

# Certified Developer Exam

Preparation Guide

# Preface

To sufficiently prepare for the Kentico 9 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 this “head knowledge” and academic understanding of the product’s features and functionality, but it also requires practical experience and a high-level of familiarity with the product itself.

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 implementing Kentico websites
- ASP.NET development and the intricacies of the .NET Framework
- Creating data-driven web user interfaces
- Writing programmatic code in Microsoft Visual Studio

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 9 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
- True/False
- Yes/No

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 9 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,
- Cheating during the exam (e.g. making screenshots of evaluated test results),
- Providing or accepting improper assistance,
- Copying, publishing, disclosing, distributing or otherwise sharing the exam content and the test questions, 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](mailto:certification@kentico.com).

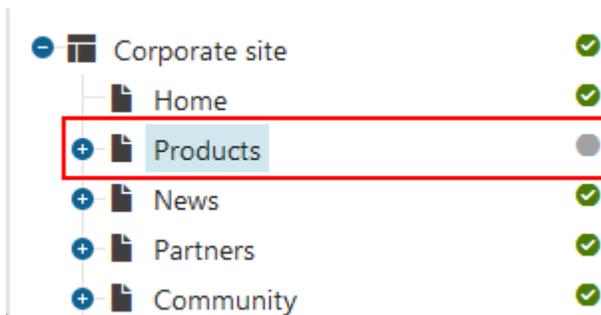
The Kentico training team will review all submitted appeal requests and conduct an investigation of each specific case and will communicate directly with you regarding the conclusion of the investigation and final appeal decision.

# Basic Kentico Functionality

This section contains sample questions involving basic Kentico functionality. These questions may cover (but are not limited to) the Pages application, the Content tree, document management, and underlying infrastructure.

## Questions

- 1) To perform on-site editing, you must first login to Administration. (True/False)
  - a) True
  - b) False
- 2) In the Pages application, when you look at the **Products** page in the Content tree, you see the following:



What is the current status of the **Products** page? (Select the most-correct answer)

- a) Page is published.
  - b) Page is not published.
  - c) Page is archived.
  - d) Page is currently checked-out.
- 3) In a structured page, each field has its own database column in SQL Server. (True/False)
    - a) True
    - b) False

## Answers

- 1) **B (False).** The purpose of on-site editing is to enable content administrators to make content updates directly on the live site (using the URL <http://<domain>/<virtual directory path>/CMSEdit>). This capability precludes the need to access the Pages application in the administration interface.
- 2) **C.** When the icon color next to a page name is grey, the current status of the page is **Archived**. When a page is Published (Answer A), the page status icon color is green. When a page is not published (Answer B), the icon color is red. When a page is checked out (Answer D), the icon displays a lock.
- 3) **A (True).** In a structured page, each field has its own database column in SQL Server that stores submitted form data (such as NewsTitle, NewsReleaseDate, NewsSummary, and NewsText in case of the News page type). Each structured page type has its own database table in SQL Server (for example, CONTENT\_News and CONTENT\_Office).

## Resources

- <https://docs.kentico.com/display/K9/Managing+website+content>
- <https://docs.kentico.com/k9/custom-development/working-with-pages-in-the-api/page-database-structure>

# Application Programming Interface

This section contains sample questions about the Kentico API (application programming interface). These questions may cover (but are not limited to) specific APIs, their syntax, and their function.

## Questions

- 1) Which of the following statements best describes the `CMS.TreeEngine.TreePathUtils` API class? (Select the most-correct answer)
  - a) Encapsulates data from the `CMS_Tree` and `CMS_Document` tables and their respective coupled tables.
  - b) Only used to delete tree nodes.
  - c) Represents a relationship between two documents.
  - d) Provides functionality for validating and converting paths, URLs, aliases, and names.
  
- 2) The **CMS.Synchronization** namespace is used for which of these purposes: (Select all correct answers)
  - a) Synchronization of Integration bus tasks
  - b) Content and object staging
  - c) Page versioning
  - d) Object versioning
  
- 3) You can register event handlers by creating a custom class in which folder? (Select the most-correct answer)
  - a) `App_Bin`
  - b) `App_Code`
  - c) `App_Data`
  - d) `App_WebReferences`

## Answers

- 1) **D.** The `CMS.TreeEngine.TreePathUtils` API class provides static helper methods for validating and converting paths, URLs, aliases, and names. For example, you can use this API to check or retrieve the path of a document or its URL.

