Unit – V

Report Menu, Report Types, Marketing automation, The Magento content management system - Pages, Static blocks, Widgets, Principles of customizing layouts, Operation of store and System, Electronic payment system, Credit Card, Debit Card, Digital Signature, Cryptography, BFS

Report Menu:

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.

For example, to generate a sales report, navigate to Reports > Sales > Orders. By applying the provided filters, you can tell Magento the exact information you would like included in your report

Report Types:

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 store[1]. 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 store[2]. 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.

Each of these report types can be accessed and managed from the Magento admin panel. For example, to generate a sales report, navigate to Reports > Sales > Orders. By applying the provided filters, you can tell Magento the exact information you would like included in your report.

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.

For example, many E- Commerce stores use abandoned cart notifications. This marketing automation technique is well-known to bring extra sales. According to the stats, there are link clicks in 21% of abandoned cart emails, while 50% of those clicks lead to a purchase.

Magento2 offers a range of personalization tools that businesses can use to tailor their products and marketing messages to individual customers. For instance, businesses can use customer data to create targeted marketing campaigns, offer personalized product recommendations, and provide customized pricing and discounts based on customer behavior.

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.

Remember, the goal of marketing automation is not just to automate tasks but also to improve the effectiveness of marketing campaigns and increase return on investment.

The Magento2 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

Example: The Magento2 content management system:

Magento CMS Content Management System section is used to manage all website pages. It is a way of promoting the products by providing valuable information to the customers and increases search engine visibility. It can be used to create rich content for your web store.

The CMS section contains following sections:

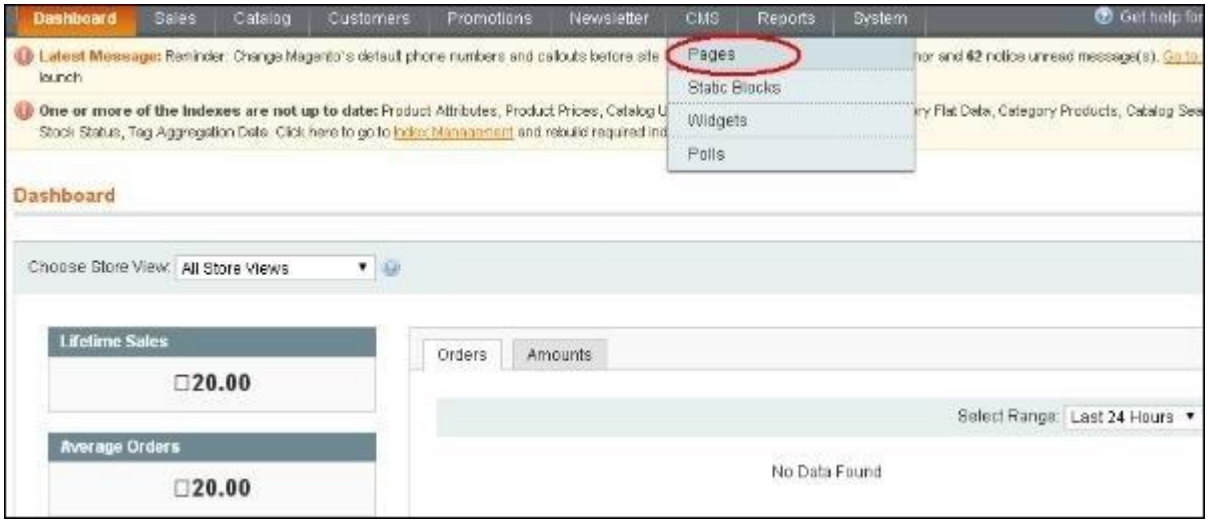
Pages:

You can create or setup new pages in Magento. You can include text, images, blocks of content etc. For more information on setting up new pages, you can refer this link Setting up New Pages.

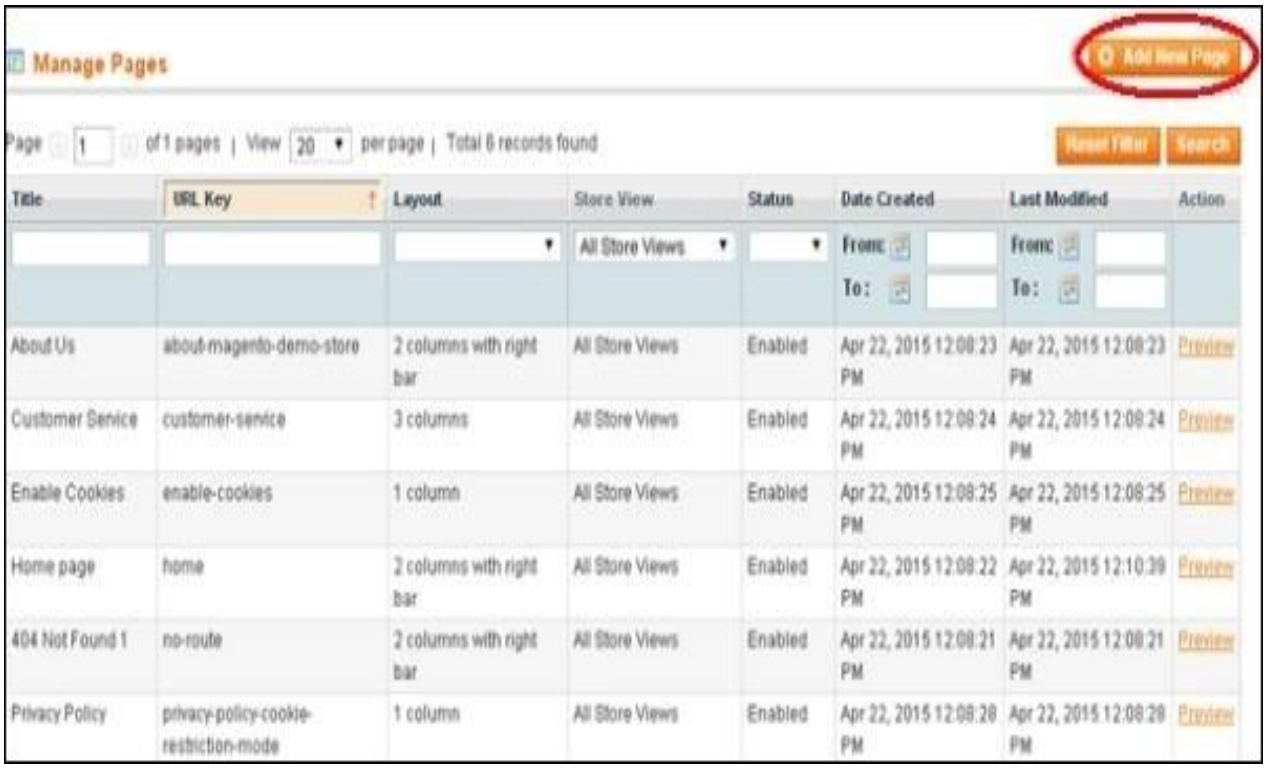
Magento - Setup New Pages: Create new pages in Magento by using the following steps:

