**Vivekanand Education Society’s**

**Institute of Technology**

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**Department of Information Technology**

MIS

CA Assignment 3

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1. **What are the types of e-commerce with examples? Difference between electronic business and e-commerce.**

There are several types of e-commerce, each with its own characteristics and examples:

1. Business-to-Consumer (B2C): In B2C e-commerce, businesses sell products or services directly to individual consumers. Examples include Amazon, eBay, and Netflix.
2. Business-to-Business (B2B): B2B e-commerce involves businesses selling products or services to other businesses. Examples include Alibaba and Cisco.
3. Consumer-to-Consumer (C2C): C2C e-commerce occurs when consumers sell products or services to other consumers through online platforms. Examples include eBay (for individuals selling to each other) and Airbnb (for peer-to-peer rentals).
4. Consumer-to-Business (C2B): C2B e-commerce reverses the traditional model, where consumers offer products or services to businesses. Examples include freelance platforms like Upwork and Fiverr.
5. Government-to-Citizen (G2C): In G2C e-commerce, government entities offer services or products to citizens online. Examples include online tax filing and government permit applications.

Difference between e-business and e-commerce:

| **S.No.** | **E-COMMERCE** | **E-BUSINESS** |
| --- | --- | --- |
| 01. | E-Commerce refers to the performing online commercial activities, transactions over internet. | E-Business refers to performing all type of business activities through internet. |
| 02. | E-Commerce is a narrow concept and it is considered as a subset of E-Business. | E-Business is a broad concept and it is considered as a superset of E-Commerce. |
| 03. | Commercial transactions are carried out in e-commerce. | Business transactions are carried out in e-business. |
| 04. | In e-commerce transactions are limited. | In e-business transactions are not limited. |
| 05. | It includes activities like buying and selling product, making monetary transactions etc over internet. | It includes activities like procurement of raw materials/goods, customer education, supply activities buying and selling product, making monetary transactions etc over internet. |
| 06. | It usually requires the use of only a website. | It requires the use of multiple websites, CRMs, ERPs that connect different business processes. |
| 07. | It involves mandatory use of internet. | It involves the use of internet, intranet or extranet. |
| 08. | E-commerce is more appropriate in Business to Customer (B2C) context. | E-business is more appropriate in Business to Business (B2B) context. |
| 09. | E-Commerce covers outward/external business process. | E-Business covers internal as well as external business process/activities. |

**2. What are ethical and legal issues of e-commerce? Explain different payment methods available in e-commerce.**

E-commerce presents several ethical and legal issues that businesses and consumers need to address:

1. Privacy and Data Security: Protecting customer data is paramount. E-commerce businesses must ensure the secure handling of personal information and maintain transparency about data collection and usage.
2. Fraud and Identity Theft: Fraudulent activities like credit card fraud and identity theft can occur in e-commerce. Businesses should implement security measures to mitigate these risks.
3. Consumer Protection: Consumers need protection against unfair business practices. This includes clear refund and return policies, accurate product descriptions, and fair pricing.
4. Intellectual Property: Protecting intellectual property rights is essential. E-commerce platforms must prevent the sale of counterfeit goods or copyright-infringing products.
5. Taxation: Determining the appropriate taxes for online sales can be complex, especially for businesses operating internationally. Compliance with tax laws is essential.
6. Cybersecurity: Protecting e-commerce websites from cyberattacks, such as hacking and data breaches, is crucial to maintain the trust of customers.
7. Accessibility: Ensuring websites are accessible to people with disabilities is an ethical and legal concern, as some countries have regulations in place to enforce accessibility standards.
8. Environmental Impact: The environmental impact of e-commerce, including packaging waste and carbon emissions from deliveries, is a growing ethical concern.

