



Redstage study guide for Magento 2 Backend Developers

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How to use this guide

This guide gives some insights to Magento 2 backend developers that are willing to be a Magento 2 Certified Developer.

This guide is collaborative so feel free to help by answering some questions, adding resources to study and references for each question.

Resources to study

- **Read this document and make sure you understood all concepts**
- **Also, help us answering the questions and feel free to add resources and references for each question**
- [SwiftOtter study guide](#)
- [SwiftOtter practice test](#)
- [Magento Dev Docs](#)
- [Mage2.tv](#)
- [Alan storm](#)
- [Magento 2 User Guide](#)

Practical development to help

- Install a Magento 2.2 instance
- Build 2-3 own Magento 2 modules which cover a real-life business case. It will give you a good understanding of how to work with Magento code
- Play around the Magento admin to understand how it works and what configuration settings are available
- Customize Sales, Checkout, Payment, Shopping cart functionalities to understand how it works
- Ideally, build a Magento 2 website and launch it
- Implement a REST API endpoint with authorization
- Add an extension attribute for products and / or customer addresses
- Create an adminhtml grid and/or and form
- Use the getList implementation of repositories (i.e. the product repository) for getting a sorted and filtered list of entities

Tips for the test

- Try to answer the questions as fast as you can and mark to review later those questions you are not sure about the answer
- Use the total time you have (1.5h)

For those who already took the test

- Focus on that areas you had low score

Questions to study and answer

1) There is a custom extension called MyCompany_MyModule. It has the following layout customization declared in MyCompany/MyModule/view/frontend/layout/default.xml:

```
<referenceContainer name="content">
    <block class="Magento\Framework\View\Element\Template"
        name="my.block"
        template="MyCompany_MyModule::my_template.phtml"
        cacheable="false"/>
</referenceContainer>
```

What will be the result of the customization?

- a) All store front pages will be non-cacheable
- b) Only the default landing page will be non-cacheable.
- c) my.block on the default landing page only will be cached using ESI.
- d) my.block on the all store front pages will be cached using ESI.

Reference:

<https://devdocs.magento.com/guides/v2.3/extension-dev-guide/cache/page-caching.html>

"To create an uncacheable page, mark any block on that page as uncacheable in the layout using cacheable="false"."

<https://devdocs.magento.com/guides/v2.0/frontend-dev-guide/layouts/xml-manage.html>

"Example: remove the Compare Products sidebar block from all store pages.

This block is declared in app/code/Magento/Catalog/view/frontend/layout/default.xml:"

Answers:

Rafa F: a) – Not confirmed

Pedro: a) – Not confirmed

Your name: your answer

2) You are debugging a before plugin implementation on the authenticate method of a third party extension's class that is not being called. The definition of the plugin within your module's di.xml is:

```
<type name="Extension\Module\Service\AuthProvider">
    <plugin name="authentication"
type="MyCompany\MyModule\Plugin\Service\AuthProvider" />
</type>
```

The structure of the third party class is:

```
final class AuthProvider {
    final public function hashToken();
    public function authenticate();
    private function send();
}
```

What is causing the plugin on the authenticate method to not work as expected?

- a) The XML definition should be defined within plugins.xml and not di.xml
- b) Plugins do not work on a class that contains a final public method
- c) The XML definition does not define the method the plugin is intercepting
- d) Plugins do not work on a class that is declared final

Reference:

<https://devdocs.magento.com/guides/v2.0/extension-dev-guide/plugins.html>

"Limitations

Plugins cannot be used with any of the following:

- *Final methods*
- *Final classes*
- *Non-public methods*
- *Static methods*
- *__construct*
- *Virtual types*
- *Objects that are instantiated before Magento\Framework\Interception is bootstrapped*
- *Objects that are not instantiated by the ObjectManager (e.g. by using new directly)."*

Answers:

Rafa F: d) – Not confirmed

Pedro: d) – Not confirmed

Your name: your answer

3) A merchant wishes to provide discounts to a variety of products, each with a different percentage discount....
purchased at a certain quantity. These products and their discounts are being imported from....
on a regular basis. No customizable options are being used.

Keeping simplicity in mind, how do you achieve this functionality in Magento.

- a) Use the tiered pricing functionality to set a lower price at the higher quantity.
- b) Add a plugin to the RegularPrice::getValue() method and calculate the pr.....
- c) Set the special price minimum quantity on the product to the higher
- d) Configure a catalog price rule to target the product with a quantity.....

Reference:

https://docs.magento.com/m2/ee/user_guide/catalog/product-price-tier.html

"The prices in the storefront take precedence from the highest to the lowest quantity. Therefore, if you have a tier for the quantity 5 and one for the quantity 10, and a customer adds 5, 6, 7, 8 or 9 items to the shopping cart, the customer receives the discounted price that you specified for the quantity 5 tier. As soon as the customer adds the 10th item, the discounted price specified for the quantity 10 tier supersedes the tier for a quantity of 5, and discounted price for 10 applies."

Answers:

Rafa F: a) – Not confirmed

Pedro: a) – Not confirmed

Your name: your answer

4) There is a method which returns an entity:

```
public function get($entityId, $editMode = false) {  
    $entity = $this->entityLoader->load($entityId);  
    return $entity;  
}
```

You need to log all occurrences of the entity being loaded successfully, along with the selected edit mode.

What mechanism achieves this with the smallest increase of the call stack?

- a) Event observer
- b) Around plugin
- c) After plugin
- d) Before plugin

Reference:

<https://devdocs.magento.com/guides/v2.0/extension-dev-guide/plugins.html>

“Around methods

Around methods are defined such that their code is run both before and after the observed method. This allows you to completely override a method. Around methods must have the same name as the observed method with ‘around’ as the prefix.

Below is an example of an around method adding behavior before and after an observed method:”

```
namespace My\Module\Plugin;  
  
class ProductPlugin  
{  
    public function aroundSave(\Magento\Catalog\Model\Product $subject, callable  
$proceed)  
    {  
        $this->doSmthBeforeProductIsSaved();  
        $returnValue = $proceed();  
        if ($returnValue) {  
            $this->postProductToFacebook();  
        }  
        return $returnValue;  
    }  
}
```



```
}
```

Answers:

Rafa F: b) - Not confirmed

Pedro: b) – Not confirmed

Your name: your answer

5) How would you create a custom product attribute which is only applicable to bundle products?

- a) By setting the attribute's apply_to property to "bundle"
- b) By creating a backend model that checks the product type parameter and throws an exception.....
different from bundle.
- c) By creating a special attribute set for these products and assigning only bundle pr....
- d) By setting the attribute's attribute_model property to "bundle".

Reference:

<https://www.mageplaza.com/magento-2-module-development/magento-2-add-product-attribute-programmatically.html>

<https://belvg.com/blog/big-day-release-apply-to-attribute-option-free-for-magento-2-0.html>

"The new "Apply To" Attribute Option extension offers a cool feature to control and manage product attributes in your store. Now you have an opportunity to assign product attributes only to specific types of products, so that the assigned attributes will be available only in the settings of the specified types of products in your admin panel."