Step 1 − Login to your Magento Admin Panel.

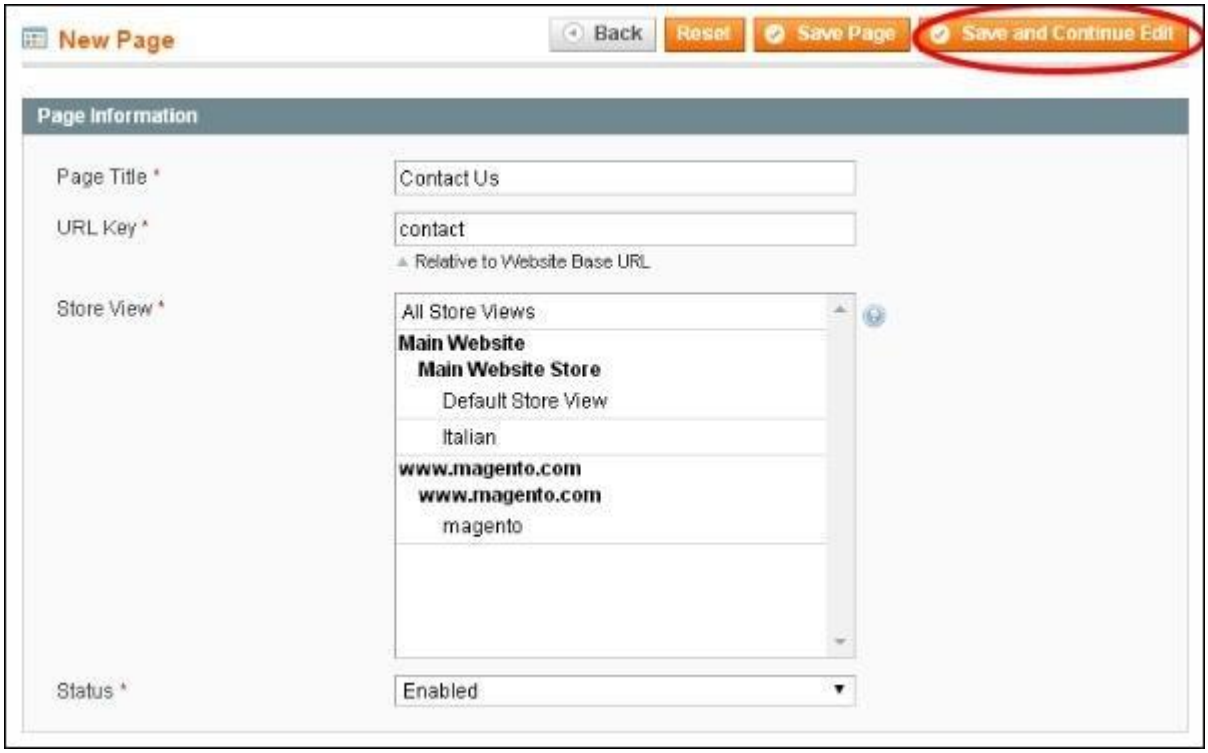
Step 2 − Go to **CMS** menu and click on the **Pages** option.



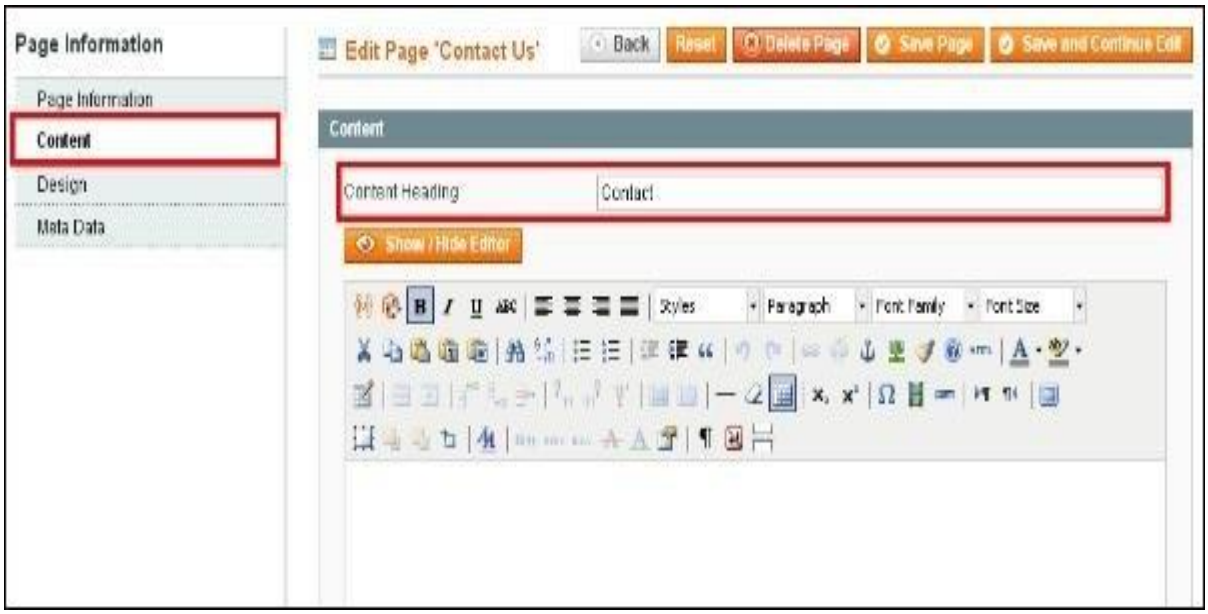
Step 3 − It will list some of the existing pages as shown in the following screen. If you want to add new page, click on the Add New Page button.



