



Certified Developer Exam

Preparation Guide

Preface

To sufficiently prepare for the Kentico 10 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 10 Certified Developer Exam is securely administered online and consists of 50 questions to be completed within 60 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 10 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.

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.

Data storage options

This section tests your ability to design Kentico websites by choosing the right storage option. You are required to understand the differences between all available storage options (e.g. Pages, Custom tables, Custom classes) as well as their limitations.

Sample question

Where can you store Page Attachments?

- A. In the file system.
- B. In the database.
- C. In the database and/or the file system.
- D. Kentico does not allow you to specify where Page Attachments are stored.

Correct answers

C

Explanation

In Kentico Settings (Settings → System → Files → Store files in), you can choose where Page Attachments will be stored:

- Database
- File system
- Database and file system

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](#)

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

What should you do when adding a custom field to a system class? (select all that apply)

- A. Manually add a foreign key to the field in the database, if it is a reference to a different class, to ensure data consistency.
- B. Only set field properties allowed by the UI.
- C. Only modify system classes marked as "Customizable".
- D. Only use name prefixes used by other fields in the class, to maintain data uniformity.
- E. Only use name prefixes unique from other fields in the class, to prevent potential naming collisions during upgrades or hotfixes.

Correct answers

B, C, E

Explanation

- 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.
- The UI will not allow you to execute changes that would introduce database schema restrictions. For example adding a required flag, as that could cause Kentico API fail to create new objects of the Class. Do 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 custom fields added to "Customizable" classes, together with their data, will be persisted during the upgrade process.

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. The Widget must be configured to be allowed for Editor zones, used as an Inline Widget, or both.
- C. The Widget must specify whether authenticated users, global administrators, or specified Roles are allowed to use it.
- D. The Widget must be added to the site before it can be used (it is not global).
- 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.
- Widgets must specify where and by whom they are allowed to be used, as they may not be applicable for all users or contexts.
- There may be users without permissions to change much of the site (e.g., basic membership users) and a widget may not be suitable for some contexts (e.g., a user widget may not be valid as an inline widget).
- 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.

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

What features should not be used to store content / data? (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

Which of the following Transformation types do not allow use of .NET User controls? (select all that apply)

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

Correct answers

A, B, D

Explanation

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

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 you have a local copy of the code, but use central database for everyone on a project, which of the following are best practices? (select all that apply)

- A. Object versioning and Object locking (check-in/check-out) should be enabled.
- B. Web farms should be configured.
- C. Media Libraries should be configured to use shared storage like a network share or Azure Blob Storage.
- D. Developers should all use the same User account to log in.
- E. Staging should be configured to synchronize changes between developers.

Correct answers

A, B, C

Explanation

- Object versioning allows you to roll-back to previous versions of your object. Therefore, it is considered best practice to keep it enabled, but only in case you are using a central/shared database. If you are using the Continuous Integration (CI) feature, you are versioning your objects on a file system under source control. Object locking (check-in/check-out) allows you to prevent conflicts, since only one user can modify a given object at a time.
- We recommend using shared storage for your media files so that these are in sync on all machines connected to the central location.
- If you use the same user account for all developers (e.g., Administrator) you will not be able to figure out who really modified a given object.
- Since you are using a central/shared database, there is no need to use any other synchronization feature for your database changes. Media files should be stored either on a database level in central location or in a shared file system location, so there is no need to synchronize them. Code files should be stored in a source control application.

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

- Classes inheriting from AbstractInfo have the Update() method that can be called directly on the object level. This method attempts to save the object.

- InfoProvider classes 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.

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

You need to execute your custom code whenever a new object of UserInfo type is created. How can you accomplish this task?

- A. By creating a Global event handler.
- B. By creating a Form control.
- C. By creating a custom Setting.
- D. By creating a custom Module.

Correct answer

A

Explanation

- Global events are a Kentico feature that enable you to execute your own code whenever some action occurs for supported objects.

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 via Staging module, 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 not sufficient 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. Not having the same User who signed the Macros on both servers.

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 than 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

After staging some Pages with a custom field with an Object selector Form control, you notice that the ID in the staging environment isn't the same as the ID in the production environment in some cases. Why is that?

- A. The Staging module is not configured correctly for this object type.
- B. The Staging module does not ensure that objects have the same ID values after synchronization to a different environment.
- C. The parent object was not synchronized yet.
- D. The synchronized object is not assigned to the given site on the target.

Correct answer

B

Explanation

- When deploying from one environment to another, you should never rely on ID values (the primary key is usually set as an auto increment) being identical as it is highly likely they will be different. Instead, you should leverage the GUID of an object to ensure consistency between environments.

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

When you are improving the performance of your website, which of the following is true? (select all that apply)

- A. To use Full Page (output) cache, you do not need to do any code changes.
- B. Using any type of cache means the content can't be up to date all the time.
- C. If a particular Page is dynamic (implemented with Wildcard URL feature), you can still use Partial cache on Web parts.
- D. If you apply Partial cache on a particular Web part, the data in the cache can't be removed until validation time expires.

Correct answers

A, C

Explanation

- Full page (output) cache can be just enabled on the page level for any Content tree Page.
- Using Cache dependencies, any cache item can be easily flushed/removed upon update of a specified object.
- For every single URL alias (including Wildcard URLs), Kentico builds a new Partial cache for Web parts.
- Cache dependencies are also available for Partial cache, enabling cache removal/flush upon update of a specified object.

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. A SQL script has to be run on the database.
- B. Files have to be overwritten with new versions.
- C. The website has to be run after every upgrade step between Kentico versions.
- D. The Event log has to be cleared.
- E. Virtual objects have to be stored on the file system.

Correct answers

A, B, C

Explanation

The upgrade process consists of:

- running an upgrade SQL script
- copying and overwriting system files
- a website startup phase where the upgrade is finalized after you run the website for the first time

Study resources

- [Maintenance in Kentico](#)
- [Maintaining](#)
- [KInspector](#)
- [Upgrading to Kentico 10](#)