Answers:

Rafa F: a) - Not confirmed

Pedro: a) – Not confirmed

Your name: your answer

6) Which two use cases would be valid causes to create a new block type?
Choose 2 answers.

- a) You need to change how the cache key is generated for multiple blocks
- b) You want to hard code the template path for a block used multiple times.....
- c) You need to add custom data to the template
- d) You need to change the behavior of the rendering methods.....

Reference:

[Study guide, pg 87](#)

“You do not need to specify a block’s type in layout XML anymore. The default \Magento\Framework\View\Element\Template is specified in the absence of the type attribute. Instead, specifying the view_model argument is the way that Magento now recommends.

Two cases where creating a block is necessary would be if the template is determined at runtime (cart item renderers) or non-default block caching needs to be used.

Templates are created to display information. For module development, templates and blocks represent an almost 1:1 ratio. For theme development, many more templates will be created or overridden than blocks.”

Answers:

Rafa F: a) b) - Not confirmed

Pedro: a) b) – Not confirmed

Your name: your answer

7) You are creating an extension attribute on the customer entity to link data obtained from an external CRM system. The custom interface `\MyCompany\MyCrm\Api\Data\ExternalCustomerDataInterface` contains the accessors for the data.

You already have implemented the interface and configured it with a `<preference>` node in `di.xml`

The extension attribute is also registered in your modules `etc/extension_attributes.xml` file.

Which 3 other steps are required to make this class available as an extension attribute on `CUS.....`

Choose 3 answers

- a) Add the getters and setters for the extension attribute to the `\Magento\Customer\Api\Data\CustomerMetadataInterface`
- b) Create an `afterLoad` plugin on `\Magento\Customer\Model\ResourceModel\Customer.....ExternalCustomerDataInterface` instance to the loaded customer.
- c) Load the `ExternalCustomerDataInterface` instance and set it on the customers....
- d) Create `after*` plugins on all methods of the `CustomerRepositoryInterface.....` instances
- e) If the customer instance method `getExtensionAttributes()` returns null.....
Extension attribute on.

Reference:

<https://magento.stackexchange.com/questions/91992/magento-2-how-to-save-custom-field-added-in-the-form-of-customer-group/92054#92054>

https://devdocs.magento.com/guides/v2.0/extension-dev-guide/extension_attributes/adding-attributes.html

Answers:

Rafa F: a) c) d) - Not confirmed

Pedro: a) c) d) - Not confirmed

Your name: your answer

8) Which three types of relations between blocks and templates are configured via layout XML?

Choose 3 answers

- a) Multiple block instances can be used from the same templates.
- b) Multiple block classes can use the same template.
- c) Multiple block instances of the same class can use the same template.
- d) Multiple templates can be assigned to the same block instance.
- e) Multiple templates can be assigned to different instances of the same block class.

Reference:

[Study guide, pg 87](#)

“Templates are created to display information. For module development, templates and blocks represent an almost 1:1 ratio. For theme development, many more templates will be created or overridden than blocks.”

Answers:

Rafa F: a) c) e)

Pedro: b) c) e)

Andre: a) b) c)

Your name: your answer

9) A new product attribute needs to be added for admins to select a CMS static block, which other code will display in a certain area of the product display page.

Keeping in mind future compatibility and simplicity, how do you implement this attribute?

a) Create an EAV source model class which iterates through the static block repository.

b) Create an EAV backend model class which returns the toArray() of the static block collection.

c) Implement a custom frontend model which renders a dropdown from the static block collection.....

d) Implement a custom UI component and connect the static block repository as a data source...

Reference:

<https://magento.stackexchange.com/questions/152316/magento-2-cms-block-names-in-dropdown>

*"Magento2, also have the source Model for an eav attribute concept like Magento 1.X.
So, you can get display mod and static block using respective source model"*

Answers:

Rafa F: a) - Not confirmed

Pedro: d) - Not confirmed

Your name: your answer

10) How do you use the Magento Vault functionality?

a) The Magento Vault provides a facility to securely store credit card numbers within Magento for re-use on future payments by the customers

b) The Magento Vault is at the center of all encrypted data within Magento providing a common int.....

All sensitive data can be securely stored

c) The Magento Vault provides a facility to securely store payment tokens for re-use on..... Customers

d) The Magento Vault is used to securely store customer passwords....

Reference:

<https://devdocs.magento.com/guides/v2.1/payments-integrations/vault/payment-token.html>

"Magento does not store any private credit card details. It only stores the data received from the payment provider: payment processor token and credit card details without sensitive data."

Answers:

Rafa F: c) - Not confirmed

Pedro: c) - Not confirmed

Your name: your answer

11) On the custom page you are working on, you should display five products with prices in the range: \$10-\$50.

How do you get those products using the `ProductRepository::getList()` method?

a) Specify 3 parameters: `$filters = ['type' => 'range', 'attribute' => 'price', 'from' => 10, 'to' => 50], $... false, $limit = 5`

b) Create an instance of `SearchCriteria` object using `SearchCriteriaBuilder`, create a `Filter` object.....

`SearchCriteria`. Set limit to the `SearchCriteria` object, and pass `SearchCriteria` as a parameter.....

c) Create `ProductCollection` instance, set all the filters and limits there and set it as a par.....

d) Create a `FilterList` object using `SearchCriteria/FilterListBuilder`, then add a `Filter` object....
Limit object using `SearchCriteria/LimitBuilder` and pass the `FilterList` and `Limit`....

Reference:

<https://devdocs.magento.com/guides/v2.2/extension-dev-guide/searching-with-repositories.html>

<https://medium.com/@dannynimmo/how-to-use-the-repository-pattern-in-magento-2-4914caa67eaa>

Answers:

Rafa F: b) - Not confirmed

Pedro: b) - Not confirmed

Your name: your answer

12) You need to display an admin grid for a custom entity, vendor. You created a vendor listing XML file which uses the native dataProvider JavaScript module.

In what two ways do you connect the data from the database to the listing UI component?

Choose 2 answers

a) Create a custom DataProvider class, specify it as a class attribute for a dataProvider property

Component and use generic mui/index/render url to obtain the data.

b) Create a vendor collection, and specify it as a class attribute for a dataProvider pro..... component.

c) Create a custom url that returns data and specifies it is an updateUrl prop.....

d) Specify a default DataProvider class (Magento\Framework\View\Elem.....

as a class attribute for a dataProvider property of a data source.....

dataProvider.

Reference:

<https://www.mageplaza.com/magento-2-module-development/create-admin-grid-magento-2.html>

Answers:

Rafa F: a) b) - Not confirmed

Pedro: a) d) - not confirmed

Your name: your answer

13) Which two actions are required when you create a new shipping module?