Payment Methods in E-Commerce:

There are various payment methods available in e-commerce, catering to different customer preferences and business needs:

1. Credit and Debit Cards: Credit and debit card payments are among the most common and widely accepted methods. Examples include Visa, MasterCard, and American Express.
2. Digital Wallets: Digital wallets like PayPal, Apple Pay, Google Pay, and Samsung Pay allow users to store payment information for quick and secure transactions.
3. Bank Transfers: Customers can make payments directly from their bank accounts using services like ACH (Automated Clearing House) or wire transfers.
4. Cryptocurrencies: Some businesses accept cryptocurrencies like Bitcoin, Ethereum, and Litecoin. These transactions are decentralized and offer potential benefits like lower fees and anonymity.
5. E-Check: Electronic checks (e-checks) are digital versions of traditional paper checks. They are used for online payments and often offer a convenient way to pay for services.
6. Cash on Delivery (COD): In some regions, customers have the option to pay for their orders in cash when they receive the product, particularly for items ordered online.

**3. What is electronic storefronts/e-mall?**

An electronic storefront, sometimes referred to as an "e-store" or "e-shop," is a digital representation of a retail store or business on the internet. It serves as an online platform where businesses can display and sell their products or services to customers. Essentially, it's the digital equivalent of a physical store. Customers can browse, select, and purchase items from an electronic storefront using a web browser.

An e-mall, short for electronic mall, is a concept that extends the idea of electronic storefronts. It's a digital marketplace or online shopping center where multiple businesses, often from various industries, come together within a single website or platform. In an e-mall, customers can access a wide variety of products and services from different vendors in one place, similar to how a shopping mall houses various retail stores under one roof.

E-malls aim to provide consumers with a diverse and convenient online shopping experience by offering a broad range of options from different sellers. They often feature categories, search functions, and sometimes even special promotions to enhance the shopping experience.

Amazon, for example, started as an electronic storefront for books and evolved into a massive e-mall with products from countless vendors. Similarly, marketplaces like eBay and Alibaba can be considered e-malls because they host numerous sellers and products on a single platform.

**4. What is green computing? How is it different from distributed computing?**

Green computing, also known as green IT or sustainable computing, is an approach to designing, manufacturing, and using computer systems and technology in an environmentally responsible and energy-efficient manner. It aims to reduce the environmental impact of computing equipment and processes throughout their lifecycle. Green computing focuses on several key areas:

1. Energy Efficiency: This involves using energy-efficient hardware, optimizing software to consume less power, and implementing power management practices to reduce electricity consumption.
2. Eco-friendly Materials: It promotes the use of environmentally friendly materials in the manufacturing of hardware and components, as well as proper disposal and recycling at the end of a device's life.
3. Reducing E-Waste: Green computing encourages extending the lifespan of electronic devices through maintenance and upgrades, reducing electronic waste (e-waste).
4. Virtualization: Virtualization technologies aim to make more efficient use of physical hardware by running multiple virtual machines on a single server or computer, reducing the need for additional hardware.
5. Cloud Computing: Cloud services can be more energy-efficient because they can optimize resource usage and reduce the need for individual data centers.

Distributed computing, on the other hand, is a model of computation where processing tasks are divided among multiple interconnected computers or nodes. It's often used to tackle complex problems by breaking them into smaller, manageable parts and distributing those parts to different machines. These machines work in parallel to process the data, which can lead to improved performance and scalability.

**Difference between Cloud Computing and Green Computing :**

| **Cloud Computing** | **Green Computing** |
| --- | --- |
| It is all about delivery of computing services including servers, storage, databases, networking, etc., over internet. | It is all about utilizing energy to perform operations in most efficient way possible. |
| It offers utility-oriented IT services to users worldwide. | It helps in using least amount of computing resources for doing most amount of work. |
| Its main goal is to provide magnitude improvement in cost effective, dynamic provisioning of IT services. | Its main goal is to attain economic viability and improve way of how computing devices are used. |
| It reduces energy consumption, waste, and carbon emissions, reduce carbon foot print, etc. | It reduces use of hazardous materials, increase energy efficiency during product’s lifetime, manage power and energy efficiency, create sustainable business processes, etc. |
| It increases revenue of business organizations and help them to achieve business goals, provide faster communication, secure network collaboration, promote efficient utilization of existing resources, etc. | It reduces carbon footprint of business and provide a reputation boost, help business responsibly use energy and keep business running on energy-lean diet. |
| It is internet service that provides computing needs to computer users. | It is that a computer and technology is how much responsible for environmental change. |
| It allows company to diversity its network and server infrastructure. | It allows companies to improve disposal and recycling procedures. |
| It lowers IT costs, maintain business continuity, provide scalability, allows automatic software integrations, etc. | It lowers energy bills, lower overall power usage, cost-effective due to less energy usage and cooling requirements, etc. |
| It is less cost effective as compared to green computing. | It is more cost effective as compared to cloud computing. |