Step 4 − Next, specify the title for the page using **Page Title** field, enter the page URL identifier using **URL Key** option. Enable the page using **Status** dropdown menu and click on the **Save and Continue Edit** button.



Step 5 − When you save the page, it will go to **Content** section asking heading for the page using Content Heading field and page content. Click on **Save and Continue Edit** button to proceed to the next step.

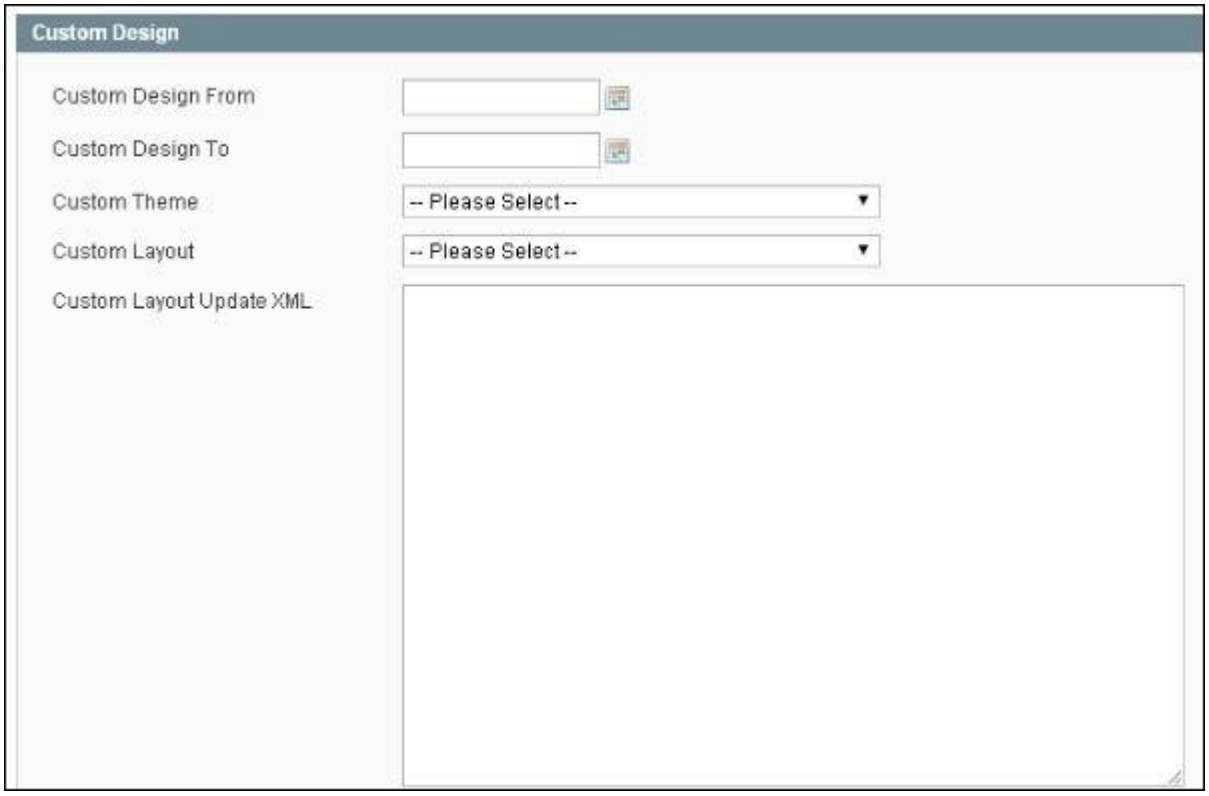


Step 6 − After done with the content section, you can design the page by using **Design** section which has two sections i.e. **Page Layout** and **Custom Design**.

The **Page Layout** section contains a *Layout* option which allows select a layout as per your choice and *Layout Update XML* option inserts the XML code.