Choose 2 answers

- a) Define a new carrier in MyCompany/MyModule/etc/carriers.xml
- b) Create a class implementing the \Magento\Shipping\Model\Carrier\ShippingInterfa.....
- c) Define a new carrier in MyCompany/MyModule/etc/config.xml
- d) Create a class extending the \Magento\Shipping\Model\Carrier\Abstract....
\Magento\Shipping\Model\Carrier\CarrierInterface

Reference:

[Study guide, pg 16](#)

Answers:

Rafa F: c) d) - Not confirmed

Pedro: b) c) - Not confirmed

Your name: your answer

14) Which two options can be accomplished using ACLs without additional code changes?

Choose 2 answers

- a) Roles can control integration access to web APIs.
- b) Roles can grant access to multi address checkout on the frontend.
- c) Roles can grant access to edit products in specific attribute sets.
- d) Roles can grant access to edit store configuration in the admin.

Reference:

[Study guide, pg 84](#)

"The primary difference is that the admin scope uses the Magento ACL to determine whether or not it should be displayed."

[Study guide, pg 128](#)

"The resources defined in acl.xml do not only apply to the admin user interface but also can be used to restrict access to REST and SOAP APIs and extension attributes."

Answers:

Rafa F: a) d) - Not confirmed

Pedro: a) d) - Not confirmed

Your name: your answer

15) The Magento application may be configured to run in either developer or production mode.

Which two effects apply when Magento is in production mode as opposed to developer mode?

Chose 2 answers

- a) Exceptions are not displayed to the user, they are written only to log files.
- b) Magento will utilize caching to speed up general page processing overhead.
- c) The database will no longer be automatically upgraded on each page request.
- d) Custom "X-Magento-*" HTTP header are stripped from the response.

Reference:

[Study guide, pg 62, 63](#)

<https://devdocs.magento.com/guides/v2.0/config-guide/bootstrap/magento-modes.html>

"Does not show exceptions to the user (exceptions are written to logs only)."

Answers:

Rafa F: a) d) - Not confirmed

Pedro: a) d) - Not confirmed

Your name: your answer

16) Your module requires a password to be entered into the store configuration to authenticate with a webservice.

Keeping in mind data security, which three steps are necessary?

Choose 3 answers

- a) Use the obscure setting input type.
- b) Configure the setting under secure.xml.
- c) Add it to the sensitive settings via di.xml
- d) Use the Encrypted frontend model.
- e) Use the Encrypted backend model.

Reference:

<https://webkul.com/blog/how-to-create-an-obscure-field-in-admin-configuration-in-magento2/>

“To create a field as password type in which input text is abstruse at admin configuration

*Use **obscure** as the field type and **Magento\Config\Model\Config\Backend\Encrypted** as the backend_model”*

```
<field id='api_secret' translate='label' type='obscure' sortOrder='3' showInDefault='1'
showInWebsite='1' showInStore='1'>
  <label>Api key</label>
  <backend_model>Magento\Config\Model\Config\Backend\Encrypted</backend_model>
</field>
```

By Rafa F: There isn't any "secure.xml" file in Magento's source code so letter b) is incorrect. Also there isn't an Encrypted frontend model in Magento so letter d) is also incorrect.

Answers:

Rafa F: a) c) e) - Not confirmed

Pedro: a) c) e) - Not confirmed

Your name: your answer

17) A specific customer attribute, their preferred retail location, is to be displayed in a custom block on every....
To personalize their experience.

Without breaking the Full Page Cache, how can this attribute be displayed in the most performant way.....

a) In the etc/frontend/default.xml layout file, create a new block which calls the cust....
template file and set cacheable="false"

b) In JavaScript, call the customerData.get() method to retrieve the required.....
required

c) Implement a new custom etc/frontend/sections.xml file, a new Cus....
Magento\Customer\CustomerData\SectionSourceInterface and.....
Magento_Customer/js/customer-data to retrieve the attributes

d) Create a custom controller which returns a \Magento\.....
attribute, on page load create a JavaScript AJAX req....

Reference:

<https://devdocs.magento.com/guides/v2.2/extension-dev-guide/cache/page-caching/private-content.html>

Answers:

Rafa F: c) - Not confirmed

Pedro: c) - Not confirmed

Your name: your answer

18) Which two steps are necessary when creating a custom CLI command?

Choose 2 answers.

- a) Providing the classname to the CommandList type in commands.xml
- b) Defining a protected execute() method which contains the command's.....
- c) Implementing the methods specified in Magento\Console\Comman....
- d) Providing the classname to the CommandList type in di.xml

Reference:

<https://www.mageplaza.com/magento-2-module-development/magento-2-how-to-add-command-line-console-cli.html>

Answers:

Rafa F: b) d) - Not confirmed

Pedro: b) d) - Not confirmed

Your name: your answer

19) A merchant site has the requirement that all products can only be purchased once per order. When reviewing the custom code for this requirement, you found a plugin on Checkout\Controller\Cart\Add::execute method.

This plugin checks the “qty” request parameter, and ensures that it is never greater than 1.

What has occurred?

- a) The approach is incorrect because the “qty” parameter in local storage must be updated as well.
- b) The approach is incorrect because the product may be added to the cart outside of the controller action.
- c) The solution follows best practices and implements the requirement properly.
- d) The approach is incorrect because the quantity update action needs the same plugin.

Reference:

[Study guide, pg 154](#)

“There are a number of ways to add items to the cart in Magento 2:

- *Frontend, through Magento application*
- *Backend, through Magento application*
- *From the wishlist*
- *Reordering a product”*

Answers:

Rafa F: b) - Not confirmed

Pedro: b) - Not confirmed

Your name: your answer

20) You need to display a block that uses a phtml template at both the top and bottom of the page. Although most of the content of the block will be identical, they need to use a different CSS class name around the block HTML for styling purposes.

How do you implement this only in layout XML?

- a) Use a UI component to update the CSS class names in the blocks using x-mage-init.
- b) Use an argument to pass the CSS class names into the blocks.
- c) Use a container to wrap the blocks and specify the CSS class names on the containers.
- d) Use a ViewModel class to specify the class name in the blocks.

Reference:

<https://magento.stackexchange.com/questions/134664/adding-a-class-to-block-magento-2>

Answers:

Rafa F: b) - Not confirmed

Pedro: c) - Not confirmed

Your name: your answer

21) A merchant is offering a big discount to all customers on orders over a certain amount. A third party developer has implemented a module which displays a message on every page, with the difference between the current cart total and the discount threshold, as long as the current cart total is below the limit.

On some pages the block renders correctly, but on others it calculates the difference as if the cart were empty.

