

SRINIVAS UNIVERSITY MANGALORE
INSTITUTE OF COMPUTER SCIENCE AND INFORMATION SCIENCES
Course Name: MCA II Year: Semester Name: III Semester
Subject Name: E - COMMERCE DEVELOPMENT USING MAGENTO

Question Bank and Answer keys

Unit - I

Part - A Questions

1. What is E- Commerce?
Electronic commerce (e-commerce) refers to companies and individuals that buy and sell goods and services over the internet.
2. What is B2C?
Business-to-consumer e-commerce involves transactions between a business and individual consumers
3. What is B2B?
Business-to-business e-commerce involves transactions between businesses.
4. What is C2C?
Consumer-to-consumer e-commerce involves transactions between individual Consumers
5. What is C2B?
Consumer-to-business e-commerce involves transactions where individuals offer products or services to businesses.
6. What is P2P?
Peer-to-peer e-commerce involves direct transactions between individuals without the involvement of a centralized business.
7. What is D2C?
This is where a business that manufactures or produces goods and services sells directly to consumers online without any middlemen
8. What is Mobile commerce?
Mobile commerce refers to transactions conducted through mobile devices such as smartphones and tablets.
9. What is SaaS?
SaaS (software-as-a-service) platforms: SaaS provides e-commerce businesses with ready-to-use software applications over the internet

10. What is PaaS?

PaaS(platform-as-a-service) platforms: PaaS provides a platform for software and app development. It delivers and manages all the hardware and software resources needed to develop applications through the cloud.

11. What is Magento?

Magento is an E Commerce platform built on open source technology which provides online merchants with a flexible shopping cart system, as well as control over the look, content and functionality of their online store.

12. What is composer in Magento?

Composer is a tool for dependency management in PHP. It allows you to declare the libraries your project depends on and it will manage (install/update) them.

Part - B Questions

1. How does E- Commerce work? Define with example.

E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These e-commerce transactions typically fall within four types: business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business. The terms e-commerce and e-business are often used interchangeably. The term e-tail is also sometimes used in reference to the transactional processes that make up online retail shopping.

E-commerce works:

E-commerce is powered by the internet. Customers use their own devices to access online stores. They can browse products and services those stores offer and place orders. As an order is placed, the customer's web browser communicates back and forth with the server hosting the e-commerce website. Data pertaining to the order is relayed to a central computer known as the order manager. The data is then forwarded to databases that manage inventory levels; a merchant system that manages payment information using payment processing applications, such as PayPal; and a bank computer. Finally, it circles back to the order manager. This ensures store inventory and customer funds are sufficient for the order to be processed.

After the order is validated, the order manager notifies the store's web server. It displays a message notifying the customer that their order has been processed. The order manager then sends order data to the warehouse or fulfillment department, letting it know the product or service can be dispatched to the customer. At this point, tangible and digital products are sent to the customer, or access to a service is granted.

Example:

Platforms that host e-commerce transactions include online marketplaces that sellers sign up for, such as Amazon; software as a service (SaaS) tools that let customers rent online store infrastructures; and open source tools that companies manage using their in-house developers.

2. Explain the types of E-commerce in real world.

E-commerce, or electronic commerce, refers to the buying and selling of goods and services over the internet. There are several types of e-commerce models that exist in the real world, each catering to different needs and preferences of consumers and businesses. Here are some common types of e-commerce along with examples:

1. Business-to-Consumer (B2C):

- Business-to-consumer e-commerce involves transactions between a business and individual consumers.
- Example: Amazon.com is a prime example of B2C e-commerce. Consumers can purchase a wide range of products directly from Amazon's website.

2. Business-to-Business (B2B):

- Business-to-business e-commerce involves transactions between businesses.
- Example: Alibaba.com facilitates B2B transactions by connecting businesses with manufacturers, wholesalers, and suppliers.

3. Consumer-to-Consumer (C2C):

- Consumer-to-consumer e-commerce involves transactions between individual consumers.
- Example: eBay is a popular C2C e-commerce platform where individuals can buy and sell a variety of products to each other.

4. Consumer-to-Business (C2B):

- Consumer-to-business e-commerce involves transactions where individuals offer products or services to businesses.
- Example: Freelance platforms like Upwork or Fiverr allow individuals to offer their skills and services to businesses in need of specific tasks or projects.

5. Peer-to-Peer (P2P):

- Peer-to-peer e-commerce involves direct transactions between individuals without the involvement of a centralized business.
- Example: Airbnb enables individuals to rent out their properties or spare rooms to other individuals looking for accommodations.

6. Mobile Commerce (M-commerce):

- Mobile commerce refers to transactions conducted through mobile devices such as smartphones and tablets.
- Example: The Starbucks mobile app allows users to order and pay for drinks directly from their smartphones for pickup at nearby locations.

7. Social Commerce:

- Social commerce involves the use of social media platforms to facilitate buying and selling of products and services.
- Example: Instagram Shopping allows businesses to tag products in their posts, enabling users to purchase directly from within the app.

3. Write a short notes about the basic features of Magento

Magento is the best open-source to build an online store.

1. **Product management:** with many images, optional comment reviews on products, a favorites list, and inventory.
2. **Category management:** easy to find and select products by category
3. **Inventory management:** management of products left in stock, import, export ...
4. **Client account:** account status, transaction history, preferred catalog, address, shopping cart
5. **Customer service:** enhance the features, customer contact form; comprehensive follow-up, and email service.
6. **Order Management**
7. **Payments:** Many payment methods such as credit card, PayPal, Authorize.net, Google Checkout, support for external payment modules like CyberSource, ePay, eWAY, and more.
8. **Search technology:** fast, friendly, supports search on Google Sitemap
9. **International support:** multi-lingual and monetary
10. **Promotional and marketing tools:** coupons, promotions, and more.
11. **Analyze and report:** integrate with the Google Analytics service and provide multiple reports.

4. What are the Advantages and Disadvantages of Magento versions?

Magento2 is quite different from its previous versions. Magento2 is a user-friendly. C-commerce platform. If we want to work with Magento2, then we should also be aware of its advantages and disadvantages. It has advantages along with some disadvantages, which are given below.

Advantage

1. Category and product creation is much easier and quicker than the other.
2. It offers various templates and theme that allows both the Magento designer and store owner to customize the look and feel and even also optimize it for the Smartphone.
3. Magento2 offers amazing Admin interface, which is very simplified. Non-technical admin likes this simplified interface.
4. LESS preprocessor and CSS URL helps to increase performance, speed up the page load, and also make system friendly with the search engine.
5. It is developer-friendly, as it built according to the modern development logic that makes it more efficient for the developer to work with it.

6. Magento2 has Luma theme, which is an eye-catching theme and easy to learn. Using the Luma theme, we can easily manage our online store in very less time. It also helps us to enhance the productivity of creating products, managing orders, and customer's data.

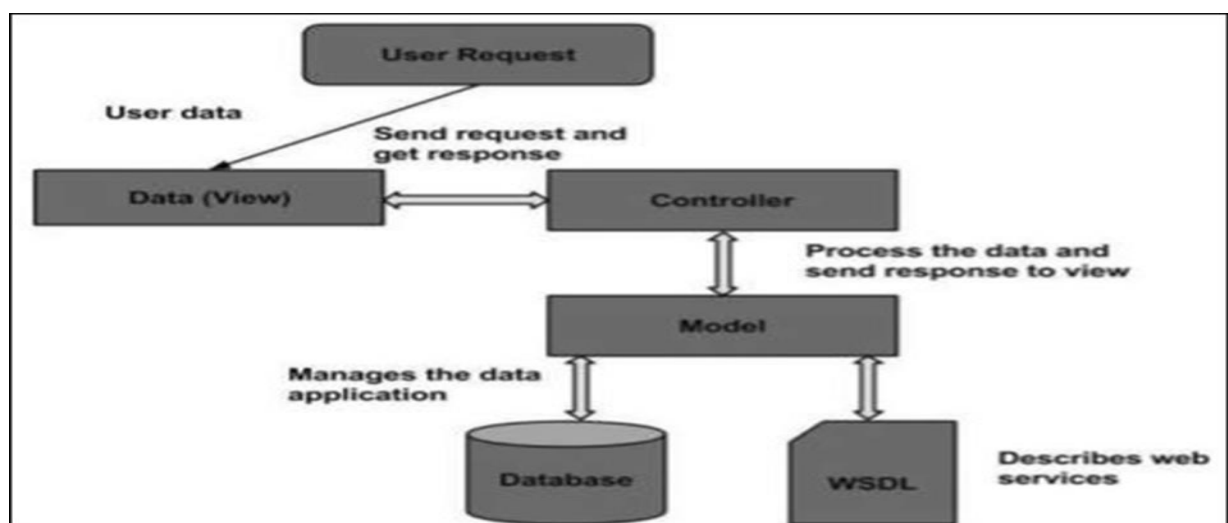
Disadvantage

1. All the extensions of Magento1.x will not work on Magento2.0. You need to purchase the extensions and integrate them into Magento2.
2. Magento2 Community Edition is free, whereas Magento2 Enterprise Edition is paid. You have to pay for Magento2 Enterprise Edition.
3. Development expertise is required due to its complexity.
4. Magento1 theme "Madison Island" cannot be transferred to the Magento2, it will need to be built from scratch, which makes it an expensive endeavor.
5. For the small store, it is a little pricey. The enterprise edition is expensive of the Magento2.
6. Magento2 needs heavy servers, which makes it slow and requires intensive data input for optimal performance.

5. Explain the Magneto Block Diagram

Magneto block diagram provides a high-level overview of Magento's architecture, showing how different components interact to deliver a robust e-commerce solution. It's important to note that the actual architecture may vary depending on the specific implementation and customization of the platform.

Architectural style of Magneto, for implementing user interfaces. The following block diagram shows the magneto functionality The Magneto architecture comes with Models, Views and Controllers.



Magento Block Diagram

User Request – The user sends a request to a server in the form of request message where web browsers, search engines, etc. act like clients.

View – View represents the data in particular format. It is the user interface which is responsible for displaying the response for user request. It specifies an idea behind the presentation of the model's data to the user. Views are used to reflect "how your data should look like".

Controller – The controller is responsible for responding to user input and perform interactions on the data model objects. It uses models to process the data and send responses back to the view.

