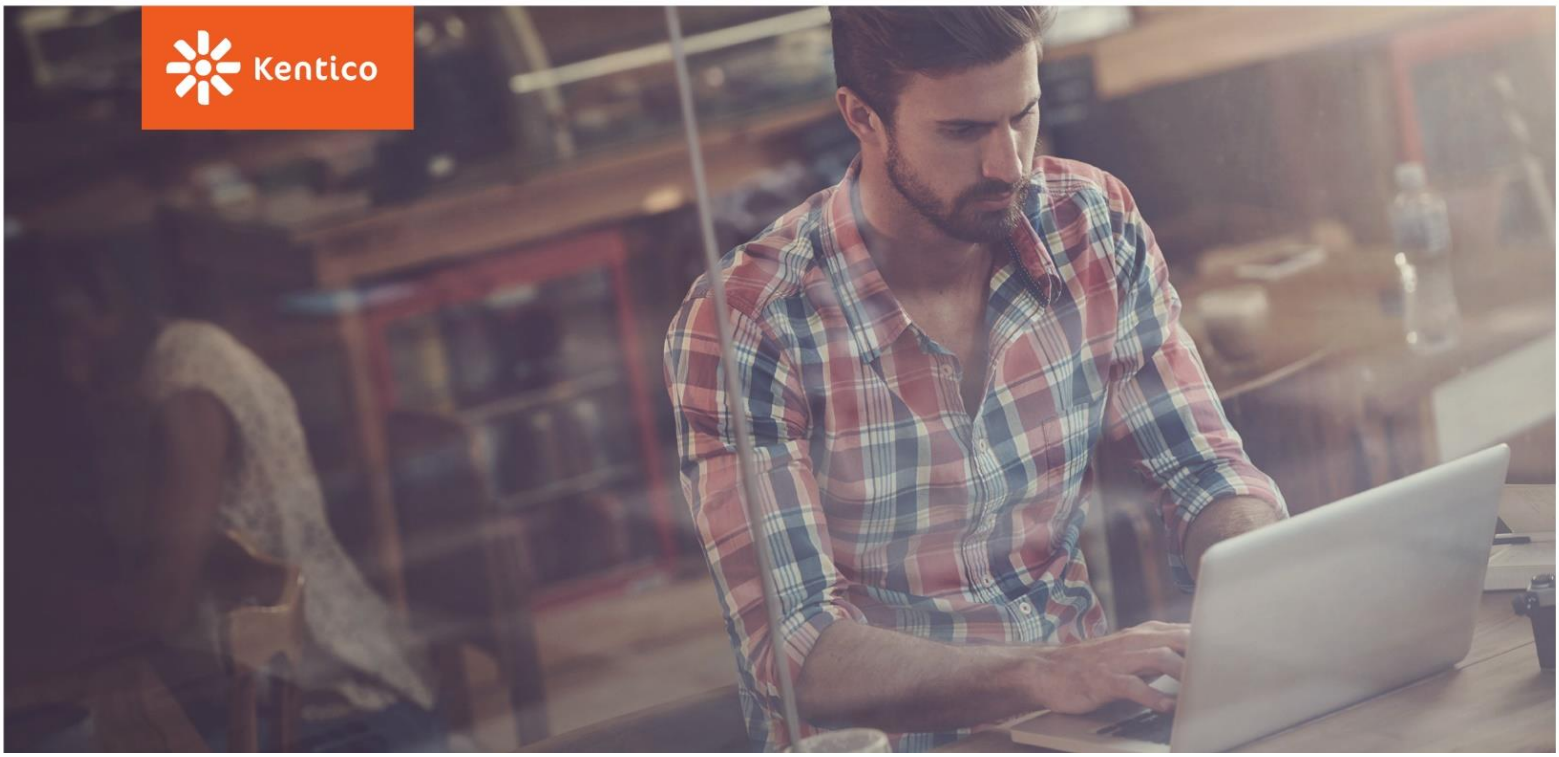

Certified Developer Exam

Preparation Guide

Preface

To sufficiently prepare for the Kentico 11 Certified Developer Exam, please study this Preparation Guide thoroughly in conjunction with the product documentation and other resources available online at http://devnet.kentico.com.

