given.
5. **Monitoring:** When decide, organize and put staff to start the activities, as a project manager you must monitor the progress of the project to ensure that the project will complete within the time, budget and resources.
6. **Controlling:** When the project start some unseen problems may occur, which may technologies, input/output problem etc... As a project manager you must control these problems which stop the progress of the project.
7. **Innovating:** Some new technologies may be used that were not used in the previous project, so as a project manager you must be careful about the new technologies and check these before use. Innovations are encouraged.
8. **Representing:** You must contact with users of the system or product. You must ensure that the facility or product you develop is according to the requirements.

**Project**

It is a planned activity. It must be unique. It must have aim, task and purpose. It is limited time scale, even if the project is complex and versatile. It is progressive elaboration. It means that the project is developing thoroughly in steps and continuing steadily by increments. Longer delays, jump from one activity to another must be lower as possible.

Software project is not visible.

Software Project Dimensions

People: You must select the right people for the project.

1. Principles of Staffing A Project

* Top Talent
* Job Matching: The people must have the suitable jobs. No one can do all the thing. So job matching is very important.
* Career Progression:
* Team Balance: The team must be balance.

1. Team Organization:

* Important who works with whom:

1. Motivation

* Bad motivation, bad outcomes, less work

**Process:**

1. Rework Avoidance: Rework waste the time, resources and budget.
2. Quality Assurance: That the software does not lose its significance and quality.
3. Development Fundamentals: Develop the same thing with a fewer people, less budget, and less time. If you have the same thing before, then use the lesser resources to develop the same thing.
4. Risk Management: Identify the risk and find solutions for the risks.
5. Resource Targeting: All the resources must be available to right people at the right time with required quantity.
6. Customer Orientation: You must develop the thing that the user wants. Strong focus on customer’s needs and desires.

Product and Technology

1. 80/20 – Rule: When you develop the product, you list the key features of the product.
2. Product Size:
3. Product Characteristics: The quality of the product must be maintain.

**Discrete Mathematics**

Discrete Mathematics is important to survive in subjects like compiler design, database, operating system, automata theory, computer security etc.

Discrete mathematics is the study of discrete objects. Discrete means distinct or not connected.