A custom template which is rendered on every page contains the following code:

```
<div>
  <?php
  /** @var \MyCompany\DiscountCallout\Block\DiscountCallout $viewModel */
  $viewModel = $block->getData('view_model');
  $cartTotal = $viewModel->getSession()->getCartGrandTotal();
  $discountThreshold = $viewModel->getDiscountThreshold();
  $delta = $cartTotal - $discountThreshold;
  ?>
  <?php if($cartTotal < $discountThreshold): ?>
    <?= __('Add items worth %1 to your cart to save big time!',
$viewModel->formatPrice(...
  <?php endif; ?>
```

What is causing the issue?

- a) on pages cached in the full page cache, the session is emptied before templates are rendered.
- b) The calculation in the \MyCompany\DiscountCallout\Block\DiscountCallout must be buggy.
- c) The cart total is cached and if a redis cache backend is used congestion under high load... cache read to return an empty result.
- d) A race condition in request processing causes the template to be rendered before... is completed.

Reference:

<https://maxchadwick.xyz/blog/working-with-the-magento-2-page-cache-the-right-way>

In order to understand how to access this information let's look at Magento\Customer\Block\Account\Customer, the block responsible for rendering the accounts links in the header for logged in users. In the customerLoggedIn method we see the following code...

```
public function customerLoggedIn()
```

```
{  
    return  
(bool)$this->httpContext->getValue(\Magento\Customer\Model\Context::CONTEXT_AUTH);  
}
```

As you can see it consults the \$httpContext to make the determination as to whether or not the customer is logged in, not the session. This allows us to query the customers logged in state with no impact on the page cache, and is the correct way to solve this problem.

Answers:

Rafa F: a) - Not confirmed

Pedro: a) - Not confirmed

Your name: your answer

22) Consider that constructor dependency injection should be used for all optional and required dependencies of a class.

In a project where instantiating an optional dependency may be expensive, which method is used to eliminate performance degradation?

a) The class constructor should be updated, appending "Proxy" to the slow loading class name. The Proxy will be automatically generated.

b) The object manager should be used to load the class on an as-needed basis.

c) First declare a virtual type in DI configuration, then update the class constructor signature.....

type as a drop-in replacement of the slow loading class.

d) DI configuration should be setup to inject a lazy-loaded proxy object. No change... necessary.

Reference:

[Study guide pg 34](#)

"For objects that might be time intensive to create, Magento provides proxies. A proxy lazy loads the class. To utilize this, specify a class like \Magento\Catalog\Model\Product\Proxy in di.xml. Proxies must NOT be specified in the __ constructor method."

Answers:

Rafa F: a) - Not confirmed

Pedro: a) - Not confirmed

Your name: your answer

23) In a custom module MyCompany_Blog you have a new service contract for fetching blog articles.

Where is the new route declared to make the service method accessible at <https://your.store.base.url/rest/V1/myblog?>

- a) MyCompany/Blog/etc/frontend/routes.xml
- b) MyCompany/Blog/etc/service_routes.xml
- c) MyCompany/Blog/etc/webapi.xml
- d) MyCompany/Blog/etc/di.xml

Reference:

<https://devdocs.magento.com/guides/v2.2/extension-dev-guide/service-contracts/service-to-web-service.html>

Answers:

Rafa F: c) - Not confirmed

Pedro: c) - Not confirmed

Your name: your answer

24) You need to add a new link to the customer account section navigation in the same way Magento modules add links.

What do you implement to display the new link in the list of existing options?

- a) Add a new route in mycompany/mymodule/etc/frontend/routes.xml
- b) Create an after plugin for Magento\Customer\Block\Account\Navigation::getLinks()
- c) Utilize layout XML to add a new SortLinkInterface block in customer_account.xml within...
- d) Modify the module-customer/view/frontend/templates/account/navigation.phtml..link

Reference:

<https://magento.stackexchange.com/questions/190828/create-link-dynamically-in-customer-account-navigation-in-magento-2>

Answers:

Rafa F: c) - Not confirmed

Pedro: c) - Not confirmed

Your name: your answer

25) Your storefront will sell bedding sets which are available in multiple sizes and colors. The customer can purchase different amounts, colors or sizes of the optional pillows, sheets and blankets. These items will be added to the shopping cart together and each component has managed stock.

How do you implement this?

- a) Set the product up as a bundle product. Add bundle options and selections for each bedding.....
- b) Set the product up as a grouped product. Add group selections for each bedding type....
- c) Set the product up as a simple product. Add customizable options for each bed.....
- d) Set the product up as a configurable product. Add configurable options....

Reference:

https://docs.magento.com/m2/ee/user_guide/catalog/product-types.html

Answers:

Rafa F: a) - Not confirmed

Pedro: a) - Not confirmed

Your name: your answer

26) You are tasked with building a new module that adds functionality to the frontend of Magento. Part of your requirement is to add a custom content block. To do this you're going to define new frontend layout, taking modularity into account.

Which approach do you take?

- a) Create a new layout.xml file within `/MyCompany/MyModule/view/layout/` that uses the `urn:magento:framework:View/Layout/etc/page_configuration.xsd` XSD
- b) Create a new theme.xml file within `app/code/define/frontend/MyModule/` that uses the `urn:magento:framework:View/Layout/etc/page_configuration.xsd` XSD
- c) Define a new layout within the `MyCompany/MyModule/etc/di.xml`
- d) Create a new layout.xml file within `/MyCompany/MyModule/view/frontend/layout/` that user the `urn:magento:framework:View/Layout/etc/page_configuration.xsd` XSD

Reference:

Answers:

Rafa F: d) - Not confirmed

Pedro: d) - Not confirmed

Your name: your answer

27) There is a project requirement to make category URLs more user friendly when utilizing filtering/sorting...

For example, if category URL key is “dress”, sorted and filtered, category should have a URL:

/dress-sorted-by-price-desc-price-in-range-20-50-size-equals-14

Assuming there are many filtering attributes and each may potentially have many....
Implement this requirement?

- a) Action class
- b) Router class
- c) URL rewrites
- d) Front controller class

Reference:

[Study guide, pg 75](#)

“What is necessary to create a custom URL structure?”

- *Create a new router (example: vendor/magento/module-cms/ Controller/Router.php) which implements the \Magento\Framework\App\RouterInterface interface. It is easiest to extend an existing router.*
- *Register the router (example: vendor/magento/module-cms/etc/ frontend/di.xml) • Return an instance of an \Magento\Framework\App\ActionInterface*
- *In most cases a custom router will forward the request to the base router by mutating the request (like the CMS router or the default routers do), instead of directly returning an Action instance.”*

Answers:

Rafa F: b) - Not confirmed

Pedro: b) - Not confirmed

Your name: your answer

28) A merchant would like to preview discount prices on the admin product grid page, and has requested a field which allows them to specify the discount percentage for the current displayed products. The discount amounts should only be displayed on the page, and not saved in the database.

You have created a subcomponent of the product listing UI component with a field that allows setting a discount.