Please note that our training courses for developers do not fully prepare you for the exam. Passing the Exam requires not only head knowledge and academic understanding of the product's features and functionality, but it also requires practical experience and a high-level familiarity with the product itself. Therefore we recommend completing a project on Kentico before taking the exam.

To pass the Exam and be recognized as a Kentico expert, it is expected that you have extensive experience in the following:

- Designing, developing, and maintaining Kentico websites
- ASP.NET development and the intricacies of the .NET Framework
- Using MS SQL database management language
- Creating data-driven web user interfaces

If you pass the Exam and gain acknowledgement for being a Certified Kentico Developer, then you have successfully proven your skills and set yourself apart from the everyday developer. Earning your certification is a mark of approval and distinction that builds your credibility, makes you more marketable, and gives you a competitive advantage over the other developers you will encounter in your career.

Test Format

The Kentico 11 Certified Developer Exam is securely administered online and consists of 50 questions to be completed within 90 minutes. The Exam is an open-book test – you may use any resource that you find helpful (have Kentico running, have the documentation open, etc.) **except** another person. You must take the exam individually; sharing or cheating will **not** be tolerated and will result in the disqualification of your current and future exams.

The exam contains the following question types:

- Single answer
- Multiple choice

The purpose of this study guide is to help you assess your skills in answering each of the four types of questions on the Kentico Certified Developer Exam. The sample questions in this guide are based on real questions from the exam.

Certified Developer Exam Policies

Score Calculation

To receive the Kentico 11 Developer Certification, a minimum score of 70% is required. The testing and scoring process is designed to be confidential. Completed exams are not returned and the answers (whether correct or incorrect) are not provided to tested candidates.

The exam doesn't award a partial score for a multiple-response question. Unless you select all the correct options within the multiple answer question (identified usually by "Select all that apply"), your answer to the question is evaluated as incorrect.

This study guide will help you answer the questions, "If the sample questions in this guide are like the real questions on the Kentico Certified Developer Exam, how will I do? Do I have sufficient knowledge and experience to pass the exam?"

You can then use this information to hone your skills and focus on the areas where you need more understanding and experience before actually taking the Exam.

Exam Retake Policy

If you do not achieve the minimum passing score of 70 % on the exam the first time, you must wait at least 24 hours before retaking the exam. A new voucher has to be purchased through Kentico Developer Certification page.

If you do not achieve the minimum passing score the second time, you must wait at least 30 days before retaking the exam for the third time. A new voucher also has to be purchased through Kentico Developer Certification page.

For fourth, fifth and subsequent retakes, there is a 30 days waiting period. You are allowed unlimited number of attempts as long as the 30 days waiting period is withheld.

Kentico Software is unable to offer any refunds for failed exams.

Candidate bans

If you violate any testing rule or any exam policy, you may be permanently prohibited from taking Kentico Certified Developer Exam.

Examples of such misconduct or misuse, include, but not limit to, the following:

- Violating the time-frame for exam retakes,
- Providing or accepting improper assistance,

- Copying, publishing, disclosing, distributing or otherwise sharing the exam content and the test questions and answers, whole or in part, in any form or by any means, verbal or written, electronic or mechanical, for any purpose.

Appeal Process

You may appeal the ban by submitting an appeal to certification@kentico.com.

The Kentico training team will review all submitted appeal requests and conduct an investigation of each specific case and will communicate directly with you regarding the conclusion of the investigation and final appeal decision.

Exam Consultation

If you are unsure of why you have not passed the exam or if you would like to go through the areas you have not answered correctly with a specialist on the given area, you can request an exam consultation.

How to request an exam consultation?