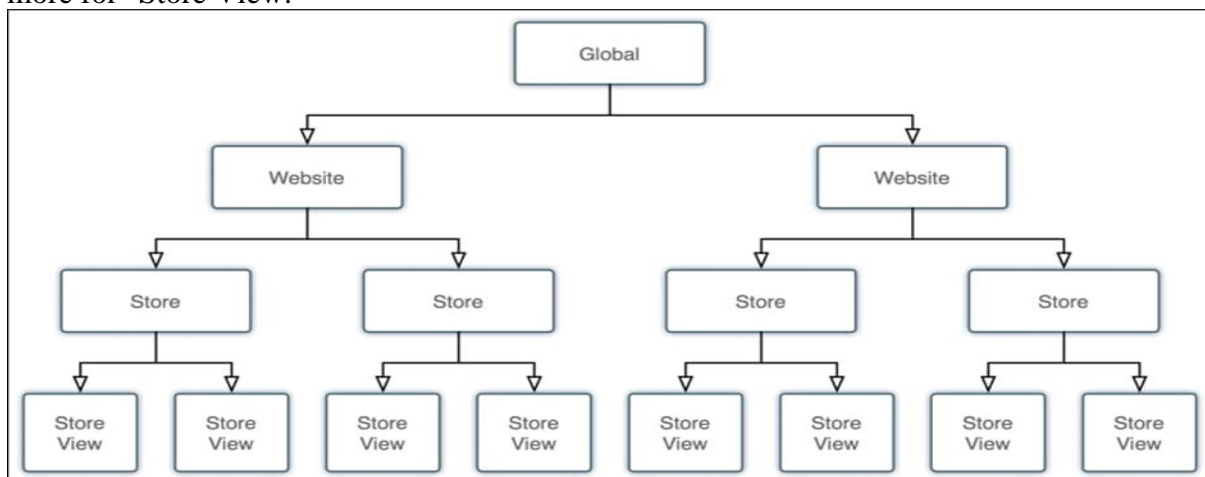
Model – The model is responsible for managing the data of the application. It contains logic of the data and represents basic data object in the framework. It responds to request from the view and to the instructions from the controller to update itself.

Database – Database contains the information which is requested from the user. When the user requests data, view sends requests to the controller, the controller requests from the model and the model fetches the required information from the database and responds to the user.

WSDL – WSDL stands for Web Services Description Language. It is used for describing web services and how to access them.

6. Explain the Global, Website and Store methodology in Magento

Magento Commerce and Magento Open-source have four levels of hierarchy: Global, Website, Store, and Store View. It is crucial to have the basic fundamental knowledge about website, store, and store-view for starting an online E-Commerce store. Before you begin laying out your master plan for the various websites and stores you intend to create (and even if you're only beginning with one website), you need to master the Magento methodology for multiple stores. Magento describes this as "GWS," which stands for "Global, Website, Store." Each Magento installation automatically includes one of each part of this hierarchy, plus one more for "Store View."



Global

Global refers to settings (for example, stock management rules) and values (for example, product price) for the entire installation.

Website

The website is the "root" of a Magento store. From the website, multiple stores are created that can each represent different products and focus. However, it is at the website level that certain configurations are applied that control common functions among its children stores and Store Views.

Store

What can sometimes be confusing is that "**Store**" for Magento is used to describe both a store structure as well as a Store View. When configuring your hierarchal structure, "Store" is used to associate different product catalogs to different stores under a single "Website," whereas "Store Views" can be created to display a "Store" in multiple languages or styles, each with their own URL or path. Each Store View can be assigned different themes, content, logos, and so on.

7. Write a short notes about the Magento2 Components with example

Hardware and Software Components Overview

Web Server: Magento2 is compatible with Apache or NGINX web servers. Both are widely used and provide excellent performance and support for running a Magento2 store.

PHP: Magento2 requires PHP 7.4 or later, the scripting language used for server-side scripting and executing Magento code.

MySQL: To store data, Magento2 needs a MySQL database server, version 5.7 or 8.0.

Elasticsearch: Magento2 requires Elasticsearch7.x for its powerful search capabilities and improved indexing performance.

Components Magento2

- **PHP:** Magento2 requires PHP 7.x or later, leveraging the language's latest features for improved performance and security.
- **Database:** MySQL or MariaDB is used to store product data, customer information, order details, and other essential e-commerce data.
- **Elasticsearch:** An optional but recommended component for handling catalog search capabilities, providing fast and relevant search results.
- **Redis:** An advanced key-value store used for full-page cache (FPC) and session storage, significantly improving site performance.
- **Varnish:** A highly efficient HTTP accelerator and reverse proxy server that can be used to cache static content, further enhancing site speed.
- **Apache or Nginx:** Web servers compatible with Magento2, each with its configuration specifics for serving web content.

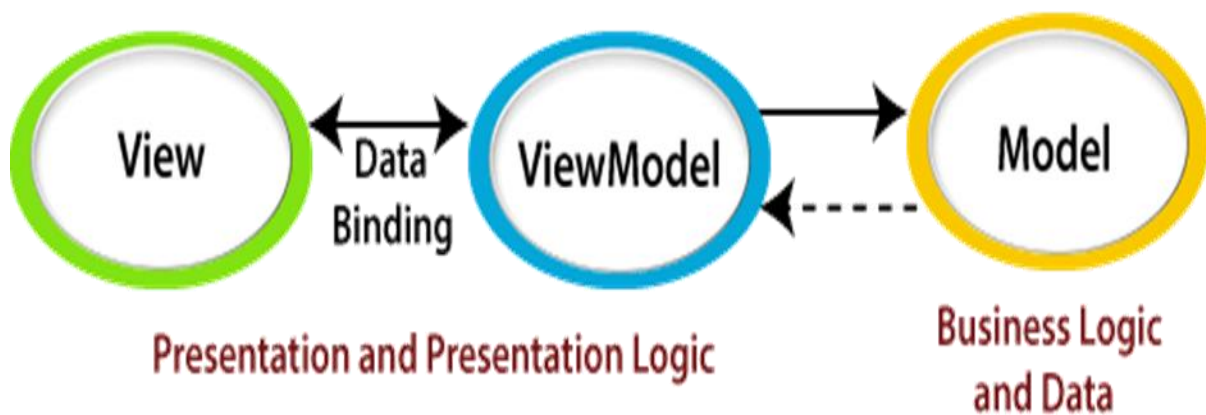
- **Composer:** A dependency management tool for PHP, allowing for easy management of Magento2 extensions and libraries.
- **RabbitMQ** (optional): A message queue system that helps with asynchronous processing, improving scalability and performance for complex operations.
- **Laminas (formerly Zend Framework):** A collection of PHP libraries used by Magento2 for various functionalities, including input validation, filtering, and more.

Part – C Questions

1. Explain the Magento Architecture functionality.

Magento2 has a totally different architecture than Magento1. Its architecture is designed with the objective of making the source code as an extensive and modularized as possible. The main purpose of this approach is to allow it to be easily adapted and customized according to the need of the project. Every business logic and functionality is designed in the form of modules. So, every module can work as a standalone unit.

Magento2 has a **Model View ViewModel (MVVM) architecture**. This MVVM architecture provides much more robust separation between the Model and View layer, as it is closely related to the Model View Controller (MVC). The brief description of MVVC is given below.



Magento Architecture

Model: It holds the business logic of the application, and depends on an associated class - Resource Model for database access. Similar to the MVC, it is the logic of data management and description of the fundamental data which is necessary for the operation of the application. The model responds to the request coming from the view.

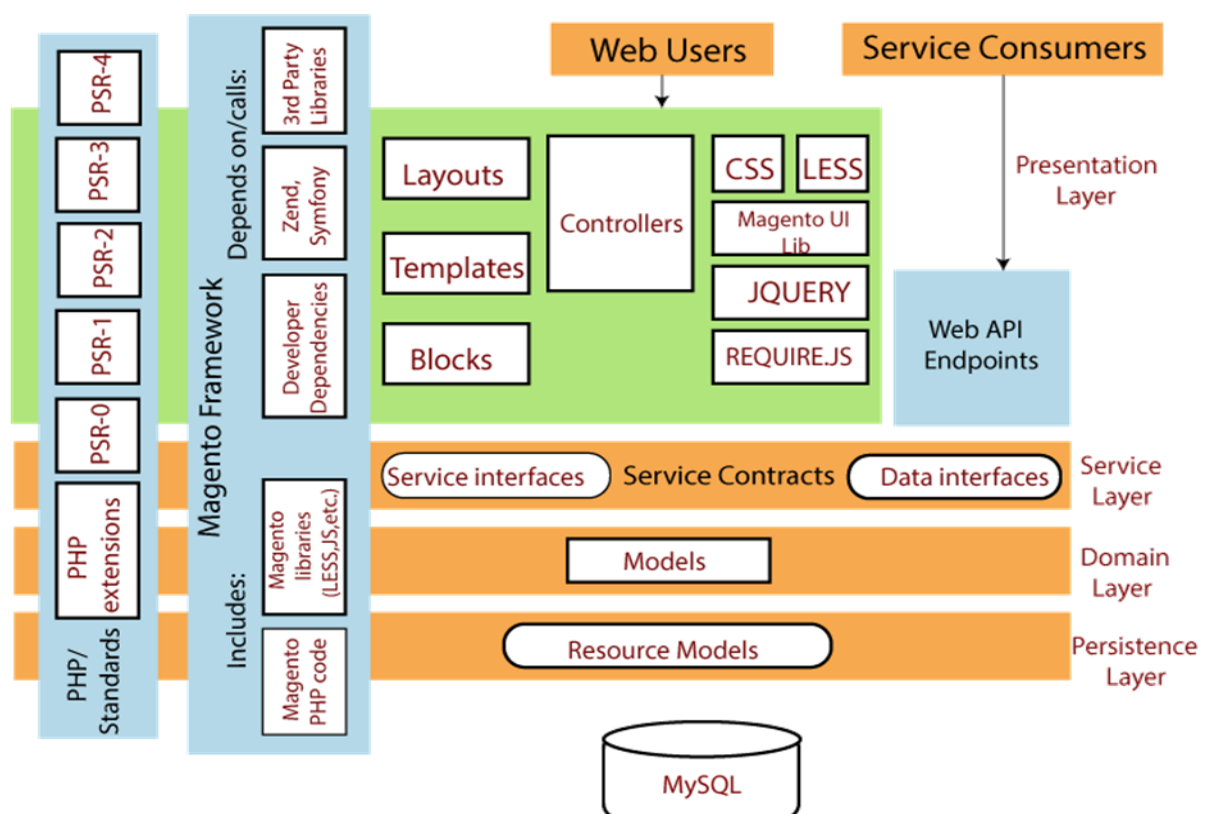
View: The view is a graphical interface that the users see on the screen. It is responsible for displaying the respond for the user request. The view is a structure or a layout, which represents the data in a particular format. Views specify that "how your data looks like". It is a subscriber for the changes of the property values or commands provided by the ViewModel.