How will the value entered into the field adjust the displayed values?

a) You have to create a mixin for a data-provider module such that it will check the value....
The data

b) You should modify the server-side code to return discounted prices and trigger...
is entered

c) The price display can be modified directly from your component using....
With the data provider's data.

d) You should modify the price column component. Module-cache....
Such that it checks for the value in the new field and module....

Reference:

https://devdocs.magento.com/guides/v2.1/javascript-dev-guide/javascript/js_mixins.html

Answers:

Rafa F: a) - Not confirmed

Your name: your answer

29) How do you capture the HTML output for the checkout/cart/index action?

a) By implementing an after plugin for the Magento\Framework\App\Http::launch() method that re....

Object containing all the needed information.

b) By implementing an observer for the controller_front_send_response_before_checkout....

c) By implementing an observer for the controller_front_send_response_before event....

d) By creating a preference for Magento\Framework\App\Http class, and overr....

Reference:

<https://magento.stackexchange.com/questions/108579/how-can-i-get-response-getbody-in-ob-server-event>

"If you want to captures the HTML from the response, you can declare your event under etc\<area>\events.xml (where <area> is adminhtml or frontend)."

```
<?xml version="1.0"?>
<config xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="urn:magento:framework:Event/etc/events.xsd">
    <event name="controller_front_send_response_before">
        <observer name="vendor_module" instance="Vendor\Module\Model\Observer"
shared="false" />
    </event>
</config>
```

Answers:

Rafa F: c) - Not confirmed

Your name: your answer

30) You have a custom block which renders content via an API and is show on category pages. The merchant has noticed that it does not update when changes are made to the system the API talks to.

You receive notifications when changes occur in the system the API talks to.

How do you make the block update when the API content changes?

a) Implement the IdentifyInterface in the block and return a static tag. Clean this tag when the API notifies....

Update.

b) Specify a static value as the cache_tags argument for the block in layout XML. Clean this tag.....

notifies of an update.

c) Implement the IdentifyInterface in the block and return a value based on a hash of....

When the API notifies of an update.

d) In the block, override the getCacheTags() method to return a value based on....

Tag when the API notifies of an update.

Reference:

<https://devdocs.magento.com/guides/v2.2/extension-dev-guide/cache/page-caching/public-content.html>

"You can clear cached content immediately after a entity changes. Magento uses IdentityInterface to link entities in the application with cached content and to know what cache to clear when an entity changes."

Answers:

Rafa F: c) - Not confirmed

31) The project you're working on has 3 websites scopes: US, UK and EU. The EU website has multiple store scopes to display different languages. Prices are different for US, UK and EU.

The merchant would like to use a catalog price rule to discount products from specific categories in the Spanish language store scope. The discount would be a fixed 10%. However, the merchant noticed that catalog price rules lack a field to enter a store scope, and is now asking you to add this field.

Which statement about this approach is correct?

a) Catalog rules cannot be applied on the store level, and this cannot be changed without significant rework of....

Entire Magento pricing system.

b) This will require a change to the UI, as well as a change in the
Magento\CatalogRule\Model\Rule.....

class so that it validates the store rather than website. No database change would be required.....

c) Rules actually are applied on the store level, however this is hidden from the interface.....
A store switcher on the rule configuration page.

d) This is a native feature, which can be enabled in system configuration by setting.....
Rules > Rules scope to "Store View".

Reference:

https://docs.magento.com/m2/ce/user_guide/marketing/price-rules-catalog.html

By Rafa F: There isn't any mention for catalog rules on store level on the link above.

Answers:

Rafa F: a) - Not confirmed

Your name: your answer

32) What is the difference between the <entityCode>_save_after event and the <entityCode>_save_commit_after event...

a) If save_after fails, the observer entity and all associated entities will not be persisted. If save_commit...

the observed entity and all associated entities will still be persisted.

b) save_commit_after allows to modify the entity's data, while save_after does not.

c) save_after is fired in the model and save_commit_after is fired in the resource model (There's no functional..)

Difference between them.

d) If save_after fails, the observed entity will not be persisted, but all associated entit...
save_commit_after fails, the observed entity and the related entities will not be pe...

Reference:

<https://www.atwix.com/magento-2/choose-your-perfect-event/>

"model_save_after – executes after each model saving.

model_save_commit_after – executes after the models saving transaction is committed."

[https://magento.stackexchange.com/questions/120004/difference-between-catalog-product-s
ave-after-and-catalog-product-save-commit-af](https://magento.stackexchange.com/questions/120004/difference-between-catalog-product-save-after-and-catalog-product-save-commit-af)

"Saving happens in a MySQL transaction and the save_after event is triggered before the transaction is committed, so that you can do additional updates in the database within the same transaction.

The save_commit_after event is triggered after the transaction has been committed, i.e. when the changes were written to the database.

Also, on save_commit_after, the _hasDataChanges property already has been reset to false
"

Answers:

Rafa F: d) - Not confirmed

Your name: your answer

33) A merchant has the requirement that some meta information be added to each quote item when a customer adds a product to the cart assuming the product meets a set of pre-defined criteria. This meta information will be used later on to alter the rendering of the items in the cart and should be discarded when the order is placed.

If the customer adds the same qualifying item twice, this should result in a duplicate quote item rather than increasing the qty of an existing cart item.

How do you store this meta information and meet these requirements?

a) Create a before plugin to intercept `\Magento\Quote\Model\Quote::addItem` and add the meta information to the....

`$item` object using the `$item→addMeta()` method.

b) Create an observer for the `sales_quote_product_add_after_event`, then retrieve the items array,...

invisible `info_buyRequest` option, add the meta information, reserialize and set the updated `inf....`

Option on the quote item.

c) Create a before plugin to intercept `\Magento\Quote\Model\Quote::addProduct` and ad... calling `setAdditionalData` on the `$product` object before it is converted to a quote...

d) Create an observer for the `sales_quote_product_add_after` event, then retriev....

On each relevant cart item to store the meta information in the form of an ad-...

Reference:

By Rafa F: Since Magento guidelines recommends to use plugins for data changing the options here are: a) OR c). I haven't found any mention for "addMeta" in Magento's source code so I guess the correct option is c)

Answers:

Rafa F: c) - Not confirmed

Your name: your answer

34) You are integrating Magento with an external system. When an order is fulfilled, an invoice will be created in Magento by the individual fulfilling the order. There is a queuing system which will be used to synchronize data and you need to add each invoice to the queue as it is created.

How do you accomplish this?

- a) Create a plugin to intercept \Magento\Sales\Model\Order\Invoice::save
- b) Setup an observer listening to the sales_order_invoice_register event
- c) Create a plugin to intercept \Magento\Sales\Model\Order\InvoiceRepository::create...
- d) Extend the \Magento\Sales\Controller\Adminhtml\Order\Invoice\NewAction... request.