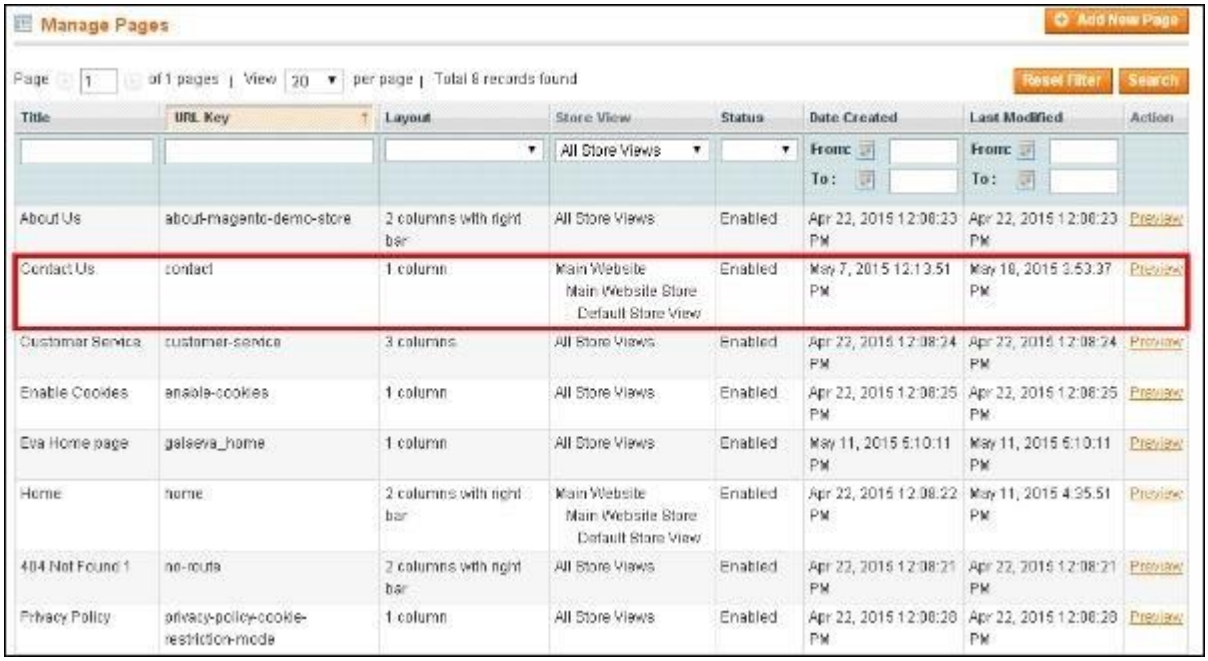
The **Custom Design** section contains fields such as

- ***Custom Design From*** and ***Custom Design To*** are used to set start date and end date for the design change
- ***Custom Theme*** option allows to select theme for your page using dropdown menu
- ***Custom Layout*** option allows to select a layout as per your choice
- ***Custom Layout Update XML*** option inserts custom XML code



Step 7 − The **Meta Data** section contains *Keywords* field which sets keyword for a page name and the *Description* field specifies the description the given page. Click the **Save Page** button to save your page.

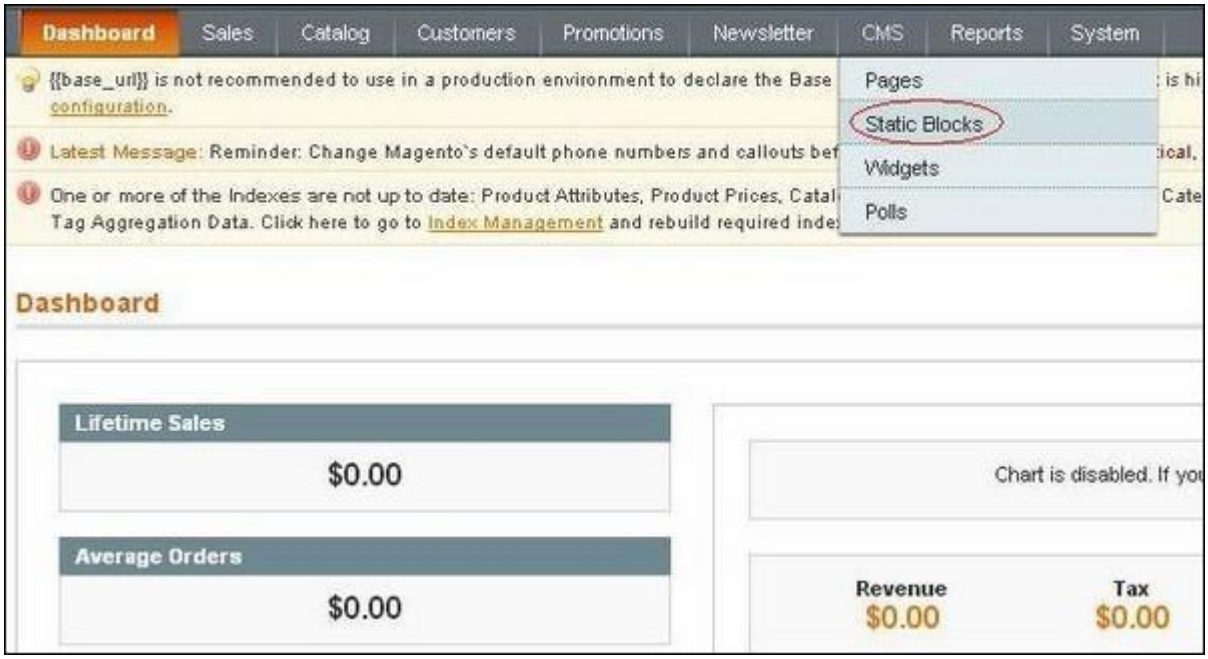
Step 8 − Now you can see the page created in the list.


Manage Pages
Add New Page
Page 1 of 1 pages | View 20 per page | Total 8 records found
Reset Filter
Search
Title
URL Key
Layout
Store View
Status
Date Created
Last Modified
Action
All Store Views
From:
To:
About Us
about-magento-demo-store
2 columns with right bar
All Store Views
Enabled
Apr 22, 2015 12:08:23 PM
Apr 22, 2015 12:08:23 PM
Preview
Contact Us
contact
1 column
Main Website
Main Website Store
Default Store View
Enabled
May 7, 2015 12:13:51 PM
May 18, 2015 3:53:37 PM
Preview
Customer Service
customer-service
3 columns
All Store Views
Enabled
Apr 22, 2015 12:08:24 PM
Apr 22, 2015 12:08:24 PM
Preview
Enable Cookies
enable-cookies
1 column
All Store Views
Enabled
Apr 22, 2015 12:08:25 PM
Apr 22, 2015 12:08:25 PM
Preview
Eva Home page
galeeva_home
1 column
All Store Views
Enabled
May 11, 2015 5:10:11 PM
May 11, 2015 5:10:11 PM
Preview
Home
home
2 columns with right bar
Main Website
Main Website Store
Default Store View
Enabled
Apr 22, 2015 12:08:22 PM
May 11, 2015 4:35:51 PM
Preview
404 Not Found 1
no-route
2 columns with right bar
All Store Views
Enabled
Apr 22, 2015 12:08:21 PM
Apr 22, 2015 12:08:21 PM
Preview
Privacy Policy
privacy-policy-cookie-restriction-mode
1 column
All Store Views
Enabled
Apr 22, 2015 12:08:28 PM
Apr 22, 2015 12:08:28 PM
Preview