ViewModel: The ViewModel interacts with the Model layer and exposes only necessary information to the View layer. This is handled by module's Block classes in Magento2. An important thing to notice that this was usually part of the Controller role of an MVC system. In MVVM, the Controller is only responsible for handling the user flow means it receives requests and either tell the system to render a view or to redirect the user to another route. It contains a Model which is converted to a View and also contains the commands that can be used to affect the Model. The ViewModel is basically an abstraction of the view exposing public properties and commands.

2. Explain the Magento Framework Concepts.

Magento2 software is a CMS (Content Management System), developed by Varien Inc. It is an open-source software which is a very useful software for online business. Magento2 is developed in PHP and Zend framework. Magento2 is currently the largest E-commerce platform in the world. Magento2 is known for easy customization and extension of its functionalities.

Magento2 is split into four layers, according to the official documentation.



Magento Framework

The detailed description of Magento2's layer architecture is given below.

1) Presentation Layer

The presentation layer is the uppermost layer of Magento2 architecture. When we interact with the web interface of Magento, that time, we are interacting with the presentation layer code. It contains all controllers and View elements such as - layouts, templates, block, and css.js, etc. The presentation layer calls the service layer using service contracts, usually. It can overlap business logic.

Web users, system administrators, are the user of the presentation layer

2) Service Layer

The service layer is the middle layer among the presentation layer and domain layer. It provides a bridge between the presentation and domain layer and resource-specific data. The service layer implements service contracts, which are defined using the PHP interface. These service contracts allow us to add or change the business logic resource model without breaking the system. This is done using the dependency injection configuration file (di.xml). The service layer grants access to API (REST/SOAP or other modules). It resides above the domain layer and below the presentation layer.

3) Domain Layer

The domain layer is responsible for business logic. It does not contain database-specific or resource-specific information. The domain layer defines the generic Magento data objects or models which contain business logic. This logic describes that which operation can be performed on the particular types of data, such as Customer object.

To retrieve the data from the database with the MySQL calls, each domain-layer model has a reference to a resource model.

4) Persistence Layer

It describes the resource model, which is responsible for data extraction and modification in the database using the CRUD (Create, Read, Update, and DELETE) requests. For completing these requests, the resource model contains the SQL code. Additional business logic capabilities are also implemented.

For example - database functions implementation and data validation.

As a software developer, it is crucial to write clean, maintainable, and compatible code. Adhering to the PHP Standard Recommendation (PSR) guidelines will ensure your PHP code is consistent and easy to read. PSR standards are coding guidelines created by the PHP Framework Interoperability Group (PHP-FIG). The main goal of these standards is to streamline the development process by defining a set of rules for how PHP code should be written, formatted, and organized. By following these rules, PHP developers can ensure that their code is more readable, maintainable, and compatible with other PHP codebases.

Example: PSR-0 – Autoloader Standard, PSR-1 – Basic Coding Standard, PSR-2 – Coding Style Guide, PSR-3 – Logger Interface, PSR-4- Autoloader Standard

Unit – II

Part - A Questions

1. What is Magento store?

Store is a child entity of a website with its own settings, resources, main menu (root category) and default store view

2. What is contact?

In Magento “Contact” typically refers to the “Contact Us” form that customers can use get in touch with the business. Setting up a contact form in Magento allows customers to send inquiries, feedback, or requests for assistance

3. What is product?

Products in Magento represent individual items that are available for purchase in the online store. They can be physical goods, digital products, or services. Each product has its own unique set of attributes that describe its characteristics

4. What is attributes?

Product attributes in Magento are the properties or characteristics that define a product. They provide additional information about the product beyond the basic details like name and price.

5. What is quantity?

In Magento, "quantity" refers to the numerical value representing the amount of a particular product available in stock. This quantity value is essential for managing inventory and ensuring that customers can purchase products that are in stock.

6. What is special price?

In Magento, “Special Price” is a promotional campaign that can offer to shoppers within a specific time period. It’s one of the ways to provide discounts and boost conversion rates in online store

7. What is order?

In Magento an “Order” is a request for products made by a customer. It’s a key component of the Magento Order Management System (OMS), which is designed to manage, sell, and fulfill inventory from any sales channel

8. What is CSV file?

In Magento CSV (Comma Separated Value) files are commonly used for importing and exporting data. The format of a CSV file is each column is separated with a comma and each row is separated with a new line

9. What is import?

In Magento the “Import Product” feature allows to add a large amount of data in online store at once. This can include inventory, price details, and customer data

10. What is export?

In Magento “Export Product” is a feature that allows to extract and download product data from Magento store into a CSV file. This data can include product details, pricing, inventory

Part - B Questions

1. Write short notes about the contact in Magento.

The “Contact Us” form is a key communication channel for customers to reach out with inquiries, feedback, or requests for assistance. It plays a significant role in enhancing the customer experience of the store. A well-designed contact form can help manage customer inquiries swiftly, creating better user experiences

Setting up a contact form in Magento allows customers to easily reach out to you with inquiries, feedback, or support requests.

Here's : set up and use the contact form in Magento:

Enable the Contact Form:

Log in to your **Magento admin panel**.

Navigate to **Stores > Configuration**.

Under General, **click on Contacts**.

Set Enable Contact Us to "Yes".

Configure other settings like Email Sender, Email Template, and Recipient Email if needed.
Save Config.

Example: To modify the content of the contact form, login to your admin dashboard and navigate to the Stores → Configuration → Contacts section.

Enable Contact Us - This should be set to Yes if you wish to have the Contact Us page on your Store

Send Emails To - Here type the email address on which you want to receive all of the messages submitted via the form

Email Sender - This option is used for the email "From" field.

Email Template - From here you can select the template of the email. You can create new Email Templates by going to Marketing → Email Templates.

2. Explain the storefront branding in Magento.

In Magento software, "Storefront Branding" refers to the customization and branding of the online storefront to reflect a particular brand's identity. Magento is a popular e-commerce platform that allows businesses to create and manage their online stores. Storefront branding is essential for businesses to create a unique and memorable shopping experience for their customers.

1. **Custom Themes and Templates:** One way to brand the storefront is by customizing the appearance using themes and templates. Magento offers a wide range of themes and templates that can be customized to match the brand's colors, fonts, and overall aesthetic. For example, a fashion retailer might choose a theme with a sleek and modern design to showcase their products effectively.
2. **Logo and Branding Elements:** Another important aspect of Storefront Branding is incorporating the brand's logo and other branding elements throughout the storefront. This includes placing the logo in the header or footer of the website, using branded colors for buttons and links, and incorporating brand-specific imagery where appropriate. For instance, an outdoor equipment retailer may feature images of adventurous activities like hiking or camping to reinforce their brand identity.
3. **Customizable Content:** Magento allows businesses to customize various content elements on the storefront, such as banners, product descriptions, and promotional messages. Brands can use this feature to communicate their unique selling propositions, highlight special offers, or share their brand story. For example, a skincare brand might use banners to promote new product launches or offer skincare tips and advice on the homepage.
4. **Personalizing:** the shopping experience based on customer preferences can also contribute to Storefront Branding. Magento offers features such as product recommendations, personalized marketing emails, and targeted promotions, which can help brands tailor the shopping experience to individual customers. For instance, an online bookstore might recommend books based on a customer's past purchases or browsing history.
5. **Mobile Responsiveness:** With the increasing use of mobile devices for online shopping, ensuring that the storefront is mobile-responsive is crucial for effective branding. Magento provides responsive design capabilities, allowing businesses to optimize their storefront for various screen sizes and devices. This ensures a consistent and seamless brand experience across desktops, tablets, and smartphones.

3. Explain the catalogs and categories in Magento.

Imagine are running an online bookstore that sells various genres of books. In Magento, would organize business products within catalogs and categories to make it easier for customers to browse and find the books they're interested in.

Catalogs: A catalog in Magento represents the entire collection of products available for sale in your store. It encompasses all the products you offer, organized into different categories and subcategories. In our bookstore example, the catalog would include all the books available for purchase.

Categories: Categories are a way to further organize products within the catalog. They provide a hierarchical structure that helps customers navigate through different sections of your store. Each category can contain subcategories and products. For our bookstore, we might have categories such as Fiction, Non-fiction, Mystery, Romance, Science Fiction, etc.

The Catalog menu provides easy access to product creation, category, and inventory management tools, and shared catalogs for custom pricing in B2B stores.

4. Explain the category management in special prices in Magento.

Category management in Magento refers to the process of organizing products into different categories to make it easier for customers to navigate through the online store. Setting special prices for products within specific categories is a common strategy used by merchants to attract customers and drive sales.

Setting special prices for products within a category allows you to implement targeted promotional strategies. By offering discounts on specific categories, such as "Laptops," you can attract customers interested in those products and encourage them to make a purchase. This approach can help boost sales and drive traffic to your online store. Additionally, Magento's category management feature provides merchants with flexibility and control over their product pricing and promotion strategies, enhancing the overall shopping experience for customers.

1. Login to your Magento admin panel.
2. Navigate to Catalog > Categories.
3. Select the "Laptops" category.
4. In the Products tab, select all laptop products listed.
5. Set a special price for each selected laptop product (e.g., 10% off).
6. Save the changes.
7. Check your online store's frontend to verify that the special prices are displayed for the laptops within the "Laptops" category.