Make your request within 5 days following the day you have received this notification. The consultation is a paid service that costs 1 consulting credit, which you can purchase from a payment gateway or via your sales representative. The consultation process takes up to 5 business days upon a successful payment. If you find a wrong question or answer in the exam, you will get a refund for the consulting credit. If you are planning to retake the exam, do not register for the second exam attempt before the Kentico training team confirms your exam consultation request.

Data structure design

This section tests your understanding of Kentico data structures (e.g., tables, views, stored procedures) and your ability to choose the most suitable approach to custom development.

Sample question

When you need to modify a system class, which of the following are true? (select all that apply)

A. You cannot mark new fields as required.
B. You can only modify system classes marked as "customizable".
C. You can change a default field's database definition.
D. You should use a unique prefix for new fields you add.
E. You should use the same prefix as the default fields for new fields you add.

Correct answers

A, B, D

Explanation

- The administration interface will not allow you to execute changes that would introduce database schema restrictions. For example, adding a required flag could cause Kentico API fail to create new objects for that class. As such, you should not bypass these restrictions and modify the field definition directly in the database.
- Classes marked as "Customizable" allow you to carry out a specific set of safe modifications via the Modules application. Any fields added to "Customizable" classes, together with their data, will be persisted during the upgrade process.
- Aggressive customization of Kentico system classes may cause significant issues with maintainability, especially when it comes to upgrading Kentico. Even after customization, system classes remain an integral part of Kentico architecture. Therefore, individual class entries may be inserted, updated, or deleted during upgrade and the class table schema may also change. This means that you need to avoid any modifications that could introduce database schema restrictions, such as adding foreign keys or field constraints, and also avoid adding fields with names that might be chosen by our developers for newly added features.

  - Docs: Editing system tables
  - Docs: Best practices for customization

Study resources

- Planning your data structure
- Planning content management

- Identifying data structures
- Defining web site content structure
- Working with Pages
- Custom tables
- Creating custom modules
- Configuring file system providers

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  - Docs: Editing system tables
  - Docs: Best practices for customization

Study resources

- Database structure and objects

- Page database structure
- Editing system tables

Kentico Development models

This section tests your knowledge of the differences between and basics of Kentico development models. You are expected to understand the pros and cons of each development approach.

Sample question

When creating a new widget for a page editor to use on the Page tab in the Pages application, which of the following are necessary? (select all that apply)

A. The Widget must be based on a web part.
B. You must specify it as either an inline widget, allowed in editor zones, or both.
C. You must make sure page editors are in a role that you have granted permission to for the widget.
D. The widget must be added to the site before it can be used.
E. The widget should inherit from one of these classes:
    - CMSAbstractWidget
    - CMSAbstractEditableWidget
    - CMSAbstractLayoutWidget
    - CMSCheckoutWidget

Correct answers

A, B, C

Explanation

Widgets can be thought of as lightweight web parts. They are always based on a web part as they inherit all code and underlying properties from a web part. Additionally, you must specify who can place them and where they be placed since not all widgets are suitable in all contexts. Widgets are global objects (just like web parts) and do not need to be assigned to a site. As widgets do not have any code, the listed classes do not exist. Though if you changed "Widget" to "WebPart", these classes are generally the ones you'd use to build a web part.

- Docs: Creating widgets
- Docs: Preparing widgets for users
- Docs: Configuring permissions for widgets

Study resources

- Picking a project type and development model
- Choosing the right development model
- Developing web sites using Portal Engine
- Developing web sites using ASPX Templates
- Developing web sites using MVC

Kentico features

This section tests your understanding of what's available in the out-of-the-box solution and how to map your project requirements to Kentico features.

Sample question

Which of the following features should not be used to store content? (select all that apply)

A. Pages
B. Custom tables
C. Page templates
D. Custom module classes
E. Transformations

Correct answers

C, E

Explanation

- Page templates and Transformations were not designed to store data, but instead should serve only as design/data presentation elements. Therefore, it is not best practice to store content in these elements.

Study resources

- Mapping requirements to Kentico features
- Best practices for customization

Data presentation

This section tests your understanding of different data presentation techniques, data retrieval options, and best practices for displaying media files.

