UNIT 6 - FUTURE OF CLOUD COMPUTING

HOW THE CLOUD WILL CHANGE OPERATING SYSTEMS

- Cloud moves the OS focus from local hardware to virtual and cloud resources.
- Modern OS's are lightweight, modular, and scalable to work well in the cloud.
- Users mostly use web browsers, so the OS becomes less visible.
- Virtualization lets multiple OS run on one machine, saving resources.
- Future OS will include AI, edge computing, and support new tech like quantum processors.
- So cloud changes OS from big hardware-based systems to flexible, cloud-friendly platforms.

LOCATION-AWARE APPLICATIONS

use location to provide services

- A location aware application uses the geographical position of a device, user, or asset to provide relevant service or execution of specific task.
- These are apps that ~~we~~ use our device's location (GPS, WiFi, etc) to give personalised services. Common in maps, Uber, weather apps and delivery services.
- Components of LBS (Location Based Services):

1) Mobile Device - used by user to access location-aware service.
2) Content Provider - provides service based on users location.
3) Communication Network - transfers data betn mobile device & content provider.
4) Positioning Component - Determines exact location of user's device (GPS, WiFi, etc)

- How it Works: Position is detected through GPS, cell towers or WiFi → This data helps apps provide service based on users location.

Examples: Delivery tracking, Navigation & Routing (Google Maps), Government inspections, Geographical Information System (GIS) applications.

Advantages: Affordable (No extra hardware needed); works even when GPS isn't available; Helps create customized maps.

Services provided by LBS: Local content, Navigation, Search & explore locality, Advertisement, Tracking.

INTELLIGENT FABRIC

- Also called as electronic textiles, smart garment, smart clothing, smart textiles or smart fabric are textiles that have built-in technology to sense, react or communicate based on environmental conditions or user actions.
- Features: Sensing and Responding - detects change in environment & responds automatically (changing brightness, heating up)
  Integration of Electronics - incorporate sensors, batteries, chips etc into the fabric without compromising comfort or flexibility.
- Types: Active smart textile - sense and react to stimuli.
  Passive smart textile - monitors condition but don't respond.

- Applications : Health Monitoring - tracking heart rate and body temperature, useful for athletes, patients.
Wearable Technology - Fitness wear with embedded sensors, self heating jackets, and color changing fabrics for personalization.
Smart Homes and IoT - fabrics that light up, display information, or interact with other smart devices in the environment.
Environmental Monitoring - Textiles that sense & report environmental factors like pollutants or humidity.
Beauty Enhancement - changing color according to different time of the day.

INTELLIGENT PAINT

- It is a digitised material that can be applied on surface as a paint, and that can sense environmental changes and accordingly respond to it.
- It combines nanotechnology, sensors and smart materials.
- Applications : Infrastructure - used for road markings, airport runways and public spaces to enhance safety and provide real-time information.
Interior Design - Enables walls and surfaces to change color, texture creating futuristic living spaces.
Automotive and Industrial - Improves durability, comfort, and safety in vehicles and machinery through smart coatings that respond to environmental changes.
Healthcare & Public Spaces - Anti-microbial and air-purifying paints help maintain clean and healthy environments.

THE FUTURE OF CLOUD TV

- Cloud TV is modern way of delivering television content using internet & cloud computing, instead of traditional cable or satellite systems.
- Future Trends : On-demand everything, Device independence (works on any device), Personalized viewing (based on likes & habits), Interactive & Social TV (like polls, chats, sharing), Portability
- Features : Multi-device access, Personalized Recommendation, Interactive features, Voice assistant integration, cost effective, Global Reach, Smart Home integration, User friendly interface.

FUTURE OF CLOUD BASED SMART DEVICES

- Smart devices (like smart TV's, speakers, appliances) using cloud for storage, processing and updates.
- Future Trends : AIML (Google AI)
Social, Legal and Ethical Obligations (protect user rights, must follow laws, no bias).
Infomix and Data Broking (store & process large vol. of data).
IoT Governance (strong governance to ensure ethical use).
Innovation in related technologies (5G, Blockchain, serverless compute)

FASTER TIME TO MARKET FOR SOFTWARE APPLICATIONS.

Means delivering softwares to user more quickly.

1) Continuous Integration (CI) and Continuous Delivery, & Deployment (CD) -
   - The cloud lets developers automatically test and release their code.
   - This means new features and bug fixes reach users quickly and safely.
2) Fully Managed Service -
   - Cloud companies offer ready-to-use tools (like db, storage, messaging).
   - Developers don't have to build these from scratch, so they save lot of time.
3) Microservices Architecture -
   - Apps are split into small, independent parts that run in the cloud.
   - Teams can work on different parts at same time, making updates & fixes much faster.
4) Improved Developer Productivity -
   - Frees developers from repetitive tasks, letting them focus on building new features and solving problems.