Reference:

<https://magento.stackexchange.com/questions/11602/run-method-after-capturing-invoice>

<https://stackoverflow.com/questions/7661455/whats-the-event-name-when-you-create-a-new-invoice-in-magento>

Answers:

Rafa F: b) - Not confirmed

Your name: your answer

35) Magento uses a Category Hierarchy Tree Structure to organize, manage and load category data. When Magento is installed, a category is created with a parent_id of 0 yet no category with an ID of 0 exists in the database. This category also does not show up in any customer facing display.

What purpose does this category entity record serve?

- a) It is a container for all products assigned to categories, used by the URL indexer to generate URL re....
Product.
- b) This category is displayed in the admin as a top-level container for all the root categories...
no other purpose.
- c) It is the base category, or tree root, from which each store's root category desc....
Global or partial trees.
- d) This serves as a container for all other categories in the system and serv....

Reference:

[Study guide, pg 147](#)

"POINTS TO REMEMBER

- *Root category is used to group categories within a store. It is never shown to the customer.*
- *parent_id = 0 is the identifier for the grandparent of root categories. ID 0 does not exist in the database and is used as a placeholder.*
- *Category name is the only required category attribute that is not automatically specified."*

Answers:

Rafa F revision: b) - Not confirmed

Your name: your answer

36) In your module MyCompany_MyModule you want to programmatically check the presence of a file within the ... module directory structure.

Keeping testability in mind, how do you get the directory path to your module?

- a) On an instance of the class \Magento\Framework\Module\Dir call \$dir→getDir('MyCom....
- b) Get an instance of \Magento\Framework\Module\PackageInfo and call \$package.... ('MyCompany_MyModule');
- c) Call the static method \Magento\Framework\Component\ComponentReg..... 'MyCompany_MyModule')
- d) Use dirname(dirname(__DIR__))

Reference:

<https://github.com/magento/magento2/blob/2.2/lib/internal/Magento/Framework/View/Design/Fallback/Rule/Module.php#L58>

Answers:

Rafa F revision: c)

Your name: your answer

37) There is a product which has the following price configuration:

base price = \$100

catalog rule = 10% off

tier price: \$90 per unit for 2 items

custom option that adds \$50 to the price (option id = 1 and value id =1, type = checkbox)

\$price = \$product

→setCustomOption('option_ids', 1)

→setCustomOption('option_1', 1)

→getFinalPrice();

Assuming that \$product is an instance of \Magento\Catalog\Model\Product, what will be the value....

Variable?

a) $(90 + 50) \times 0.9 = 126$

b) $100 \times 0.9 = 90$

c) $100 \times 0.9 + 50 = 140$

d) $(100 + 50) \times 0.9 = 135$

Reference:

<https://github.com/magento/magento2/blob/2.3-develop/app/code/Magento/Catalog/Model/Product.php#L2058>

By Rafa F: The setCustomOption method expects an array as a parameter. Since we are not sending an array those parameters shouldn't take effect on products price.

Answers:

Rafa F: b) - Not confirmed

Your name: your answer

Magento Study Guide questions

38) A merchant asks you to create a module that is able to process URLs with a custom structure that can contain any combination of a product type code, a partial name, and a 4-digit year in any order.

The request path will look like this: /product/:type-code/:name-part/:year

Which layer in the Magento request processing flow is suited for this kind of customization?

- a) Front controller
- b) Router
- c) Action controller
- d) HTTP Response

Magento: b)

39) While integrating a merchant's product information management system with Magento, you create a module `MyCompany_MerchantPim` that adds a catalog product EAV attribute `pim_entity_id` programmatically.

In which type of setup script do you create the EAV attribute?

- a) `Setup/InstallSchema.php`
- b) `Setup/UpgradeSchema.php`
- c) `Setup/InstallEntity.php`
- d) `Setup/UpgradeData.php`

Magento: d)

40) You are facing a bug, which is supposedly caused by the customization of `\Magento\Catalog\Api\ProductRepositoryInterface::save()`.

To resolve the issue, you decide to find all logic which customizes this method.

Which two places do you search for customization declarations? (Choose 2)

- a) `*/di.xml`
- b) `*/config.xml`
- c) `*/events.xml`
- d) `*/plugins.xml`

Magento: a) c)

41) You are implementing a customization of the sales management within a module `MyCompany_MySalesProcess`. You have created several event observers to add the custom functionality. Each observer is a separate class, but they require some common functionality.

How do you implement the common functionality in the event observers, keeping maintainability and testability in mind?

- a) You create a trait with the common methods and use the trait in the observer classes.
- b) You create an abstract class `AbstractObserver` with the common methods and extend the observer classes from it.
- c) You create a regular class implementing the common functionality as public static methods and call those from the observers.
- d) You create a regular class implementing the common functionality as public methods and use constructor injection to make them available to the observers.

Magento: d)

42) A custom module is performing an optimized custom query for quote items. The class applies the query customizations on the select object of a quote item collection instance.

```
public function __construct(
    \Magento\Quote\Model\ResourceModel\Quote\Item\Collection $collection
) {
    $this->collection = $collection;
}

public function fetchData()
{
    $select = $this->collection->getSelect();
    ... code modifying $select...
    return $this->collection->getData();
}
```

You are tasked to resolve an issue where the query sometimes does not deliver the expected results.

You have debugged the problem and found another class is also using a quote item collection and is loading the collection before the custom module.

How do you resolve the issue, keeping maintainability in mind?

- a) You change the argument type to `\Magento\Quote\Model\ResourceModel\Quote\Item\CollectionFactory` and instantiate the collection using `$collectionFactory->create();`
- b) You remove the constructor argument and use `ObjectManager::getInstance()->create(\Magento\Quote\Model\ResourceModel\Quote\Item\Collection::class)` to instantiate the collection instead.
- c) You inject `\Magento\Framework\DB\Select` instead of the collection and perform the desired query independently of the collection.
- d) You inject `\Magento\Quote\Api\CartItemRepositoryInterface` because low level query customizations are not allowed.

Magento: a)

43) In a custom module you implement the interface
\\Magento\\Framework\\App\\Config\\DataInterface.

```
/**
 * Configuration data storage
 *
 * @api
 */
interface DataInterface
{
    public function getValue($path);

    public function setValue($path, $value);
}
```

What version constraint for magento/framework do you add to your module's composer.json file?

a) major

b) minor

c) patch

d) stable

Magento: b)

Additional questions:

1. Difference between referenceContainer and referenceBlock in Magento 2?
2. How Blockchain works with Magento 2?
3. What is BlueFoot in Magento 2?
4. How deployment modes are differ from each other? production, default and developer mode check in Magento 2?
5. What is caching? Which two methods are there for caching event?
6. What is the difference between Full Pache caching and Partical Caching in Magento 2?
7. In which way, can we our own test or validate component using PHPUnit?
8. How to add Magento CLI commands in Magento 2?
9. In Magento 2, How Routing will works?
10. What is the main purpose of Service Contract in Magento 2?
11. Core difference between Preference and Plugin in Magento 2?
12. Why Bundle and Merge modes are enabled for Javascripts in Magento 2? How they differ it?
13. Why di.xml is used
14. What is proxy classes?
15. What is extension attributes in Magento 2 how it will work on product, customer and billing address and shipping address?
16. A customer wants to display a CMS block on category pages. What would be the most efficient way to implement that?
17. What payment method(s) would you recommend as the easiest technical solution to satisfy PCI requirements?
18. What is Swagger, and how is it used in Magento 2?
19. How do you preview the result of setting content to appear at a future time?