**5. Define IT infrastructure and describe its components.**

The components of IT infrastructure can vary depending on the size and requirements of the organization, but they generally include:

1. Hardware: This includes all physical equipment and devices used in an organization's IT environment. Common hardware components include:

Servers: Computers responsible for hosting and managing data, applications, and services.

Network Devices: Routers, switches, and firewalls used to facilitate data transmission and connectivity.

Storage Devices: Hard drives, solid-state drives, and storage arrays for data storage.

Client Devices: Workstations, laptops, tablets, and mobile devices used by end-users.

Printers and Scanners: Devices for printing and scanning documents.

1. Software: IT infrastructure relies on various software components to manage and control hardware and provide necessary services. These include:

Operating Systems: Software that manages hardware and provides a foundation for running applications.

Application Software: Programs used to perform specific tasks, such as office suites, databases, and specialized applications.

Virtualization Software: Enables the creation of virtual machines and virtualized environments.

Management and Monitoring Tools: Software for managing, monitoring, and optimizing the IT environment.

1. Network Infrastructure: This includes the physical and virtual network components that facilitate data communication within and outside the organization. Components include:

Network Cables and Connectors: Physical connections that link devices.

Network Switches: Devices that connect multiple devices in a local network.

Routers: Devices that route data between different networks.

Firewalls: Security devices that control incoming and outgoing network traffic.

Wireless Access Points: Devices for wireless network connectivity.

1. Data Centers: Data centers are specialized facilities housing servers, storage systems, and networking equipment. They provide centralized computing and data storage capabilities. Data centers may include redundancy and backup systems for reliability.
2. Cloud Services: Many organizations utilize cloud-based infrastructure, which involves outsourcing some or all IT services to cloud providers. This can include Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) solutions.
3. Security Solutions: Components and software for ensuring the security and privacy of data and infrastructure. This includes firewalls, intrusion detection systems, antivirus software, encryption, and access control.

**6. What management, organization, and technology issues must be addressed if you or your business was considering systems and computers with multi-touch interfaces?**

Management Issues:

1. Cost and Budgeting: Determine the costs associated with acquiring and implementing multi-touch systems, including hardware, software, training, and maintenance. Develop a budget that considers these expenses.
2. ROI and Business Value: Assess the expected return on investment (ROI) and the potential business value of adopting multi-touch interfaces. Identify specific benefits, such as increased efficiency or improved customer experience.
3. Change Management: Plan for managing the changes in workflows and processes that multi-touch technology may introduce. Employees may need to adapt to new ways of interacting with systems.
4. Security and Privacy: Address security concerns related to the use of touch-sensitive screens, including data protection, user authentication, and physical security for the devices.

Organization Issues:

1. Training and Skill Development: Ensure that employees have the necessary training and skills to use multi-touch interfaces effectively. This includes training on the new technology and potential changes in software applications.
2. User Experience Design: Consider how the organization's applications and systems need to be adapted to maximize the user experience with multi-touch interfaces. User interface (UI) and user experience (UX) design may need to be updated.
3. Integration with Existing Systems: Determine how multi-touch systems will integrate with existing IT infrastructure and software. Compatibility and data exchange between systems should be addressed.
4. Workflow and Process Redesign: Evaluate how multi-touch technology can improve or transform existing workflows and processes. Redesign workflows as needed to take full advantage of the technology.