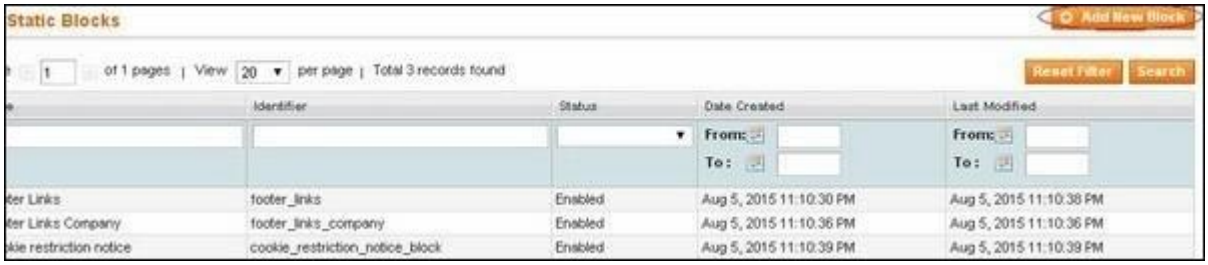
Static Blocks:

Static block is a piece of content that can be used anywhere in the pages. Magento allows creating blocks of content that can be used through the store and can be added to any page or another block. To create static blocks, follow these steps −

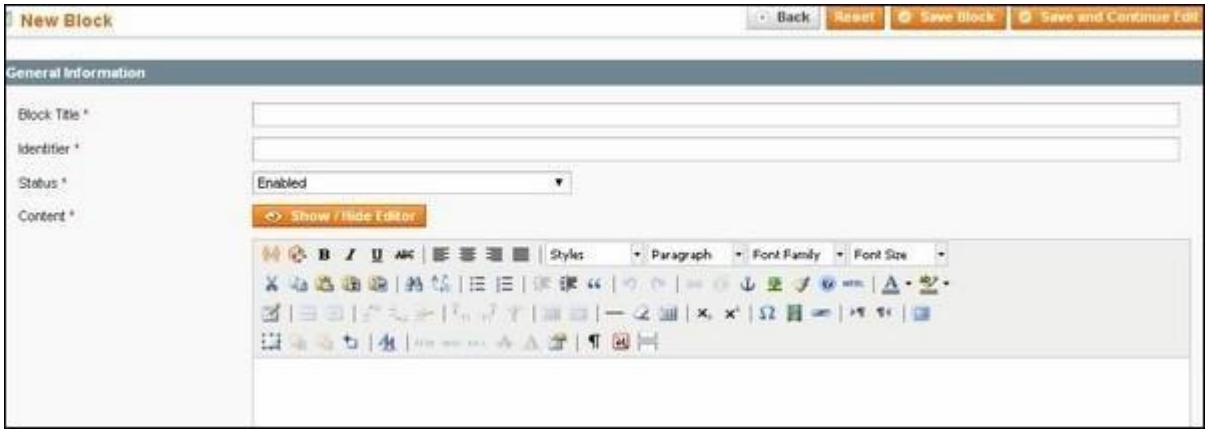
Step 1 − Go to **CMS** menu and click on the **Static Blocks** option.



Step 2 − You can create a new block by clicking on the **Add New Block** button.



Step 3 − Next, it will open a window for creating new block as shown in the following screen.



The page contains the following fields:

- **Block Title**: It adds the title for the block.
- **Identifier**: It assigns identifier to block which uses lower case characters, underscores, etc.
- **Status** Set this field as "Enabled" to make block visible.
- **Content**: It includes content of the block and uses editor to format text, creates links, tables, images, etc.

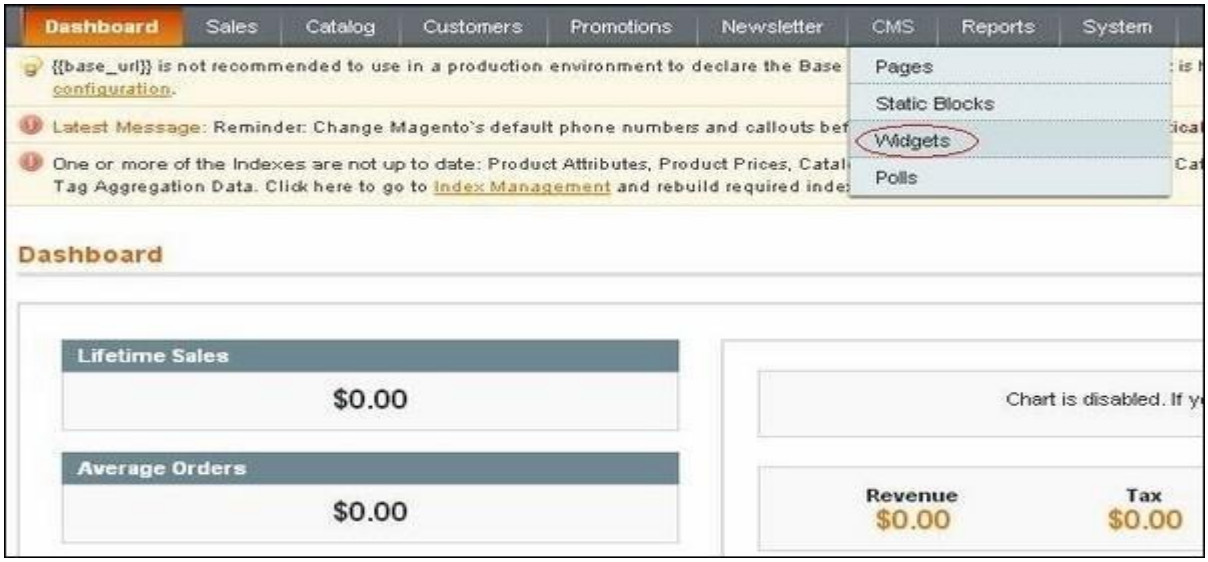
After filling the all fields, click the **Save Block** button.