5. Write a short notes about the managing products to the customer in Magento

In Magento, managing products for customers involves creating, organizing, and presenting products in a way that enhances the shopping experience and facilitates customer interaction. Below, This is outline the steps to manage products in Magento along with an example:

1. **Access Magento Admin Panel:** Log in to your Magento Admin Panel.
2. **Navigate to Products:** Click on the "Catalog" menu and select "Products" under it.
3. **Add a New Product:** Click on the "Add Product" button to create a new product.
4. **Select Product Type:** Magento offers various product types such as Simple Product, Configurable Product, Grouped Product, etc. Choose the appropriate type based on your product's attributes and variations.
5. **Enter Product Information:**
 - **General:** Enter basic information like product name, SKU (Stock Keeping Unit), price, and tax class.
 - **Images and Videos:** Upload images and videos to showcase the product.
 - **Content:** Write a detailed description of the product to inform customers about its features, benefits, and specifications.
 - **Meta Information:** Optimize meta title, description, and keywords for search engine visibility.
 - **Categories:** Assign the product to relevant categories to organize it effectively.
6. **Set Product Attributes and Variations:** Configure product attributes like size, color, material, etc., depending on the product type. For example, if you're selling shirts, you might have attributes like size (small, medium, large) and color (red, blue, green).
7. **Inventory Management:** Manage stock quantities, set thresholds for low stock alerts, and configure backorder options if necessary.
8. **Manage Product Relations:** Establish related, upsell, and cross-sell products to encourage additional purchases. For example, if you're selling cameras, related products might include camera cases, memory cards, or tripods.
9. **Configure Pricing and Discounts:** Set pricing rules, special discounts, and promotional offers to attract customers. You can offer percentage discounts, fixed amount discounts, or buy-one-get-one (BOGO) deals.
10. **Enable Product Reviews and Ratings:** Allow customers to leave reviews and ratings to build trust and credibility.
11. **Save and Publish:** Once you've entered all necessary information, save the product and make it available for customers to purchase.

6. Explain the types of product in Magento.

In Magento, there are several types of products that you can create to suit different business needs and product offerings. Here are some common types of products in Magento along with examples and explanations:

1. **Simple Product:**
 - *Example:* A single, standalone product like a t-shirt in one size and color.
 - *Explanation:* Simple products are individual items with no variations. They have a unique SKU and can be purchased directly without any options for customization.
2. **Configurable Product:**
 - *Example:* A dress available in multiple sizes and colors.

- *Explanation:* Configurable products are composed of multiple options, such as size, color, or other attributes. Customers can select their desired combination from a dropdown menu, and the corresponding price and SKU will update dynamically.
3. **Grouped Product:**
 - *Example:* A camera bundle including a camera body, lens, and carrying case.
 - *Explanation:* Grouped products are collections of related items that are sold together as a set. Customers can view and purchase each item individually or as part of the group.
 4. **Virtual Product:**
 - *Example:* Software licenses, e-books, or online courses.
 - *Explanation:* Virtual products are intangible items that are delivered electronically. They do not require shipping and are often used for digital downloads or services.
 5. **Downloadable Product:**
 - *Example:* Music tracks, software installations, or PDF guides.
 - *Explanation:* Downloadable products are similar to virtual products but involve files that customers can download after purchase. These files can be attached directly to the product listing.
 6. **Bundle Product:**
 - *Example:* Customizable gift baskets or DIY kits.
 - *Explanation:* Bundle products allow customers to build their own product package by selecting individual items from a list of options. Each component can have its own price, quantity, and attributes.
 7. **Gift Card:**
 - *Example:* A gift card redeemable for a specific amount of store credit.
 - *Explanation:* Gift cards are pre-paid cards that customers can purchase and gift to others. Recipients can use the card to make purchases on the website up to the card's value.

7. Write short notes about the Related Products: in Magento


In Magento, related products are items that are similar or complementary to the product a Customer is currently viewing. These products are displayed on the product page to encourage additional purchases and enhance the shopping experience.

Here's an explanation of related products in Magento along with an example:

Related Products:

- **Definition:** Related products are items that are associated with the product a customer is currently viewing, either because they share similar characteristics, are frequently purchased together, or are part of a curated collection.
- **Example:** Let's say a customer is viewing a laptop in an online electronics store. Related products for this laptop could include accessories such as laptop cases, external hard drives, or software applications.
- **Implementation in Magento:** In Magento, related products are typically displayed on the product page below the main product description. These related items are curated by the store owner based on their relevance to the main product. Store owners can manually select related products in the backend or use algorithms to automatically suggest related items based on attributes, purchase history, or browsing behavior.

To set up related products:

1. Open the product in edit mode.
2. Scroll down and expand  the **Related Products, Up-Sells, and Cross-Sells** section.
3. Click **Add Related Products**.
4. Use the filter controls to find the products that you want.
5. In the list, select the checkbox of any product you want to feature as a related product.

Part – C Questions

1. Explain the strategies for backups and security in Magento.

Magento is a popular open-source e-commerce platform known for its flexibility and robustness in building online stores. When it comes to backups and security, ensuring the safety of your Magento store is crucial to protect sensitive customer data and maintain business continuity. Here's an overview of backup and security practices in Magento, along with examples:

1. Regular Automated Backups:

Implement automated backup solutions to ensure that both your Magento database and file system are regularly backed up without manual intervention.

Example: Use a tool like Magento Backup Manager or a server-level backup solution like Acronis Backup to schedule automated backups of your Magento store on a daily basis. This ensures that you always have recent backup copies available for restoration in case of data loss or corruption.

2. Offsite Backup Storage:

Store backup copies of your Magento data and files in an offsite location separate from your primary server environment to protect against disasters like server failures or physical damage.

Example: Set up a backup rotation scheme where backup copies are securely transferred to remote cloud storage platforms such as Amazon S3, Google Cloud Storage, or Azure Blob Storage using automated backup scripts or backup software integrations.

3. Version Control System for Code:

Utilize a version control system (VCS) such as Git to manage and version control your Magento codebase, including customizations, themes, and extensions.

Example: Host your Magento codebase on a Git repository platform like GitHub, GitLab, or Bitbucket. This allows you to track changes, collaborate with team members, and roll back to previous versions if necessary, enhancing code security and integrity.

4. Security Patch Management:

Stay proactive in applying security patches and updates released by Magento to address known vulnerabilities and security issues in the platform.

Example: Regularly monitor Magento's Security Center for new security advisories and patches. Develop a patch management process to test and deploy patches promptly to your Magento environment to mitigate the risk of exploitation by attackers.

5. Web Application Firewall (WAF):

Implement a WAF to protect your Magento store from common web application threats, such as SQL injection, cross-site scripting (XSS), and malicious bot traffic.

Example: Deploy a cloud-based WAF solution like Cloud flare or Secure Firewall in front of your Magento store to inspect incoming traffic, filter out malicious requests, and block known attack patterns before they reach your server.

6. Continuous Security Monitoring:

Employ continuous security monitoring tools and services to detect and respond to security incidents and anomalies in real-time.

Example: Integrate Magento with security information and event management (SIEM) solutions like Splunk or Elastic Security to collect and analyze log data from your store's infrastructure and applications. Set up alerts and automated responses to potential security threats, such as unauthorized access attempts or abnormal user behavior.

7. Employee Security Training:

Provide regular training and awareness programs for your Magento store administrators and staff members to educate them about common security risks and best practices.

Example:

Conduct security awareness training sessions covering topics such as password hygiene, phishing awareness, and incident response procedures. Encourage employees to report any security concerns or suspicious activities promptly to the designated security team. By implementing these backup and security strategies for your Magento store, you can effectively mitigate the risk of data loss, unauthorized access, and security breaches, thereby ensuring the integrity and availability of your e-commerce operations.

2. Explain the up-sells, and cross-sells in Magento with example

Up - sells and Cross – sells in Magento

In Magento, upsells and cross-sells are techniques used to encourage additional purchases and increase average order value by suggesting related or complementary products to customers. Here's an explanation of upsells and cross-sells in Magento along with examples:

1. Upsells:

- **Definition:** Upsells are products that are of higher value or better quality than the one the customer is currently viewing or considering.
- **Example:** Suppose a customer is viewing a mid-range smartphone priced at \$500. An upsell for this product could be a premium smartphone model with advanced features priced at \$800.
- **Implementation in Magento:** In Magento, when a customer views a product, upsell products are displayed on the product page to tempt them to consider a higher-end option. These upsell products can be configured in the backend by selecting relevant items to suggest when customers view a particular product.

2. Cross-sells:

- **Definition:** Cross-sells are products that are complementary or related to the one the customer is currently viewing or considering, often purchased together.
- **Example:** If a customer is viewing a digital camera, cross-sell products could include camera accessories such as a camera bag, memory card, or tripod.

- **Implementation in Magento:** In Magento, cross-sell products are typically displayed in the shopping cart or during the checkout process. When a customer adds a product to their cart, cross-sell items are presented as suggestions for additional purchases. These suggestions are based on the customer's current selection and can be configured in the backend by specifying related products for each item in the catalog.

In Magento, both upsells and cross-sells are effective techniques for increasing sales and enhancing the shopping experience for customers. By strategically suggesting relevant products, you can encourage customers to explore additional items and make more informed purchasing decisions, ultimately leading to higher revenue and customer satisfaction.

Unit - III

Part - A Questions

1. What is user role in Magento?

User roles in Magento2 are a set of permissions and privileges assigned to a specific user. These roles determine user actions on the admin panel, such as managing customers, orders, products.

2. What is Magento theme?

Magento theme is a combination of files including CSS, HTML, PHP, XML, and images, all of which contribute to the look and feel of an online store.

3. What is Luma theme?

A Luma theme is a pre-designed template or group of files that determine the appearance and feel of a Magento-powered store. A theme comprises several aspects that define the visual look of the storefront, such as layout, typography, color scheme, images, and widgets

4. What is Blank for custom theme?

The Blank theme provides a basic layout with essential e-commerce pages like the Homepage, Product Category, Product Detail, Cart page, Checkout page, and about page. and Serves as a foundation for custom theme development.

5. What is XML?

In Magento, XML (Extensible Markup Language) is used to define the structure and content of different website pages. Each page in Magento has its corresponding layout file which specifies the page's blocks, containers, and other elements

6. What is JSON?

JSON which stands for JavaScript Object Notation, is a lightweight, text-based format for data interchange. It's often used when data is sent from a server to a web page. In Magento JSON (JavaScript Object Notation) is used for data serialization and deserialization.