Technology Issues:

1. Hardware and Software Selection: Choose the appropriate hardware and software for multi-touch interfaces. Consider factors like screen size, sensitivity, durability, and the availability of touch-enabled applications.
2. Scalability: Plan for scalability as the organization grows. Ensure that the chosen technology can be expanded to accommodate increased usage.
3. Maintenance and Support: Develop a maintenance plan for keeping the multi-touch systems in good working condition. Consider warranties, support contracts, and a troubleshooting process.
4. Accessibility: Ensure that the technology is accessible to all users, including those with disabilities. Compliance with accessibility standards is essential.
5. Testing and Quality Assurance: Implement thorough testing and quality assurance processes to identify and address any issues or bugs related to the multi-touch interface.

**7. Describe the key characteristics and advantages of cloud computing.**

Cloud computing is a technology paradigm that offers various key characteristics and advantages, making it a popular choice for businesses and individuals.

Key Characteristics:

1. On-Demand Self-Service: Users can provision and manage computing resources, such as servers and storage, as needed without requiring human intervention from service providers.
2. Broad Network Access: Cloud services are accessible over the internet from a variety of devices, including laptops, smartphones, and tablets.
3. Resource Pooling: Cloud providers pool computing resources to serve multiple customers, which allows for cost savings and resource optimization. Resources are dynamically allocated as needed.
4. Rapid Elasticity: Cloud resources can be rapidly scaled up or down to accommodate changing workloads and demand. This scalability provides flexibility and cost efficiency.
5. Measured Service: Cloud usage is metered, and users are billed based on their consumption. This "pay-as-you-go" model ensures cost control and efficiency.

Advantages:

1. Cost-Efficiency: Cloud computing eliminates the need for businesses to invest in and maintain their own hardware and data centers. This reduces capital expenditures and allows businesses to pay only for the resources they use.
2. Scalability: Cloud services provide the ability to scale resources up or down as needed, accommodating fluctuations in workload without major upfront investments.
3. Flexibility and Accessibility: Users can access cloud services from anywhere with an internet connection, promoting remote work and collaboration.
4. Reliability and Redundancy: Reputable cloud providers offer redundancy and failover mechanisms to ensure high availability and reliability of services.
5. Security: Cloud providers invest heavily in security measures and technologies, often exceeding what many individual organizations can implement, enhancing data protection.

**8. Identify a use case scenario for each of the four types of clouds.**

Public Cloud:

Use Case Scenario: A startup company needs to host its website and web applications. They opt for a public cloud provider like Amazon Web Services (AWS) or Microsoft Azure. This allows them to quickly deploy and scale their web services without the need to invest in on-premises infrastructure. Public cloud is cost-effective and offers flexibility for their growing business.

Private Cloud:

Use Case Scenario: A large financial institution, like a bank, requires a highly secure and compliant environment to manage sensitive customer data and transactions. They choose a private cloud to maintain control over their infrastructure, ensuring data security and adhering to strict regulatory requirements.

Hybrid Cloud:

Use Case Scenario: A retail company needs to handle variable workloads, especially during seasonal sales peaks. They maintain their critical customer data on a private cloud for security and compliance, but utilize a public cloud during peak times to handle the increased traffic and demand. This hybrid cloud setup offers the flexibility to scale resources as needed.

Community Cloud:

Use Case Scenario: Several healthcare organizations in a region decide to collaborate on a cloud-based electronic health records (EHR) system. They establish a community cloud to share patient data securely among authorized healthcare providers, ensuring that patient records are easily accessible by authorized parties while maintaining privacy and compliance with healthcare regulations.

**9. Explain the operational model of each of the three types of cloud services.**

The three primary types of cloud services—Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS)—have distinct operational models that define how they deliver and manage computing resources and services:

1. Infrastructure as a Service (IaaS):

Operational Model: IaaS provides the foundational infrastructure components, such as virtualized hardware, storage, and networking, to users. It allows customers to manage and control these infrastructure elements while offloading tasks like data center maintenance and hardware management to the cloud provider.

Responsibilities:

Users are responsible for managing virtual machines (VMs), operating systems, applications, and data on top of the infrastructure.

Cloud providers manage the underlying physical hardware, virtualization, and the availability of resources.

1. Platform as a Service (PaaS):

Operational Model: PaaS abstracts the underlying infrastructure, focusing on providing a platform where developers can build, deploy, and manage applications. It includes tools, development frameworks, and runtime environments to streamline application development.