Widgets:

Widget allows displaying a wide range of content and placing it at block references in the store. They can be inserted into pages, blocks or they can have blocks inserted into the widget.

You can create the widget by using following steps:

Step 1 − Go to **CMS** menu and click on the **Widgets** option.



Step 2 − To create new widget, click the **Add New Widget Instance** button.

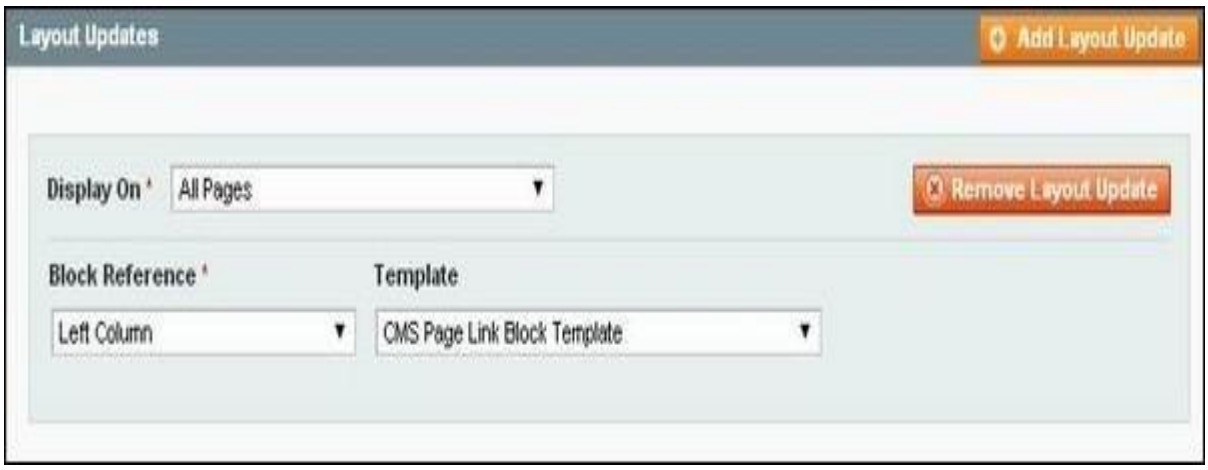
Step 3 − Under the settings section, select the **Type** of the widget and **Design Package/Theme** and click the **Continue** button.

Step 4 – Next, it displays the **Frontend Properties** and **Layout Updates** sections.

In the Frontend Properties section, fill the following details:

Widget Instance Title: It specifies the title for the widget. It is only for internal use and won't be visible to the customers.
Sort Order: It is used to specify the order of the block when listed with others.

In the **Layout Updates** section, click the **Add Layout Update** button and set the **Display On** field to type of category where you want the widget to appear. It can be set with the other options as shown in the following screen.



In the **Block Reference** list, select the section of your page layout where you want the widget to appear and set the template with **Link Block Template** or **Inline Template**.

Step 5 – Click **Save and Continue Edit** button to save your changes and continue editing. Next, it will open **Widget Options** panel with the following options.

Anchor Custom Text: It adds custom text for the widget.
Anchor Custom Title: It adds custom title for the widget.
CMS Page: It allows selecting the CMS page with the widget.

After done with the settings, click on the **Save** button.

Principles of customizing layouts:

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, 3columns[1].
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

Customizing layouts in Magento2 involves understanding and manipulating several key components: **layouts, containers, and blocks**.

Here's a brief overview:

Magento2 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 file1. Magento2 offers five default frontend page layouts: empty, 1column, 2columns-left, 2columns-right, 3columns.

Containers Containers are used to organize and position page content effectively.

Blocks Blocks play a role in rendering UI elements and can be customized.

Customizing Layouts You can add, modify, or remove a block and its sub-elements2. Here are some examples:

Example 1: Passing an image to the logo block:

XML

```
<referenceBlock name="logo">
    <arguments>
        <argument name="logo_file" xsi:type="string">images/logo.png</argument>
    </arguments>
</referenceBlock>
```

AI-generated code. Review and use carefully.

Example 2: Adding a new block to the top.links section:

XML

```
<referenceBlock name="top.links">
    <block class="Magento\Framework\View\Element\Template" name="top.search" as="topSearch" after="-" template="Magento_Search::form.mini.phtml" />
</referenceBlock>
```

AI-generated code. Review and use carefully.

Example 3: Removing a block:

XML

```
<referenceBlock name="div.sidebar.additional" remove="true"/>
```

AI-generated code. Review and use carefully.

Example 4: Hiding a block:

XML

<referenceBlock name="product.info.stock.sku" display="false"/>

AI-generated code. Review and use carefully.

Remember, these are just examples. The actual implementation will depend on your specific needs and the structure of your Magento2 store. Always test your changes in a development environment before applying them to your live store.

Operation of store and System:

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. Remember, the success of an online store depends not only on the platform but also on how well it's managed and optimized.

Example -1:

Operating a store and system in Magento2 involves various aspects, including basic settings like currency and time zone, and more advanced options like caching and indexing.

Here are some key components:

Magento2 Configuration Magento2 configuration manages various aspects of a store. It lets you customize your store's functionalities to match your unique needs and preferences.