7. What are translation dictionaries in Magento?

Translation dictionaries in Magento2 allow the creation of translation dictionaries for both modules and themes. Magento2 works by extracting translatable words and phrases from enabled components using the translation collection command.

8. What are elements in Magento?

Elements in Magento contains 3 methods to create **content** in a Magento2 site: Pages, Blocks and Widgets. In Pages, you can create as many pages as you want and also customize these pages with text, images, blocks, variables, and widgets to make them more visual to customers.

Part – B Questions

1. Explain the importance of user and roles management in Magento store

Magento's user roles are crucial for maintaining secure and efficient e-commerce operations. They provide the capability to manage and control access rights for each admin user, ensuring that sensitive information is protected.

Some of the reasons behind the importance of Magento2 user roles are:

Security

By limiting the areas of the Magento2 admin panel that certain users can access, you ensure that sensitive data is only accessible to those who genuinely need it. This greatly reduces the risk of important information falling into the wrong hands.

Efficiency

Assigning specific roles helps keep the backend operations of your store running smoothly. Each user knows their responsibilities, and there is no overlap or confusion about who is supposed to do what.

Control

User roles allow the store owner or main administrator to maintain control over the store's operations. They can easily manage user roles, add new users, or adjust the current user's permissions.

Flexibility

With the advanced permissions extension, Magento user roles can be customized to suit your store's individual needs. You can create a user role that fits exactly the tasks and responsibilities of each team member.

Audit Trail

When each admin user has a unique role, tracking activity and changes on the backend is easier. This can be invaluable when trying to trace a problem or understand how a mistake occurred.

2. What are benefits of using user roles in Magento?

Leveraging user roles in Magento2 offers several advantages. It improves your store's backend's efficiency, security, and manageability.

These benefits include:

Streamlined Operations: Each team member can focus on their responsibilities by assigning specific user roles. This leads to improved productivity and effectiveness.

Enhanced Security: User roles limit access to sensitive information. This reduces the likelihood of accidental data leaks.

Accountability: With individual user roles, any changes made in the system can be traced back to a specific user. This increases accountability among team members.

Customization: Magento2 admin user roles can be customized to meet your store's unique needs. This ensures that team members have appropriate access to their respective roles.

Ease of Management: User roles simplify the task of administering a Magento2 store. They make managing current user accounts and privileges easier.

User roles: To give someone restricted access to the Admin, the first step is to create a role that has the appropriate level of permissions. After the role is saved, you can add new users and assign the restricted role to grant them limited access to the Admin.

3. Write short notes about the custom Magento theme of advantages

Magento2 theme controls the features and visual appearance of your store, we highly recommend creating a custom theme to bring more conversions. A custom theme in Magento is a powerful tool that can significantly enhance the visual appeal and functionality of your online store

The custom theme requires specific tech skills; if you have technical development experience, the Magento theme will bring additional changes to your store.

Advantages:

Customization: Customize the functionality and design to your specific requirements.

Relevancy: The customized theme can bring and reflect your brand with additional changes.

Change Theme: Themes can be changed per store by creating a child theme as the parent theme.

SEO-optimized: To bring more conversions to your store, the custom theme can control the URL based on SEO needs, as a result, drive more traffic to the store.

Management: Themes created by your developers will be easier to manage.

4. Explain the creative translations in Magento with example

Magento2 is a powerful E-Commerce platform that supports multiple languages, making it a top choice for international retailers. Here's how you can add creative translations in Magento2

1. **Language Packages:** A language package is used to translate any or all words and phrases in the Magento application. Each language pack contains translation files for different text content on your Magento2 website, such as standard phrases and email templates. and can create your own language packs by adding translations to the CSV file
2. **Translation Dictionaries:** Magento2 allows the creation of translation dictionaries for both modules and themes
3. **Translation Extensions:** There are extensions available that can help with the translation process.

For example, the LangShop translation extension for Magento2 or the Translation Center Magento2 extension

Here is an example of how can use theme translation files to translate the same element in different ways for different pages

PHP

"Mage_Catalog:Add to Cart","Add to Basket"

"Mage_Checkout:Add to Cart","Add to my shopping cart"

AI-generated code. Review and use carefully.

In this example, the “Add to Cart” button text is translated differently depending on whether the user is on a Catalog page or a Checkout page.

This is especially important for E-Commerce, as providing more languages makes the store available globally

5. Explain the Magento theme variants of uses.

Magento themes are flexible and allow for a variety of customizations. You can use theme variants to change the look and feel of your store for different seasons, events, or promotions. Here's a general guide on how to use Magento theme variants:

1. **Choose a Theme:** Look for a theme that matches the industry and niche of your e-commerce store. Consider the features you need, such as product sliders, menu styles, and product page layouts
2. **Create a Theme Directory:** Create a directory for your theme within the app/design/frontend directory in your Magento installation
3. **Theme Configuration:** Create a theme.xml file to specify the parent theme and other theme information
4. **Theme Layout:** Customize the layout of your store by creating or modifying layout XML files in your theme directory

5. **Templates and Styles:** Create or modify templates, CSS, and JavaScript files to achieve the desired look and functionality
6. **Activate the Theme:** In the Magento Admin Panel, go to Content > Design > Configuration and set your new theme as the default for your website.

each design package in Magento can contain any number of theme variants. You can include these variants within a design package and use them for different purposes, such as seasonal changes

Example: How to Change Theme in Magento2?

1. **Log in to Admin Panel**
2. **Navigate to Content > Design > Configuration**
3. **Click Edit theme**

In Applied Theme dropdown, select the theme that you want to change to.

6. Write a short notes about the content menu in Magento

“**Content** is King” – a very well-known saying that proves the huge importance of **content** for any fields. Content is one of the most effective ways to transmit information via words, images or video and express emotions, opinions as well as evaluation of authors to all readers.

For E-commerce, **content** has become more significant than ever because it is the only mean to communicate with customers, provide them necessary information about products or anything related to business and build trust and credibility in customers’ mind. Besides, **content** also helps an E-commerce site get a good visibility to search engines, which makes customers easier to find it out and click to read more.

Therefore, developing a complete and adequate **content** system is extremely indispensable and requires all stores having a particular strategy for it. This is a reason why default Magento2 supports a specific configuration section called **Content** Menu to allow Magento users to flexibly create and customize **content** for their business. This menu is the most fundamental basement for a Magento2 store to build primary elements for later **content**.

Example: navigate to **Admin** => **Content** in the left sidebar of Magento2 backend.

Content Menu is divided into 2 small section : Elements and Design

Elements

Elements section contains 3 methods to create **content** in a Magento2 sites: Pages, Blocks and Widgets. In Pages, you can create as many pages as you want and also customize these pages with text, images blocks, variables, and widgets to make them more visual to customers. Moreover, pages are configured to be displayed in the side navigation of a website and can be linked to other pages which have relevant **content**.

Design

Design section includes settings of visual display of your store such as how to choose a suitable theme for your store or how to schedule design changes.

7. Explain the content elements in Magento.

Content elements in Magento2 are the various components that make up the content of your website. They include pages, images, videos, and other types of media. Creating custom content elements in Magento2 involves creating custom layouts, blocks, and templates.

Here's a step-by-step guide on how to do it:

1. **Create a Controller:** The controller is an integral part of the Magento module for handling the requests rendering on the page. Create a new controller to add a new page in Magento2
2. **Create a Layout File:** The layout creates a link between the Block class & the template to manage and describes the page's structure. The layout file is an XML file containing multiple layout instructions
3. **Create a Block:** Blocks in Magento2 are PHP classes that contain the logic needed to present data from the database or other sources
4. **Create a Template File:** Templates are pieces of code in PHTML (PHP) files that add features and contents you see on the front page.
5. **Flush Magento Cache:** After making changes, you need to flush the Magento cache to see the changes on the frontend
6. **Run a Test:** Finally, test your changes to ensure everything works as expected

Creating custom content elements allows you to customize your Magento2 store to fit your specific needs. Always ensure to follow best practices for Magento development to maintain the integrity and security of your store.

Part – C Questions

1. Explain the customer group management system in Magento

Customer group management refers to the processes, practices, systems, and applications that a company uses to manage its relationships with existing customers and new prospects. It involves grouping customers based on shared characteristics, allowing you to tailor your interactions, marketing efforts, and promotions to specific segments.

In Magento2, this functionality enables you to assign customers to specific groups, making it easier to apply sales discounts, tax classes, or manage content displayed to specific customer groups. By default, Magento2 provides four customer groups: General, Wholesale, Retailer, and Not Logged In. However, you can create additional custom groups based on your business needs.

Magento2 provides four distinct customer groups to streamline the shopping and checkout process, each tailored to different types of customers:

1. **General:** This group is for the average consumer who visits the online store. For example, John wants to buy a new shirt online, so he browses the store, adds a shirt to his cart, and checks out as a general customer.
2. **Wholesale:** These are customers who buy in bulk, often for resale. For instance, a business owner, Sarah, needs to purchase 100 shirts for her retail store. She would be categorized under the wholesale group and might receive special pricing or discounts.

3. **Retailer:** Retailer customers are similar to general but might have a physical storefront or an online platform where they sell products. Alex owns a small boutique and buys products from various online stores (including yours) to sell in his shop.
4. **Not Logged In:** These are visitors who browse the online store but haven't created an account or logged in. Emma is looking for a new dress but isn't sure where she wants to buy it from yet. She visits several websites, including your Magento2 store but doesn't log in.

These customer groups allow Magento2 store owners to provide a personalized shopping experience for different types of customers. They can set different pricing levels, discounts, and access permissions for each group. This helps in better customer segmentation and targeted marketing.

2. Explain the Magento theme structure concept.

Magento theme structure: Magento theme is a combination of files including CSS, HTML, PHP, XML, and images, all of which contribute to the look and feel of an online store. Magento provides **two themes, one is Luma for demonstration, and the second is Blank for custom theme creation.**

Magento Theme Structure:

- Magento themes are essential for maintaining a consistent aesthetic and mood throughout your store. They control the visual appearance of both the **admin panel** and the **storefront**.
- By combining custom templates, designs, styles, or images, developers can enhance the overall look and feel of their Magento stores.
- Magento provides two default themes:

Luma: A demonstration theme. **Blank:** Serves as a foundation for custom theme development.