Sample question

When you need to use a .NET control in a transformation, which transformation type supports this?

A. Text/XML
B. XSLT
C. ASCX
D. HTML

Correct answers

C

Explanation

- Only the ASCX type of transformation is compiled and therefore allows the use of .NET User controls.
    - Docs: Writing Transformations

Study resources

- Writing transformations
- Writing macro conditions
- Managing responsive images

Development environment

This section tests your knowledge of developing in a team and configuring the environment to allow for team collaboration.

Sample question

When developers have their own local copies of the code, but all use a single database for a project, which of the following are best practices? (select all that apply)

A. Object locking should be enabled.
B. Web farms should be configured.
C. Developers should all use the same user account to log in.
D. Staging should be configured to synchronize changes between developers.

Correct answers

A, B

Explanation

- Because everyone is using the same database, it would be easy for different developers to try to make changes to the same object, resulting in collisions. Enabling object locking will prevent this by forcing only one user to have access at any given time.
- Because there are multiple instances connecting to the same database, web farms should be configured to prevent issues with outdated caches.
- Having separate user accounts will help you track who actually made specific changes.
- Staging is unnecessary in this scenario because it primarily deals with database changes and because everyone is using the same database there's nothing to stage.

  - Advantage: Developing in a team
  - Docs: Preparing your environment for team development

Study resources

- Developing in a team
- Preparing your environment for team development

Kentico API

This section tests your ability to understand Kentico API and best practices for writing custom code such as performance optimization and code protection against security vulnerabilities.

Sample question

Which of the following code examples will update the **PageTemplateInfo** object correctly? (select all that apply)

A.
```
var pageTemplate = PageTemplateInfoProvider.GetPageTemplateInfo(1);
if (pageTemplate != null)
{
 pageTemplate.DisplayName = "New name";
 pageTemplate.SetPageTemplateInfo(pageTemplate);
}
```

B.
```
var pageTemplate = PageTemplateInfoProvider.GetPageTemplateInfo(1);
if (pageTemplate != null)
{
 pageTemplate.DisplayName = "New name";
 PageTemplateInfoProvider.SetPageTemplateInfo(pageTemplate);
}
```

C.
```
var pageTemplate = PageTemplateInfoProvider.GetPageTemplateInfo(1);
if (pageTemplate != null)
{
 pageTemplate.DisplayName = "New name";
 pageTemplate.Update();
}
```

D.
```
var pageTemplate = PageTemplateInfoProvider.GetPageTemplateInfo(1);
if (pageTemplate != null)
{
 pageTemplate.DisplayName = "New name";
 pageTemplate.Save();
}
```

Correct answers

B, C

Explanation

- **Answer B:** Provider classes typically contain methods for getting, setting, inserting, updating, and deleting class objects. For the respective class have the Set<objectTypeName>() method, which can be used to either update or insert the object depending on the presence of a value in the ID column.
    - API reference: PageTemplateInfoProvider.SetPageTemplateInfo Method

    - API examples: Page templates
    - Docs: Database table API
- **Answer C:** Since the PageTemplateInfo Class inherits from AbstractInfo, which ultimately inherits from BaseInfo, it has the Update() method. This method attempts to save the object and can be called directly on the object.
    - API reference: PageTemplateInfo class
    - API reference: BaseInfo.Update() method

Study resources

- Database table API
- Working with Pages in API
- Developing secure web sites
- Using Kentico API externally
- Macro syntax
- API Examples

Kentico customization

This section tests your knowledge of different Kentico customization options as well as the ability to use the right customization in certain scenarios.

Sample question

When you need to implement some custom logic that runs whenever a new user is created, which of the following would allow you to accomplish this?

A. Create a global event handler attached to the UserInfo insert event.
B. Create and register a custom UserInfoProvider with your code.
C. Modify the registration web part.
D. Create a watcher extension to inject your code when a new user is created.