Magento Cron Jobs All tasks at predefined intervals, dates, and times in Adobe Commerce are carried out using the cron command. To create a cron job in Magento, run the command bin/magento cron:install in your terminal.

Indexers There are two modes in which an indexer can operate: Update on Save and Update on Schedule. In Update on Save mode, indexing occurs whenever there are changes to your catalog or other data. For optimal production use, employ the Update on Schedule mode.

Caches To optimize your store's performance in production, enable all caches through the Cache Management page in the System > Tools section.

Magento2 Multistore You can configure the domain and DNS for each store. You can use subdomains or subdirectories for each store.

Electronic payment system:

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.**

Credit card and debit card:

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.

Rewards and Privileges:

Debit Card: Rewards and privileges with debit cards are typically minimal.

Credit Card: Credit cards often come with rewards such as cash back, air miles, and reward points which can be redeemed. They also come with numerous dining, retail, entertainment, and travel privileges.

Credit History:

Debit Card: Debit cards do not help build a credit history.

Credit Card: Credit cards can help build a credit history.

Lost Card Liability:

Debit Card: Protection from theft or loss of the card is minimal.

Credit Card: Most cards offer 100% lost liability protection. So, you are not liable for any unauthorized transactions made

Note: it's important to use both types of cards responsibly and understand the potential fees and interest associated with each.

Magento2: Set up credit/debit cards:

Boost conversion with Mollie Components by embedding credit/debit card details in your checkout, eliminating additional steps and distractions. Enable one-click payments for customers to securely save their card details, enhancing convenience and streamlining future transactions.

Mollie Components and One-click payments provide features similar to Magento Vault
By default, Mollie Components is disabled and one-click payments is enabled in Magento2.
Ensure that credit/debit cards have been added to your checkout.

Enable Mollie Components

By embedding credit/debit card fields in your checkout, customers won't be redirected to Mollie Checkout. They can enter their credit/debit card details directly in the checkout, streamlining the process and saving time and effort. This can lead to increased conversion as it eliminates additional steps and potential distractions that may occur during redirection.

1. Log in to Magento2.
2. Go to **Stores** > **Configuration**.
3. Expand the **Mollie** section in the left side-bar, and select **Payment methods**.
4. Scroll to **Credit card**.
5. From the **Use Mollie Components** drop-down menu, select **Yes**.
6. Save the changes.

Enable one-click payments

One-click payments allow customers to make subsequent payments without having to re-enter their payment details. This saves them time and effort, providing a more convenient checkout experience and potentially increasing conversion rates.

Note: No sensitive credit/debit card details are stored in your Magento2 store. All credit/debit card data is securely stored on Mollie servers.

1. Log in to Magento2.
2. Go to **Stores** > **Configuration**.
3. Expand the **Mollie** section in the left side-bar, and select **Payment methods**.
4. Scroll to **Credit card**.
5. Select **Yes** from the **Enable single-slick payments** drop-down.
6. Save the changes.

Split payment authorisation and capture

Authorize customer payments and capture funds separately to have more control over your store's cash flow management.

Note: Mollie captures the amount when you mark the order as shipped.

To split payment authorisation and capture, follow these steps:

1. Log in to Magento2.
2. Go to **Stores** > **Configuration**.
3. On the **Configuration** page, expand the **Mollie** and select **Advanced**.
4. Select **Yes** from the **Manual capture** drop-down menu.
5. Save the changes.

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.

Please note that this is a simplified explanation. The actual process involves more detailed steps and requires a good understanding of Magento2’s architecture and coding practices.

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. 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.

Example: How cryptography is used in E-commerce:

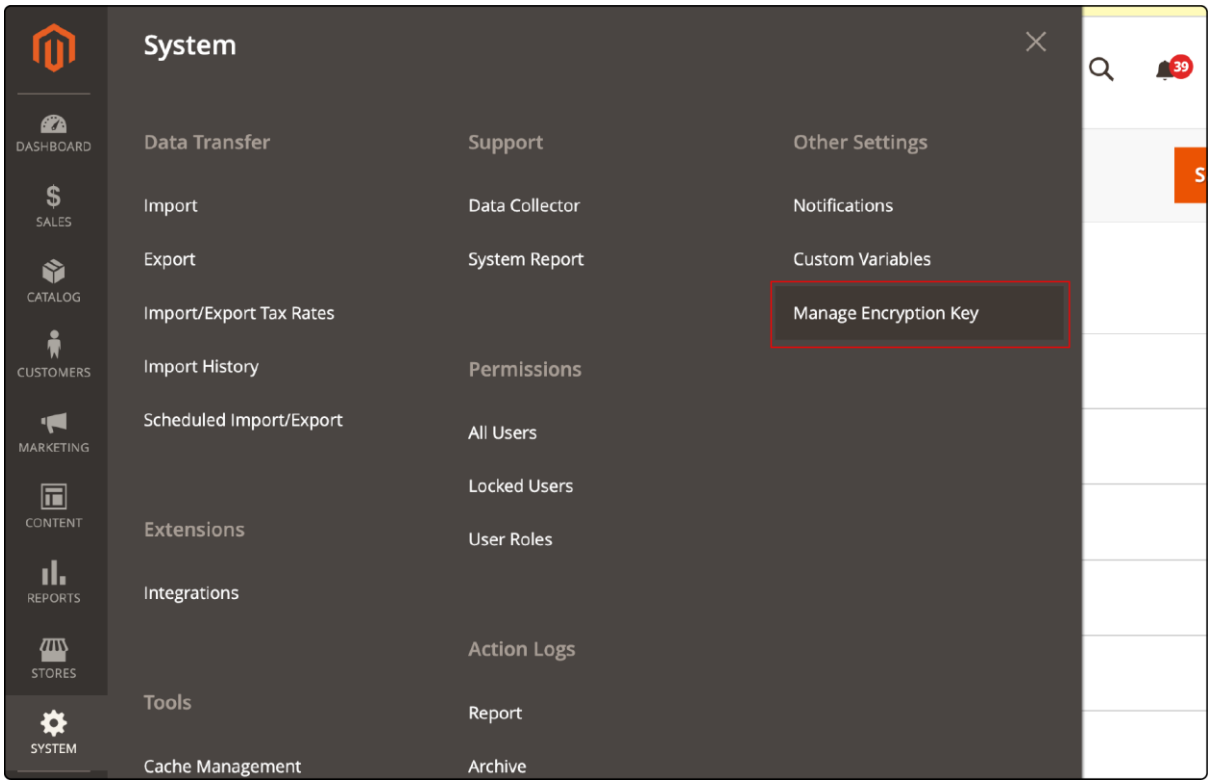
Suppose you want to purchase a product from an online store. When you proceed to make the payment, your credit card information needs to be sent to the store's server. To prevent any unauthorized access during this transmission, the data is encrypted using a public key provided by the server. Once the 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.