20. How does the persistent shopping cart option work in Magento 2?
21. Does Magento 2 save credit card numbers in the database when the Authorize.Net payment method is used?
22. For which product types can the Magento 2 Recurring Profile be enabled?
23. What is the difference between the Authorize Only and Authorize and Capture payment actions?
24. How can you display a telephone number in a page footer using Admin functionality?
25. How do you configure an email action to use a particular template?
26. In a multi-site infrastructure, what is the reach of “Global” scope?

Additional notes

1) How to capture HTML output of cart page

Reference:

Study guide, pg 82, 94

Plugin for toHtml method

Blocks do not expose many public methods and so the best choice for globally modifying data is often a plugin for toHtml.

2) default.xml layout file update and what pages it effects

Reference:

<https://devdocs.magento.com/guides/v2.2/frontend-dev-guide/layouts/layout-overview.html>

3) cacheable="false"

Reference:

Study guide, pg 63, pg 66

cache types:

Understanding the `config`, `layout`, `block_html`, `config_webservice` and `full_page` caches and their functions is important.

```
config: 1
layout: 1
block_html: 1
collections: 1
reflection: 1
db_ddl: 1
eav: 1
customer_notification: 1
config_integration: 1
config_integration_api: 1
full_page: 1
target_rule: 1
translate: 1
config_webservice: 1
```

4) How to add quote item meta data

Reference:

Extension attributes. Study guide pg 109

review view/frontend/sections.xml

5) How to add invoice to ERP queue

RabbitMQ :

“You can also use RabbitMQ (available in Magento Open Source as a module). If consistency is important, using a messaging system might not be the best approach. If the operation fails after being sent to the external system, the data in the two systems becomes inconsistent.”

Events : **sales_order_invoice_register**

\$this->_eventPrefix . _load_before

\$this->_eventPrefix . _load_after

\$this->_eventPrefix . _save_before

\$this->_eventPrefix . _save_after

\$this->_eventPrefix . _save_commit_after

\$this->_eventPrefix . _delete_before

\$this->_eventPrefix . _delete_after

\$this->_eventPrefix . _delete_commit_after

\$this->_eventPrefix . _clear

6) How to add order statuses and set default to state

Through the admin. Stores > Order Statuses.

Reference:

Study guide

“States are hardwired into the \Magento\Sales\Model\Order class. While you can create plugins to hook into and change these states, unintended consequences might arise.”

7) How to add carriers

Reference:

Study guide

Create a new group in etc/adminhtml/system.xml for carriers/ [shipping_code].

Add etc/config.xml and create the path for default/ carriers[shipping_code] with default values (if necessary) for what was specified in system.xml.

Add a <model/> node to point to the class that contains the shipping method.

Create a new class that implements \Magento\Shipping\Model\Carrier\CarrierInterface and possibly extends \Magento\Shipping\Model\Carrier\AbstractCarrierOnline.

Minimum required methods to implement new shipping method:

isTrackingAvailable

getAllowedMethods

8) How to encrypt data in admin

Using backend_model in system.xml and config.xml

(Magento\Config\Model\Config\Backend\Encrypted) OR Using Encryptor Interface

```
use Magento\Framework\Encryption\EncryptorInterface as Encryptor;  
$this->encryptor = $encryptor;  
$encrypt = $this->encryptor->encrypt($data);  
$decrypt = $this->encryptor->decrypt($data);
```

9) How to add sales attributes

Extension attributes.

10) How to add static block product attribute

Create a block on the desired layout handle. e.g. catalog_product_view.xml

Updating product.info.details and add the following:

```
<block class="Magento\Catalog\Block\Product\View\Description" name="product.info.description"  
template="product/view/attribute.phtml" group="detailed_info">  
    <arguments>  
        <argument name="at_call" xsi:type="string">getDescription</argument>  
        <argument name="at_code" xsi:type="string">description</argument>  
        <argument name="css_class" xsi:type="string">description</argument>  
        <argument name="at_label" translate="true" xsi:type="string">none</argument>  
        <argument name="title" translate="true" xsi:type="string">Details</argument>  
    </arguments>  
</block>
```

Admin > Stores > Product – Update is_visible_on_front to yes

11) UI Components, data sources, data providers, and how to format values

UI components can be changed via xml file. e.g. cms_block_edit.xml

Reference:

Study guide pg 131

Data source and Data providers: study guide pg 132

Format: Specify a component item in the column attribute.

```
<column name="last_visit_at"
class="Magento\Ui\Component\Listing\Columns\Date">
  <argument name="data" xsi:type="array">
    <item name="config" xsi:type="array">
      <item name="filter" xsi:type="string">dateRange</item>
      <item name="dataType" xsi:type="string">date</item>
      <item name="component"
xsi:type="string">Magento_Ui/js/grid/columns/date</item>
      <item name="label" xsi:type="string" translate="true">Last Activity</item>
    </item>
  </argument>
</column>
```

12) When to use plugins and events

Plugins: to transform data before or after a specific method

Events: to trigger an action such as updating the generated class when a specific method runs.

13) Calculating final price on product page (catalog price rule)

Reference:

Study guide: pg 146

Practice test page: 14

14. Currency and how to aggregate different currency (baseRowTotal) plugin ? Como exibir a informação em um report com outra currency.

15) Can catalog or shopping cart rules be applied on store view level?

No, just websites, customer groups and quantity.

https://docs.magento.com/m2/ce/user_guide/marketing/price-rules-cart.html

16) How to add a new configuration file (e.g. etc/custom.xml)

Reference:

Study guide, pg 29, 30

<https://www.atwix.com/magento-2/working-with-custom-configuration-files/>

A XSD defining the schema to validate configuration files.

VirtualType created that extends \Magento\Framework\Config\Reader\Filesystem, specifies the converter, schemaLocator, and fileName.