It's important to note that while you can use the Luma theme for your live store, Magento recommends avoiding direct changes to the default Luma and Blank theme files. Customizations should be done through child themes or by creating your own theme.

Custom Magento Theme Advantages:

Customization: Tailor the functionality and design to your specific requirements.

Relevancy: Reflect your brand identity through additional changes.

SEO-optimized: Control URLs based on SEO needs to drive more traffic.

Management: Easier to manage themes created by your developers.

Example: The Luma theme structure is the default theme for Magento2, an open-source E-Commerce platform. It's designed to provide a clean, eye-catching, and elegant user interface for online stores. Here's a brief overview of its structure and features:

1. **Luma Theme:** A Luma theme is a pre-designed template or group of files that determine the appearance and feel of a Magento-powered store. A theme comprises several aspects that define the visual look of the storefront, such as layout, typography, color scheme, images, and widgets

2. **Design:** The Luma theme features a modern design and includes the functionality of the updated Magento2 engine. It's a great improvement over the Magento 1 default theme, Madison Island
3. **Category Pages:** These are the pages where products are listed under a specific category. The design of these pages in the Luma theme is made to be user-friendly and visually appealing
4. **Product Pages:** These pages provide detailed information about a specific product. The Luma theme ensures these pages are well-structured and provide all the necessary information about the product
5. **Cart and Checkout:** The Luma theme provides a smooth and straightforward process for customers to add products to their cart and proceed to checkout
6. **Customization:** Magento advises against changing or upgrading Luma theme files if you want to change the default or develop the theme. By combining custom templates, layouts, or images, developers may improve the aesthetic appeal of locations like the Magento2 admin panel and storefront

Unit - IV

Part – A Questions

1. **What is shopping tool?**
Shopping tools are software applications that assist in various aspects of online shopping. They streamline, organize, and automate the processes of running and growing an online store
2. **What is promotions?**
Promotions in Magento2 are a great way to increase customer awareness about online business site and boost online business conversion rate.
3. **What is Catalog price rule?**
This rule allows to lower the product cost for all items on business store in Magento. website. Once you set a rule, it adjusts product prices according to the special Promotion. Selectively offer products at a discounted price, based on a set of conditions
4. **What is Cart price rule?**
This rule applies discounts to items in the shopping cart, based on a set of conditions. It's a great way to entice customers at the checkout. Apply discounts to items in the shopping cart, based on a set of conditions
5. **What is Message Queues?**
Message Queues Magento provides the Message Queue Framework for publishing messages to queues and creating consumers to receive them asynchronously.

6. What is SEO?
SEO (Search Engine Optimization) is a crucial aspect of any E-commerce platform, including Magento2. It helps increase the quality and quantity of traffic to engage more customers' interest in stores' products.
7. What is point of purchase?
In Magento2, the term "Point of Purchase" is often referred to as the Point of Sale (POS) system. The POS system is an organization's method of maintaining inventory and data concerning goods or services
8. What is distributed order management in Magento?
Distributed Order Management: in Magento determines the most efficient methods and channels for fulfilling an order to best meet customer expectations.
9. What is SMTP?
Simple Mail Transfer Protocol is a set of standards used for transferring email messages from the sender to the recipient over the internet
10. What is shipping?
"The process or business of sending or transporting goods". It is the physical movement of goods from one point to another, such as the moving merchandise from the warehouse to the customer.

Part – B Questions

1. Explain the different types of shopping tools application with example.

Shopping tools application:

1. **Ecommerce Platforms:** These are platforms where you can create and manage your online store.
Examples include Shopify, BigCommerce, WooCommerce, Squarespace, and Wix.com.
2. **Inventory & Order Management:** These tools help you manage your stock and orders. An example is the Shopify Fulfillment Network.
3. **Analytics and Reporting:** These tools help you track sales, orders, and measure your performance. Google Analytics and Kissmetrics are examples.
4. **Marketing Tools:** These tools help you reach more customers online and make an exciting shopping experience. Examples include Adroll and AdEspresso.
5. **Customer Service Tools:** These tools help you manage customer support. Examples include Zendesk and LiveChat.
6. **Communication and Internal Organization:** These tools help in internal communication and organization. Examples include Asana and Trello.
7. **Content Creation Tools:** These tools help in creating content for your online store. Examples include Brandwatch Social Media Management and Hootsuite.

The right tools for your business will depend on your specific needs and goals. It's always

a good idea to research each tool and consider its features, pricing, and reviews before making a decision.

2. What are the features of Magento2 tool.

Magento2, now known as Magento Commerce and Magento Open Source, is a powerful E-Commerce platform that businesses use to create and manage their online stores. Here are some key features and examples:

1. **Wider Outreach:** Magento2 supports multiple languages and currencies, allowing businesses to reach a global audience
2. **Customer-friendly:** Magento2 offers many default themes and third-party apps for customization. This allows businesses to create well-structured and easy-to-navigate websites.
3. **Search Engine Optimization (SEO):** Magento2 has excellent SEO features that help businesses rank higher in search engine results
4. **Security:** Compared to other platforms, Magento2 is highly secure, making it a safe choice for E-Commerce websites
5. **Integration:** Magento2 can be integrated with other technologies

As for examples, many renowned brands have built their E-Commerce websites using Magento2. These websites stand out due to their load speed, structure, navigation, user experience (UX), and mobile responsiveness. However, the specific names of these websites are not provided in the search results

3. What are the components of the Magento2 Order Management System

Order management in Magento2 is a comprehensive process that involves managing, selling, and fulfilling inventory from any sales channel.

Here are some key components of the Magento2 Order Management System (OMS)

1. **Distributed Order Management:** Determines the most efficient methods and channels for fulfilling an order to best meet customer expectations.
2. **Sourcing:** Provides a bird's-eye view of global inventory, allowing merchants to define and optimize how products are sourced from all available inventory.
3. **Store Fulfillment:** Allows merchants to turn their stores into mini-distribution centers for easy and adaptive sourcing of multi-store inventory and online selling.
4. **Customer Service:** Enables easier order modifications and integration with other essential customer service tools.
5. **Mobile Point-of-Sale (POS):** Enhances the in-store experience and ensures a customer never leaves the store without the desired product.
6. **Business Intelligence:** Leverages order management analytics to gain valuable insight on orders, shipments, returns, and payments¹.

Every order in Magento2 goes through several stages before it is marked as “Complete”. These stages are represented by different order statuses and states

4. Write a short notes about the Payment methods in Magento2.

Magento2 supports a variety of payment methods out of the box, such as

- Check/Money Order
- Cash on Delivery
- Bank Transfer
- Zero Subtotal Checkout
- Purchase Order

You can also create your own custom payment methods

Here’s a basic example of how to create a custom payment method in Magento2

1. **Create a new module:** You’ll need to create a new module for your custom payment method. This involves creating a registration.php file and declaring your module in a module.xml file
2. **Add configuration settings:** In your new module, you’ll need to add configuration settings for your payment method. This includes settings like whether the payment method is enabled, the title of the payment method, and which credit card types are accepted
3. **Implement the payment method:** After setting up the module and configuration, you’ll need to implement the payment method. This involves creating a model for the payment method, defining the payment action, and implementing the necessary API logic
4. **Display the payment method in the checkout page:** Finally, you’ll need to ensure that your new payment method is displayed on the checkout page. This involves creating a layout file and a template file for the payment method
5. Explain the shipping methods in Magento2.

Magento2 provides several shipping methods out of the box.

Here’s a brief explanation of each:

1. **Flat Rate Shipping Method:** This is a standard Magento2 shipping method that can be applied per single item or per order regardless of product attributes such as size, weight, etc

2. **Free Shipping Method:** Magento2 allows store owners to provide free shipping based on specific conditions, such as order value, customer segments, minimum purchase, etc
3. **Table Rates Shipping Method:** The shipping costs in Table Rate are determined based on destination, weight, and order value. This option provides multiple shipping rules for distinct product sets or customer categories
4. **In-Store Pickup:** This method allows customers to buy products online and pick them up in a physical store or specific location

To configure these shipping methods, go to Stores > Configuration > Sales > Shipping Methods in your Magento2 admin panel.

Here's an example of how to configure the Flat Rate Shipping Method:

- Enable the method by setting Enable to Yes.
 - Set the Title and Method Name.
 - Define the way the shipping fee is added to the subtotal in the Type field. There are 3 possible options:
 - **None:** No change. In this case, the Flat rate shipping method is equivalent to Free.
 - **Per Order:** The charge is generated for the whole order and not every single item separately.
 - **Per Item:** The Flat Rate shipping fee is set for each item and multiplied by the number of items in the cart.
6. Write a short notes about the configuring sales tax rules.

Configure sales tax rules in Magento2:

1. **Provide Tax Rule Information:** Access the Admin panel and navigate to Stores > Taxes > Tax Rules. In the upper-right corner, click Add New Tax Rule. Enter the name of your new rule under Tax Rule Information. Next, select the applicable Tax Rate for this rule.
2. **Input Tax Rates:** You can choose between two methods to input tax rates
 - **Manual Entry:** Click Add New Tax Rate. Fill out the required form. Once the form is complete, click Save.
 - **Import Tax Rates:** Prepare a CSV file with your tax rates to speed up the process. Scroll down to the bottom of the Add New Tax Rules page. Click Choose File and select the CSV file containing the tax rates for import.

Here's an example of how to set up a tax rule:

Step 1: Go to Stores > Taxes > Tax Rules and press the Add New Tax Rule button.

Step 2: Set the Tax Rule Information. Give the tax rule a Name. Choose the Tax Rate from the list of available rates or Add New Tax Rate manually.

Also, Magento2 taxes are auto-calculated based on tax rules. Tax rules, on the other hand, depend on customer, product tax classes as well as customers' shipping and billing addresses, and store location.

The Tax Rule is a combination of **customer tax class**, **product tax class**, and tax rate. Each customer is assigned to a customer class, and each product is assigned to a product class. Magento analyzes each customer's shopping cart and calculates the tax according to the product, customer classes, and region.

7. Write a short notes about the outgoing E-mails in Magento2

In Magento2, outgoing emails are used for various purposes such as order confirmations, payment success or failure notifications, account creation confirmations, password resets, invoice creations, and more. These emails are sent through a protocol called Simple Mail Transfer Protocol (SMTP)

To set up outgoing SMTP email for Magento2, you can follow these steps.