Magento2 Cryptography Key:

Access the crypt key via the Admin Panel. First, navigate to System > Other Settings > Manage Encryption Key. Here, you will find the crypt key in the key field.

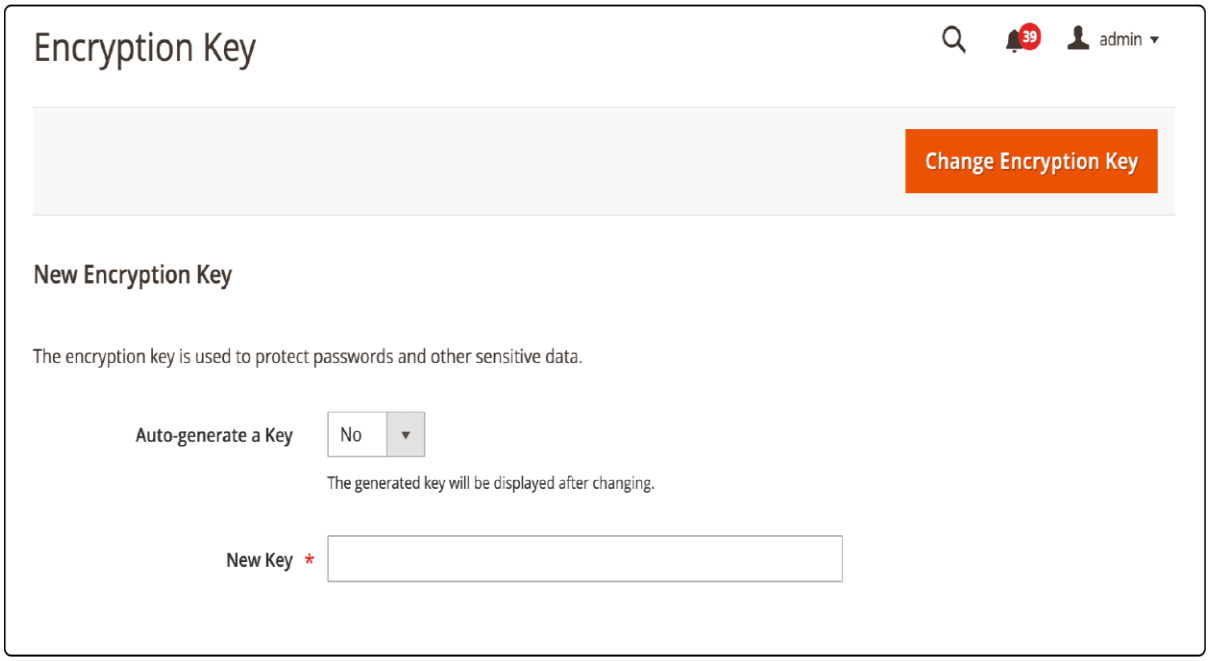
Step 1: Enter your Magento2 Admin Panel with your credentials.

Step 2: Proceed to System > Other Settings, and select Manage Encryption Key from the drop-down menu.



Step 3: Configure the settings as per the following

To create a new key, opt for Auto-generate Key and set it to Yes.
To input a custom key, turn Auto-generate Key to No. Then, provide the key of your choice in the New Key box.



Step 4: Click the Change Encryption Key button to complete the process.

BFS:

Breadth-First Search (BFS) is a fundamental algorithm used in computer science for traversing or searching tree or graph data structures. However, in a broader sense, BFS could be used in the context of e-commerce for tasks such as product recommendation systems. For instance, if you have a graph where each node represents a product and edges represent some relationship between the products (like frequently bought together), BFS could be used to traverse this graph and generate product recommendations. 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.

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.

Example:

User B places several high-value orders within a short time frame. BFS examines the order graph, checks for anomalies, and flags potentially fraudulent transactions. The system then prompts additional verification steps (e.g., two-factor authentication) to ensure the legitimacy of the purchases. BFS plays a vital role in optimizing online business processes, enhancing user experiences, and maintaining system integrity. Its versatility makes it valuable for e-commerce platforms, from recommendation engines to fraud prevention mechanisms

Note: This example simplify the application of BFS, and real-world implementations involve more complex data structures and algorithms. However, BFS remains a powerful tool for navigating the interconnected world of online business.

Part- A

1. What is sales report?
2. What is marketing automation?
3. What is CMS?
4. What is credit card?
5. What is debit card?
6. What is cryptography?
7. What is symmetric key cryptography
8. What is asymmetric Key Cryptography
9. What is BFS?

Part - B

1. How marketing automation can be used in Magento? Explain with example
2. Write a short notes about the Magento content management system.
3. Explain the principles of customizing layouts in Magento.
4. Explain the operation of store and system in Magento.
5. Write short notes about the electronic payment system in E- Commerce
6. Explain the credit card, debit card and digital signature in E- Commerce
7. Explain the application of BFS in Online Business Purchasing.

Part - C

1. Explain the report menu and report types in Magneto.
2. Explain the cryptography concept in E- Commerce.