**Practical No 1:**

Aim: Study of Cloud computing & Architecture

**Cloud Computing:**

* Cloud computing is a general term for anything that involves delivering hosted services over the Internet.
* These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS).
* The name cloud computing was inspired by the cloud symbol that's often used to represent the Internet in flowcharts and diagrams
* Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources through a cloud services platform via the internet with pay-as-you-go pricing.

**Cloud Computing Basics**

* Whether we are running applications that share photos to millions of mobile users or you’re supporting the critical operations of your business, a cloud services platform provides rapid access to flexible and low cost IT resources.
* With cloud computing, you don’t need to make large upfront investments in hardware and spend a lot of time on the heavy lifting of managing that hardware.
* Instead, you can provision exactly the right type and size of computing resources you need to power your newest bright idea or operate your IT department. You can access as many resources as you need, almost instantly, and only pay for what you use.

## How Does Cloud Computing Work?

* Cloud computing provides a simple way to access servers, storage, databases and a broad set of application services over the Internet.
* A Cloud services platform such as Amazon Web Services owns and maintains the network-connected hardware required for these application services, while you provision and use what you need via a web application.

## Advantages and Benefits of Cloud Computing

### **Trade capital expense for variable expense**

Instead of having to invest heavily in data centers and servers before you know how you’re going to use them, you can only pay when you consume computing resources, and only pay for how much you consume.

* **Benefit from massive economies of scale**

By using cloud computing, you can achieve a lower variable cost than you can get on your own. Because usage from hundreds of thousands of customers are aggregated in the cloud, providers such as Amazon Web Services can achieve higher economies of scale which translates into lower pay as you go prices.

### **Stop guessing capacity**

Eliminate guessing on your infrastructure capacity needs. When you make a capacity decision prior to deploying an application, you often either end up sitting on expensive idle resources or dealing with limited capacity. With cloud computing, these problems go away. You can access as much or as little as you need, and scale up and down as required with only a few minutes notice.

### **Increase speed and agility**

In a cloud computing environment, new IT resources are only ever a click away, which means you reduce the time it takes to make those resources available to your developers from weeks to just minutes. This results in a dramatic increase in agility for the organization, since the cost and time it takes to experiment and develop is significantly lower.

### **Stop spending money on running and maintaining data centers**

Focus on projects that differentiate your business, not the infrastructure. Cloud computing lets you focus on your own customers, rather than on the heavy lifting of racking, stacking and powering servers.

### **Go global in minutes**

Easily deploy your application in multiple regions around the world with just a few clicks. This means you can provide a lower latency and better experience for your customers simply and at minimal cost.