- 1. Download the Custom SMTP for Magento2 extension.**
- 2. Log into your Magento2 Admin**
- 3. Go to Stores > Configuration > MagePal > SMTP Configuration**
- 4. Configure your SMTP settings**

SMTP allows your Magento2 store to send email through a specific third-party mail SMTP server. You can configure your Magento store to use your Gmail, Amazon, Microsoft, or any other mail server account to send all your emails. All you need is to configure the mail server settings in the Magento extension.

The way present the business email will be one of the evaluation criteria from the customer. They may decide whether or not to continue choosing your brand, partly depending on how expert your email is. So, it's essential to carefully set up emails on the Magento2 admin page.

Part - C Questions

1. Explain the features of SEO & Search in Magento2.

SEO (Search Engine Optimization) is a crucial aspect of any E-commerce platform, including Magento2. It helps increase the quality and quantity of traffic to engage more customers' interest in stores' products. Here are some key SEO settings and features in Magento2:

1. **Magento Homepage SEO Setting:** Modify the default "Home Page" to become meaningful, such as the name of your store
2. **Magento Metadata SEO optimization:** This includes Meta Title, Meta Description, and Meta Keywords for Categories and Product settings
3. **Setting Canonical tags for SEO:** These help prevent duplicate content issues
4. **Setting Robots.txt for SEO:** This file tells search engine crawlers which pages or files the crawler can or can't request from your site
5. **Add Rich Snippets for product pages:** Rich snippets provide more information about your product directly in search results
6. **SEO XML sitemap generation:** An XML sitemap helps search engines better understand your website while crawling it
7. **Alt tags for SEO images:** Alt tags provide better image context/descriptions to search engine crawlers and help improve your SEO ranking
8. **URL Rewrite and Redirect:** URL rewriting can be used to convert complex URLs into simple, easy-to-read URLs, improving user experience and SEO
9. **Suffix for product and category URLs:** Clean, concise URLs can improve search engine optimization

Advanced Magento2 SEO setting with SEO All-in-one: This includes enabling the SEO module, removing duplicate content issues, SEO structured data configuration, business information and social profiles for local SEO, site verification for search engine optimization, SEO tool XML and HTML sitemap integration, SEO redirect, SEO metadata template rules, SEO analysis, SEO crosslinks, SEO checklist, SEO report, SEO hreflang tag, SEO image optimizer.

2. Explain the shipping modules and benefits with example

Magento2 (Adobe Commerce), the popular E-commerce platform, offers a range of shipping options..Table Rate Shipping Method and Flat Rate Shipping Methods are referred to as Magento2 modules because they are integral components of the Magento2 E-Commerce platform that provide specific functionalities

1. **Flat Rate Shipping Method:** This method allows merchants to apply a consistent rate for every order, regardless of their product attributes such as size or weight. It's particularly suitable for small businesses with a limited range of items
2. **Table Rate Shipping Method:** In contrast to the Flat Rate, the shipping costs in Table Rate are determined based on destination, weight, and order value. This option provides multiple shipping rules for distinct product sets or customer categories, giving retailers more flexibility. It's suitable for medium Magento stores.

These modules are part of the default shipping methods provided by Magento2, which also include Free Shipping and In-store Pickup. They help store owners to offer a variety of shipping options to their customers, enhancing the shopping experience and potentially influencing purchasing decisions. Therefore, they are called Magento2 modules due to their specific roles and functionalities within the Magento2 system.

Benefits of Shipping Modules:

1. **Modularity:** Modules are integral to Magento's architecture, enabling developers to add, remove, or modify functionality without affecting the core system¹². This makes Magento2 highly adaptable and customizable for e-commerce businesses.
2. **Customization:** By using modules, you can extend Magento's functionality, tweak its current capabilities, or connect it to external services. This allows you to create tailored solutions that align with your business needs and customer expectations.
3. **Cost and Time Efficiency:** Modules aid with customization, development, migration, and other tasks. This minimizes the time necessary for web development, lowers the cost of employing an experienced developer, and preserves time for future project developments.
4. **Improved Performance and Robustness:** Magento2 is a much more robust piece of software than its predecessor, with improvements such as unit and integration tests, a richer templating system, and a series of useful design patterns adopted throughout the code.
5. **Ease of Use:** Modules follow a structured directory hierarchy and can include controllers for handling user requests, layout XML files for page customization, blocks for managing content, and helpers for utility functions. This makes it easier for developers to understand and work with the system..

In summary, the use of modules in Magento2 enhances the flexibility, customization, and efficiency of e-commerce store development, making it a powerful tool for businesses

Unit - V

Part – A Questions

1. What is sales report?

These reports provide detailed information about the sales activity in online business store. For example, the Orders report under Sales Reports allows to keep track of the orders created in your store.

2. What is marketing automation?

Marketing automation in Magento2 is a technology or a scope of functionalities designed for Marketing & Sales Departments to help them market more effectively. It's about automating specific routine tasks to save time and bring personalization.

3. What is CMS?

Magento2 is a powerful E-Commerce platform that provides a content management system (CMS) for managing various elements of your online store. The CMS includes Pages, Static Blocks, and Widgets.

4. What is credit card?

This is a payment method that allows customers to borrow funds up to a certain limit to purchase goods or services. The customer must pay back the borrowed amount along with any interest charged by the card issuer.

5. What is debit card?

This is a payment method that deducts money directly from a customer's bank account to pay for a purchase. A debit card is a payment method that directly deducts money from a customer's bank account when they make a purchase. It's a convenient way to pay for goods or services without carrying cash.

6. What is cryptography?

Cryptography is the process of hiding or coding information so that only the person a message was intended for can read it and used in bank cards, computer passwords, and ecommerce. Cryptography aims to keep data and messages private and inaccessible to possible threats or bad actors.

7. What is symmetric key cryptography?

Symmetric Key Cryptography: here, the sender and receiver of the message use a single common key to encrypt and decrypt messages. This system is faster and the challenge is that the sender and receiver have to exchange the key in a secure manner.

8. What is asymmetric Key Cryptography?

Asymmetric Key Cryptography Under this system, a pair of keys is used to encrypt and decrypt information. A receiver's public key is used for encryption and a receiver's private key is used for decryption

9. What is BFS?

Breadth-First Search (BFS) techniques applied in the context of online business purchasing. BFS is a fundamental graph traversal algorithm that can help optimize various aspects of E-commerce systems.

Part – B Questions

1. How marketing automation can be used in Magento? Explain with example

Marketing automation in Magento2 is a technology or a scope of functionalities designed for Marketing & Sales Departments to help them market more effectively. It's about automating specific routine tasks to save time and bring personalization.

Here's an example of how marketing automation can be used in Magento2:

1. **Abandoned Cart Reminders:** If a customer adds items to their cart but doesn't complete the purchase, an automated email can be sent to remind them of their unfinished transaction. This can help recover lost sales.
2. **Personalized Product Recommendations:** Based on a customer's browsing and purchasing history, automated systems can suggest products that the customer might be interested in.
3. **Targeted Marketing Campaigns:** Customer data can be used to segment customers into different groups based on their behavior, preferences, or demographics. Automated marketing campaigns can then be tailored to each group.
4. **Customized Pricing and Discounts:** Special offers or discounts can be automatically applied to a customer's order based on their shopping behavior or loyalty status.

2. Write a short notes about the Magento content management system.

Magento2 is a powerful E-Commerce platform that provides a content management system (CMS) for managing various elements of your online store. The CMS includes Pages, Static Blocks, and Widgets.

Here's a brief explanation of each:

1. CMS Pages: CMS Pages are used to insert product descriptions, images, videos, audio files, and other useful data on a single page.

Example of creating a CMS Page:

Log in as an admin, go to Content → Elements → Pages

Click the Add New Page button

Fill in the details of your new page, including Page Title, Content Heading, SEO elements, Store View, and Design

Use the WYSIWYG editor for controlling the content of your pages

2. Static Blocks: Static Blocks are dynamic and highly customizable elements that allow you to quickly modify the content of your site¹. They can be used for adding additional content to the header, footer, and product category pages

Example of creating a Static Block:

Sign in to the Admin account, go to Content → Elements → Blocks

Click the Add New Block button

Fill in all the form fields and choose the most suitable Store View field

Include the content for your block, insert links, tables, images, video, and audio files by using the WYSIWYG editor

3. Widgets: Widgets in Magento2 are instances of interface components that can be inserted into CMS pages, blocks, and the layout of the store

Example of adding a static block to a CMS page by inserting a widget:

Go to Content → Elements → Pages

Choose the CMS page you want to insert a widget

Remember, these are just basic examples. Magento2 offers a wide range of customization options for Pages, Static Blocks, and Widgets to suit the specific needs of your online store

3. Explain the principles of customizing layouts in Magento.

Customizing layouts in Magento involves understanding and manipulating several key components.

1. **Magento 2 Layouts:** Layouts in Magento2 are XML files that define the structure and content of different website pages. Each page in Magento2 has its corresponding layout file. Magento2 offers five default frontend page layouts: empty, 1column, 2columns-left, 2columns-right, 3columns¹.
2. **Containers:** Containers are used to organize and position page content effectively.
3. **Blocks:** Blocks play a crucial role in rendering UI elements and can be customized.
4. **Layout Handles:** Layout Handles are unique identifiers representing a set of layout instructions. They are used for flexible page configurations

5. **Custom Layout Files:** You can create custom layout files for unique web page designs

To customize a layout, you can create a new layout or alter existing layout files. For example, to make changes to every page of your website, you can modify the default.xml file. You can also add, modify, or remove a block and its sub-elements

4. Explain the operation of store and system in Magento
Magento is a robust E-commerce platform that provides a wide range of features for creating and managing an online store. Here are some examples of successful Magento stores and how they operate:

1. **Helly Hansen:** This sportswear retailer uses a combination of Adobe Commerce Cloud and native Adobe apps such as Experience Manager and Adobe XD to power its Magento store. After moving its site from WordPress to Magento, Helly Hansen was able to create 55 different e-commerce sites in multiple languages, with localized payment methods and shipping rules. They found Magento to be a much better solution than WordPress for "doing things quickly and beautifully at scale".
2. **Lafayette 148:** This company, previously operating as a fashion wholesaler, recently switched to a direct-to-consumer (DTC) model with a Magento store. They offer a portal where personal stylists can continue to work one-on-one with clients-virtually, where necessary. This is next-level personalization, and it makes sense for a high-end fashion retailer, where customers expect this kind of personal, luxurious experience..