Correct answer

A, B

Explanation

Kentico provides a way to handle object events globally (see documentation). This is a great way to extend or customize behavior of Kentico objects like users. Additionally, if you need even more flexibility, you can create custom providers (see documentation) to dramatically change system behavior, though you should be careful when doing this. While modifying the registration web parts might sound like a good option, that is really only limited to users signing up on the front end. Users can be manually created in the administration interface or even programmatically created from the API, and customizations to the registration web parts would not affect users created with these methods.

Study resources

- Custom development

Troubleshooting tools and techniques

This section tests your ability to troubleshoot Kentico applications as well as your knowledge of debugging tools and techniques. Additionally, you are expected to know the most common issues that can occur in Kentico, their causes, and possible solutions.

Sample question

After staging your content to the production server, your macros stop working. What can be the cause of this issue? (Select all that apply)

A. User who signed the macros on production server has incorrect Permissions.
B. Not having a macro helper specified on both servers.
C. Not having the same CMSHashStringSalt key in web.config on both servers.
D. User who signed the macros on the staging server does not exist in production

Correct answers

A, C, D

Explanation

- The results of the Macro expression are evaluated against the Permissions of the User who signed (most recently saved) the Macro. If you have different permissions for the same User in different environments, your Macro might not work properly.
- Kentico uses the *CMSHashStringSalt* web.config key, which is a random GUID to make Macros even more secure. If the CMSHashStringSalt key is different then the one used to sign Macros, the Macros will not be evaluated properly.
- Macros are signed (for security reasons) by the User who created/edited them, so if the User does not exist in the environment where the Macro is executed, the result of the Macro is not displayed/is empty.

Study resources

- Troubleshooting web sites

Kentico deployment

This section tests your knowledge of Kentico deployment approaches, available tools, and steps to properly deploy your solution in different environments.

Sample question

When staging content from one environment to another, you noticed that some pages don't have the same ID in both environments, what is the reason for this?

A. Staging detected an existing page in the target environment and bound the page to that instead of doing a full synchronization.
B. Staging detected an existing page in the target environment and bound the page to that instead of doing a full synchronization.
C. Staging detected an existing page in the target environment and bound the page to that instead of doing a full synchronization.
D. You did not enable the "synchronize ID values" option.

Correct answer

B

Explanation

Content staging cannot ensure that objects and pages have the same ID values after being transferred to a different environment. However, the synchronization process preserves GUID values. Use GUID fields if you need to identify pages or objects across multiple staging environments.

- Docs: Content staging

Study resources

- Deploying web sites
- Deploying

Kentico optimization

This section tests your understanding of techniques used to optimize website performance on both server and client sides. You are expected to understand the differences between all available caching options, proper usage of Cache Dependencies, best practices for Web part configuration, and much more.

Sample question

What is the difference between output caching and content caching? (Select all that apply)

A. Output caching stores the full HTML output of a page.
B. Output caching stores structured data loaded by web parts and controls.
C. Content caching stores the full HTML output of a page.
D. Content caching stores structured data loaded by web parts and controls.

Correct answers

A, D

Explanation

- Output caching is at the page level and stores the entire HTML output of the page in cache.
- Content caching is at the web part or widget level and stores the data that the web part loaded in cache.
  - Docs: Optimizing website performance
  - Docs: Configuring caching (and sub-pages)

Study resources

- Optimizing web site performance
- Developing superfast front end with Kentico
- Performance troubleshooting tips and tricks

Kentico maintenance

This section tests your knowledge of various maintenance tasks which ought to be performed during a standard life cycle of a website project, such as upgrading, hotfixing, and cleaning tasks.

Sample question

When applying an upgrade manually, which of the following actions needs to happen (select all that apply)?

Answers

A. Run the appropriate SQL script(s) to update the database.
B. Re-sign all macros after upgrade.
C. Manually update the web.config.
D. Deploy virtual objects to the file system

Correct answers

A, B, C

Explanation

- When upgrading a site manually, you must follow the directions outlined in the documentation.

Study resources

- Maintenance in Kentico
- Maintaining
- KInspector
- Upgrading to Kentico 11