Responsibilities:

Users (typically developers) focus on application development, while the PaaS provider handles infrastructure management, including scalability, security, and database management.

PaaS providers manage the underlying infrastructure, runtime environments, and the availability of resources for running applications.

1. Software as a Service (SaaS):

Operational Model: SaaS delivers complete software applications over the internet to end-users. Users access these applications through web browsers, and the software is hosted and maintained by the SaaS provider.

Responsibilities:

Users primarily consume the software and data provided by the SaaS application. They do not need to worry about infrastructure, maintenance, or updates.

SaaS providers are responsible for managing the entire stack, including infrastructure, application code, data, security, and updates.

**10. Identify the Key Benefits of Cloud Computing**

1. Cost-Efficiency: Cloud computing reduces the need for capital expenses related to hardware and data centers. Users pay for resources as they use them, often resulting in lower overall costs.
2. Scalability: Cloud services can quickly scale up or down based on demand, providing flexibility and cost savings for businesses with variable workloads.
3. Accessibility: Cloud services are accessible from anywhere with an internet connection, promoting remote work and collaboration.
4. Reliability and Redundancy: Reputable cloud providers offer redundancy and failover mechanisms, ensuring high availability and reliability of services.
5. Security: Cloud providers invest heavily in security measures and technologies, often exceeding what many individual organizations can implement, enhancing data protection.
6. Automatic Updates: Cloud services are frequently updated and patched by the provider, reducing the burden on users to maintain and update software and hardware.
7. Disaster Recovery: Cloud providers often offer built-in backup and disaster recovery solutions, ensuring data resilience and continuity of operations.
8. Environmental Benefits: Cloud data centers are often more energy-efficient and eco-friendly compared to on-premises data centers, reducing the carbon footprint.
9. Global Reach: Cloud providers have data centers worldwide, enabling organizations to reach a global audience and provide low-latency services to users around the world.
10. Innovation and Collaboration: Cloud services provide access to cutting-edge technologies, enabling innovation and collaboration without the need for large upfront investments.
11. Competitive Advantage: Cloud computing can provide a competitive edge by allowing organizations to quickly adapt to market changes and customer demands.
12. Simplified IT Management: Cloud computing simplifies IT management by offloading tasks like hardware maintenance, allowing IT teams to focus on strategic initiatives.
13. Cost Predictability: Pay-as-you-go pricing models make it easier to predict and control IT costs, with no surprises or hidden expenses.

**11. Discuss the concerns and risks associated with cloud computing.**

Some of the key concerns and risks associated with cloud computing include:

1. Data Security and Privacy:

Concern: Storing sensitive data on remote servers raises security and privacy concerns. Unauthorized access, data breaches, or insider threats are potential risks.

Risk: Inadequate security measures, data breaches, or weak privacy policies can result in the compromise of sensitive information.

1. Data Loss and Availability:

Concern: Data may become unavailable due to service outages or provider issues, potentially leading to loss of critical data.

Risk: Downtime or data loss can disrupt operations and result in data being inaccessible or permanently deleted.

1. Compliance and Legal Issues:

Concern: Meeting regulatory requirements and compliance standards may be challenging, especially for industries with strict data protection and residency laws.

Risk: Non-compliance can lead to legal issues, fines, and reputational damage.

1. Vendor Lock-In:

Concern: Migrating data and applications from one cloud provider to another can be complex, leading to vendor lock-in.

Risk: Difficulty in changing providers can result in limited flexibility and increased costs.

1. Downtime and Service Reliability:

Concern: Cloud service providers may experience downtime, causing disruptions to business operations.

Risk: Loss of revenue and productivity due to service interruptions can impact an organization's bottom line.

1. Data Ownership and Control:

Concern: Cloud users may have limited control over their data and applications, as cloud providers manage the infrastructure.

Risk: Dependence on the provider can lead to reduced control and autonomy over data and applications.

1. Data Transfer and Bandwidth Costs:

Concern: Transferring large amounts of data to and from the cloud can incur bandwidth costs, which may be unpredictable.

Risk: Unexpected data transfer costs can strain budgets and lead to financial challenges.