Here are some key components for operating a successful Magento store:

- **Design and UX:** An intuitive and engaging design that enhances the user experience, ensuring seamless navigation and interaction.
- **Security:** Strong security measures, including SSL, two-factor authentication, and regular updates to keep your site safe from **cyber attacks**.
- **SEO Optimization:** SEO-optimized site structure and content to rank higher on search engines and increase organic traffic.
- **Mobile-Friendly Design:** Responsive design to provide an optimal viewing experience across various devices, from desktops to mobile phones.
- **Performance Optimization:** Fast-loading web pages for improved customer satisfaction and SEO rankings.
- **Inventory Management:** A robust inventory management system to accurately track and manage stock, ensuring efficient operations.

Magento2 success stories and a comprehensive guide on setting up a Magento2 store.. the success of an online store depends not only on the platform but also on how well it's managed and optimized.

5. Write short notes about the electronic payment system in E-Commerce

Electronic payment systems in Magento2 allow customers to make online transactions. Magento2 supports various types of payment methods¹. Here are some key components:

Magento2 Payment Methods: Magento2 supports different types of payment methods, including Check / Money Order, Cash On Delivery Payment, and Zero Subtotal Checkout. **You can configure these in your Magento2 Admin Panel by navigating to STORES > Configuration > Sales > Payment Methods > OTHER PAYMENT METHODS.**

Payment Gateway Integration: Magento2 allows you to integrate various payment gateways. This involves creating your own payment gateway integration in your Magento2 store². **You can find and configure it according to the path Admin panel > Stores > Settings > Configuration > Sales > Payment Methods².**

eWallet (Digital Wallet System): eWallet is an electronic version of payment that is authorized to process transactions. These eWallets are required to be linked to specific credit or debit cards in order to function properly. You can configure the eWallet feature in your Magento2 store using the Magento2 eWallet Extension. **Login to your admin panel and navigate to Stores > E-Wallet > Configuration.**

6. Explain the credit card, debit card and digital signature in E-Commerce

Credit cards and debit cards are both types of payment cards, but they have some key differences:

Source of Funds:

Debit Card: When you use a debit card, the money is deducted directly from your bank account. You can only spend the amount of money that is in your account.

Credit Card: When you use a credit card, you are borrowing money from the card issuer up to a predefined limit. You can spend more than what you have in your bank account, up to your credit limit

Payment and Interest:

Debit Card: There is no bill or statement for debit card transactions as you are using your own money. There is also no interest charged.

Credit Card: You receive a bill or statement each month with details of the transactions you have made. If you do not pay your bill in full by the due date, interest is charged on the outstanding amount.

Digital Signature:

In Magento2, a digital signature is used to ensure the authenticity of electronic documents, messages, etc. It can be added to your custom forms using extensions like the Advanced Form Builder. Here's a basic example of how you can add a digital signature to your custom form in Magento2.

1. **Create a Custom Form:** To embed a digital signature in your form, create a custom form following CONTENT > SmartFormer Gold > Form Manager > Create Form. Drag necessary elements from the toolbar to the working area.
2. **Insert the Signature:** To insert the signature, do the following:
 - At the top of the toolbar, find the ready-to-use group of elements or snippets, drag and drop the “Digital Signature” snippet (including the drawing canvas, the DIV element, and static text) to the working area.
 - After all elements were placed on the area, enter the unique “SFG Alias” and “Name” to connect the form to the database and save the entered data and signature. For example, “Name” - digital_signature, “SFG Alias” – Digital Signature
 - You can also specify the pen size, its color, or change the canvas background color and insert image in the “Common” properties
3. **Save the Customers' Data:** To save the customers' data, a new database table should be created following:
 - Select Tools > Database Designer.
 - Click button “Generate Automatically” to create a new database table or click “add field” to add a created element to the database manually. Enter a unique table name and click "Commit".
4. **Make the Signature Available for Emails:** If you need to make the signature be available for emails, for example for contracts or agreements, do the following:
 - In the “Submit” button's properties enable the email notifications for users or admin after the form is submitted.
 - Go to Tools > Email Templates. Select an email template where the signature's image should be displayed.

7. Explain the application of BFS in Online Business Purchasing.

Application of BFS in Online Business Purchasing:

1. Shortest Path and Minimum Spanning Tree for Unweighted Graphs

In an unweighted graph (such as a network of interconnected products or web pages), BFS can be used to find the shortest path between two nodes. For online business purchasing, this translates to finding the most efficient route for a user to navigate from their starting point (e.g., browsing a product category) to their desired endpoint (e.g., completing a purchase). By analyzing the graph of product links or web pages, BFS ensures that users reach their destination with the fewest steps.

Example:

Suppose a user starts by searching for a specific product category (e.g., “laptops”) on an e-commerce website. The BFS algorithm explores related categories, filters, and individual product pages in a level-by-level manner. It identifies the shortest path to the desired product (e.g., a specific laptop model) by minimizing the number of clicks or page transitions.

2. Recommendation Systems

BFS can contribute to personalized product recommendations. By constructing a graph of user preferences, product interactions, and similarity measures, BFS can traverse the graph to recommend related products. For instance, if a user adds a smartphone to their cart, BFS can explore similar products (e.g., other smartphones, accessories) and suggest them during checkout.

Example:

User A adds a high-end smartphone to their cart. The BFS algorithm analyzes the graph of related products (based on features, brand, or user behavior) and recommends compatible accessories (e.g., screen protectors, chargers) that enhance the user’s experience.

3. Inventory Management and Stock Availability

BFS helps manage inventory levels efficiently. By modeling the inventory as a graph (with products as nodes and stock levels as weights), BFS can identify low-stock items, restock priorities, and supply chain dependencies. This ensures that popular products remain available for purchase.

Example:

An e-commerce platform uses BFS to monitor stock levels. When a product’s stock falls below a threshold, BFS alerts the inventory team. For instance, if a best-selling book is running low, BFS triggers a restocking process to prevent out-of-stock situations.

4. Fraud Detection and Order Verification

BFS aids in detecting fraudulent transactions. By analyzing the transaction history graph (connecting users, products, and payment methods), BFS identifies suspicious patterns (e.g., multiple orders from different accounts using the same credit card). It helps verify orders and prevent unauthorized purchases.

Part – C Questions

1. Explain the report menu and report types in Magento.

The Report Menu in Magento2 is a powerful feature that provides detailed and versatile reports for every aspect of your store. You can export these reports as a CSV or Excel XML file for easy organizing, printing, and distribution. Here are some of the sections available in the standard Magento Open Source:

1. **Sales Reports:** This section allows you to generate, view, and export reports based on the sales activity in your store. For example, to view Sales Reports, navigate to Reports > Sales. The following options will appear on-page: Orders, Tax, Invoiced, Shipping, Refunds, Coupons, Paypal Settlement.
2. **Marketing Reports:** This section provides a selection of marketing reports. Products in Cart, Abandoned Carts, Search Terms, and Newsletter Problem Reports are under your disposal.
3. **Products Reports:** This section provides reports related to the products in your store.
4. **Customers Reports:** This section offers reports on Unique Customers, New Registered Accounts, Top Coupon Users, and Customer KPI Table
5. **Reviews Reports:** This section provides reports related to the reviews given by customers.
6. **Statistics Reports:** This section provides statistical data related to your store.

Magento2 provides a comprehensive set of reports that can be used to gain insights into various aspects of your store. Here are the types of reports available:

1. **Sales Reports:** These reports provide detailed information about the sales activity in your store¹. For example, the Orders report under Sales Reports allows you to keep track of the orders created in your store.
2. **Marketing Reports:** These reports provide information about the status of shopping carts for your online store². They include Products in Cart, Abandoned Carts, Search Terms, and Newsletter Problem Reports.
3. **Review Reports:** These reports provide information about product reviews.

4. **Customer Reports:** These reports provide insights into customer behavior and include Unique Customers, New Registered Accounts, Top Coupon Users, and Customer KPI Table
 5. **Product Reports:** These reports provide detailed information about the products in your store.
 6. **Business Intelligence Reports:** These are additional reports provided in Magento2, which offer further insights into your business.
2. Explain the cryptography concept in E-Commerce.

Cryptography is the process of hiding or coding information so that only the person a message was intended for can read it and used in bank cards, computer passwords, and ecommerce. Cryptography aims to keep data and messages private and inaccessible to possible threats or bad actors. It frequently works invisibly to encrypt and decrypt the data you send through email, social media, applications, and website interactions.

There are several uses for symmetric cryptography, including:

- Payment applications and card transactions
- Random number generation
- Verify the sender's signature to be sure they are who they claim they are

There are several uses for asymmetric cryptography, including:

- Email messages
- SIM card authentication
- Web security
- Exchange of private keys

Cryptography used in E-commerce:

Cryptography plays a crucial role in E-commerce by securing information and communications through the use of codes. This ensures that only the intended recipient can understand and process the information, thus preventing unauthorized access.

There are three main types of cryptography used in E-commerce:

1. **Symmetric Key Cryptography:** Here, the sender and receiver of the message use a single common key to encrypt and decrypt messages. This system is faster and simpler, but the challenge is that the sender and receiver have to exchange the key in a secure manner.

2. **Hash Functions:** There is no usage of any key in this algorithm. A hash value with fixed length is calculated as per the plain text which makes it impossible for the contents of the plain text to be recovered.
3. **Asymmetric Key Cryptography:** Under this system, a pair of keys is used to encrypt and decrypt information. A receiver's public key is used for encryption and a receiver's private key is used for decryption.

Cryptography used in E-commerce:

Suppose you want to purchase a product from an online store. When you proceed to make the payment, your credit card information needs to be sent to the store's server. To prevent any unauthorized access during this transmission, the data is encrypted using a public key provided by the server. Once the server receives the encrypted data, it uses its private key to decrypt the information and process the payment. This use of asymmetric key cryptography ensures that even if someone intercepts the transmission, they won't be able to decrypt the credit card information without the server's private key.