A Converter class that implements \Magento\Framework\Config\ConverterInterface

A SchemaLocator class that implements \Magento\Framework\Config\SchemaLocatorInterface

A Data class that extends \Magento\Framework\Config\Data

17) How to define REST URLs

webapi.xml. <https://devdocs.magento.com/guides/v2.0/get-started/gs-web-api-request.html>

18. How to add extension attributes

Reference:

Study guide pg 109

19) How to save and load extension attributes

Reference:

Plugin. study guide pg 111, 112

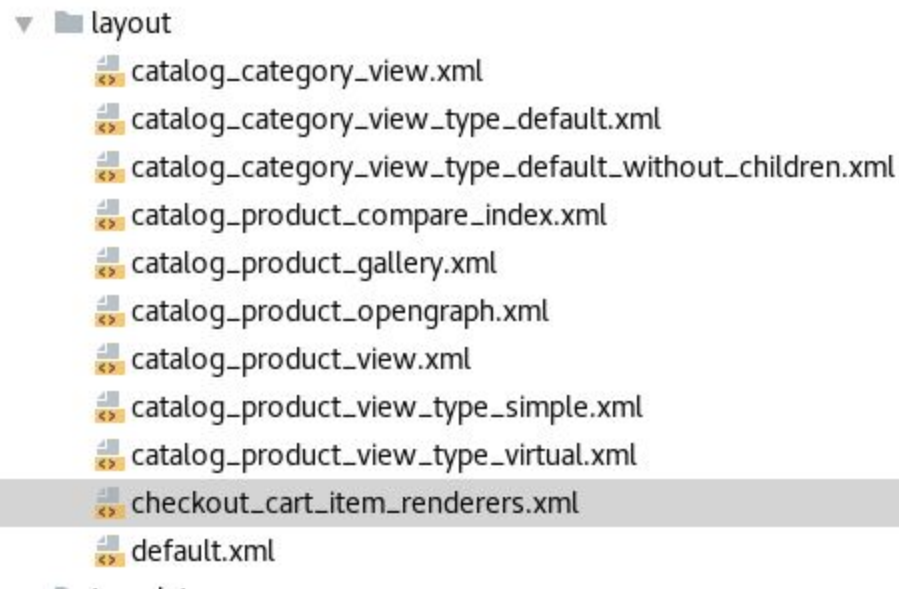
20) How to configure sensitive fields with Magento Vault and di.xml

```
<type name="Magento\Config\Model\Config\TypePool">
    <arguments>
        <argument name="sensitive" xsi:type="array">
            <item name="payment/braintree/merchant_id" xsi:type="string">1</item>
            <item name="payment/braintree/private_key" xsi:type="string">1</item>
            <item name="payment/braintree/merchant_account_id" xsi:type="string">1</item>
            <item name="payment/braintree/kount_id" xsi:type="string">1</item>
            <item name="payment/braintree_paypal/merchant_name_override"
xsi:type="string">1</item>
            <item name="payment/braintree/descriptor_phone" xsi:type="string">1</item>
            <item name="payment/braintree/descriptor_url" xsi:type="string">1</item>
        </argument>
        <argument name="environment" xsi:type="array">
            <item name="payment/braintree/descriptor_url" xsi:type="string">1</item>
        </argument>
    </arguments>
</type>
```

<https://devdocs.magento.com/guides/v2.1/payments-integrations/vault/payment-token.html>

21) Catalog product view layout files

catalog_product_*.xml



22) UiComponent input validation

Reference:

<https://magento.stackexchange.com/questions/190699/ui-form-validation-in-magento-2>

23) Extension Attributes benefits over EAV?

Reference:

<https://devdocs.magento.com/guides/v2.0/extension-dev-guide/attributes.html>

“Extension attributes are new in Magento 2. They are used to extend functionality and often use more complex data types than custom attributes. These attributes do not appear on the GUI.

Individual fields that are defined as extension attributes can be restricted, based on existing permissions. This feature allows extension developers to restrict access to data.”

<https://magento.stackexchange.com/questions/215989/magento-2-what-is-difference-between-extension-attributes-and-custom-attribute>

“Custom attributes are the attributes added to describe an entity, such as product attributes, customer attributes etc. These are a subset of EAV attributes.

Extension attributes on the other hand are generally used for more complex data types such as adding additional complex data into an entity from a custom external table.

Simply put, custom attributes conform to EAV standards whereas extension attributes are used for more complex data which custom attributes cannot handle.”

No GUI

No code change required?

Setup in XML files only?

API availability

24) New customer attributes. How to make them functional in admin forms?

Reference:

Study guide, pg 173, 174

“Adding customer attributes is similar to creating any other type of EAV attribute with one exception. Once the attribute is created, it must be added to a form to be editable.”

```
$attribute = $this->eavConfig->getAttribute(\Magento\Customer\Model\Customer::ENTITY,
Attribute::CUSTOMER_PROMOTION_PREFERENCE);

$attribute->setData('used_in_forms', ['adminhtml_customer', 'customer_account_edit']);

$attribute->save();
```

“Running the above code in a UpgradeData setup script will add this attribute to admin forms specified in customer_form_attribute. The frontend is more manual and will require you adding the fields to templates in the customer account area.

If you have created the attribute, and added it to the frontend customer account HTML, but the attribute is not saving, check to make sure that the attribute is in the customer_account_edit form. Additionally, check that the is_system attribute value is set to 0.

25) How to change default order status?

Reference:

https://docs.magento.com/m2/ce/user_guide/sales/order-status-custom.html

26) Quotes merging

Reference:

<https://github.com/magento/magento2/blob/2.3-develop/app/code/Magento/Quote/Model/Quote.php#L2360>

Study guide, pg 155

27) Which entities can use EAV attributes?

Reference:

<https://magento.stackexchange.com/questions/116501/what-are-entities-in-magento-2>

29) How to return getFinalPrice() from ProductRepository?

Reference:

Study guide, pg 34

*"For objects that need to be new every time they are used, Magento uses factories. To use a factory, specify the class or interface name and append Factory to the end. Like:
\Magento\Catalog\Api\Data\ProductInterfaceFactory"*

30) Magento authentication types

Reference:

<https://devdocs.magento.com/guides/v2.0/get-started/authentication/gs-authentication.html>

Token based authentication

<https://devdocs.magento.com/guides/v2.0/get-started/authentication/gs-authentication-token.html>

OAuth based authentication

<https://devdocs.magento.com/guides/v2.0/get-started/authentication/gs-authentication-oauth.html>

Session based authentication

<https://devdocs.magento.com/guides/v2.0/get-started/authentication/gs-authentication-session.html>

31) Magento search system

Reference:

Global Search https://docs.magento.com/m2/ce/user_guide/stores/admin-global-search.html

Catalog search

https://docs.magento.com/m2/ce/user_guide/catalog/search-configuration.html

Advanced search

https://docs.magento.com/m2/ce/user_guide/catalog/search-advanced.html

32) Pricing priority

Reference:

<https://magento.stackexchange.com/questions/24612/in-magento-which-price-or-price-rule-has-the-highest-priority>

"Magento takes the minimal value from the following variations: Product Price, Tier Price, Group Price, Special Price, Catalog Rule Price. There is no priority at all. If Product Price is 100 and Catalog Rule Price is 150, Product Price will be used, because this is the minimal value."