IIT-R Session on Cloud Computing

Cloud Computing vs Traditional on-premise computing:

Cloud computing and traditional on-premise computing are two different models for delivering information technology services. Some key differences between the two include:

- Infrastructure: Cloud computing relies on remote servers, while traditional on-premise computing uses local servers and hardware that are physically located at the business.

- Accessibility: Cloud computing allows for remote access to data and applications from any device with an internet connection, while traditional on-premise computing requires users to be physically present in the office to access the data and applications.

- Scalability: Cloud computing is highly scalable, allowing businesses to quickly and easily add or remove resources as needed. On-premise computing can be more difficult to scale, as it requires businesses to purchase and maintain additional hardware.

- Cost: Cloud computing can be more cost-effective, as businesses only pay for the resources they use and can avoid the upfront costs of buying and maintaining their own hardware and software. On-premise computing can be more expensive, as businesses are responsible for all of the costs associated with maintaining their own infrastructure.

- Maintenance: With cloud computing, the maintenance and management of the infrastructure is the responsibility of the cloud provider. With on-premise computing, the business is responsible for maintaining and managing their own infrastructure.

- Security: Both cloud computing and on-premise computing have security risks, but with cloud computing, the provider is responsible for maintaining the security of the infrastructure and data. With on-premise computing, the business is responsible for securing their own infrastructure and data.

Cloud computing can provide a number of benefits to businesses and individuals, including:

- Cost savings: By using cloud services, businesses can avoid the upfront costs of buying and maintaining their own hardware and software. Instead, they can pay for the resources they need on an as-needed basis.

- Scalability: Cloud resources can be easily scaled up or down to meet changing business needs, without the need to invest in additional hardware.

- Flexibility: With cloud computing, businesses can access their applications and data from anywhere, using any device with an internet connection.

- Collaboration: Cloud-based tools and services make it easy for teams to collaborate and share files, regardless of their location.

- Disaster recovery: Cloud providers often provide built-in disaster recovery options, allowing businesses to quickly restore their data and applications in the event of a disaster.

- Security: Cloud providers invest heavily in security measures to protect their clients' data, providing an added layer of security for businesses that may not have the resources to invest in their own.

- Innovation: Cloud computing enables businesses to focus on their core competencies, leaving the management and maintenance of IT infrastructure to the cloud provider. This allows businesses to innovate and focus on their own growth.

Course Structure of Cloud Computing:

1. Linux Essentials
2. Python Basics
3. Cloud Foundations:
    a. Deployment Models
    b. Virtual Machines vs Containers
    c. Why Cloud
    d. Traditional vs Cloud Infra
    e. Cloud Platforms:
        i. AWS
        ii. GCP
        iii. Azure

4. Containers:
    a. Container Basics
    b. System Containers
    c. Docker
    d. Kubernetes
5. AWS Core:
    a. AWS Organization and Identity Access Management
    b. Compute
    c. Storage
    d. Networking
6. AWS Advanced:
    a. Database Services:
        i. RDS
        ii. DynamoDB
    b. Elastic BeanStack
    c. Elastic Container Service
    d. Monitoring and Logging:
        i. CLoud Watch
        ii. Cloud Trail
    e. Notification Services:
        i. SNS - Simple Notification Service
        ii. SES - Simple Email Service
    f. Billing and Account Management
7. DevOps on AWS:
    a. CI/CD
    b. Deployment Pipeline:
        i. Code Pipeline
        ii. Code Deploy
    c. Infrastructure as Code:
        i. Terraform
        ii. Cloud Formation