The `CMS.TreeEngine.TreePathUtils` API class does not encapsulate data (Answer A), cannot be used to delete or manipulate tree nodes (Answer B), and does not apply to operations involving more than one document (Answer C).

- 2) **A, B, and D.** The **CMS.Synchronization** namespace contains classes that take care of synchronizing data between Kentico and external systems using Integration bus (Answer A), synchronizing data between multiple Kentico instances using Staging (Answer B), and managing versions of Kentico objects (Answer D). Page versioning functionality is part of the CMS.DocumentEngine namespace.
- 3) **B.** All custom handler code must be located in the **/App\_Code** folder of a web site project. The App\_Bin folder (Answer A) contains compiled assemblies (binary .DLL files) for controls, components, and other code referenced by the application. The App\_Data folder (Answer C) contains application data files, including database (.MDF) files, .XML files, and other data store files. The App\_WebReferences folder (Answer D) contains web service reference contract (.WSDL) files, schema (.XSD) files, and discovery document (.DISCO and .DISCOMAP) files for creating web references.

## Resources

- <https://docs.kentico.com/display/K9/Custom+development>
- <https://docs.kentico.com/display/K9/Using+the+integration+bus>
- <http://devnet.kentico.com/articles/api-changes-in-kentico-8>

# Web Parts and Widgets

This section contains sample questions about web parts and widgets. These questions may cover (but are not limited to) specific web parts, their properties, and their functionality.

## Questions

- 1) Which of the following Twitter web parts is not included with Kentico out-of-the-box? (Select the most-correct answer)
  - a) Twitter feed
  - b) Twitter follow button
  - c) Twitter tweet button
  - d) All of the above
  
- 2) Which of the following actions does NOT optimize the performance of a **Repeater** web part in a Portal Engine page template (without modification of any caching or transformation code)? (Select the most-correct answer)
  - a) Check permissions
  - b) Edit the web part control ID
  - c) Disable the ViewState property
  - d) Reduce the number of columns displayed
  
- 3) When developing a custom web part, what class do you need to inherit from? (Select the most-correct answer)
  - a) WebPartInfo
  - b) WebPartInfoProvider
  - c) CMSAbstractWebPart
  - d) WebPartInstance

## Answers

- 1) **D.** All of the mentioned web parts were abandoned and are not present in Kentico 9.
  
- 2) **A.** Checking permissions does not optimize the performance of the **Repeater** web part in a Portal Engine page template, however:

- Editing the **Web part control ID** property (Answer B) can increase performance because the ID is used as a unique identifier in the rendered HTML code. Shortening the ID string causes the system to render less HTML code, thus increasing performance.
  - Disabling the ViewState property (Answer C) can increase performance by eliminating the need for the **Page** class to gather the collective view states for all of the controls and serialize the state to a base-64 encoded string, each time a page is requested. Subsequently on postbacks, the view state will not need to load and deserialize the persisted view state data and update the relevant controls. Additionally, the `_VIEWSTATE` hidden form field will not add size/latency to page loading. Postback request times are minimized because the `_VIEWSTATE` form field will not need to be sent back to the Web server in the HTTP POST headers.
  - Reducing the number of columns displayed (Answer D) can increase performance by decreasing the amount of data that needs to be retrieved from the database.
- 3) **C.** When developing a custom web part, you must inherit from the **CMSAbstractWebPart** class because it contains the methods and constructors needed to initialize the parent portal manager and required controls for web parts. The `WebPartInfo` class (Answer A) creates a new web part object but does not provide the members required to initialize the controls for web parts. The `WebPartInfoProvider` class (Answer B) provides management functionality for web parts (such as get, set, and delete web part), but does not create or instantiate them. The `WebPartInstance` class (Answer D) initializes an instance of a web part, but does not provide the members required to initialize the controls for web parts.

## Resources

- <https://docs.kentico.com/display/K9/Developing+websites+using+the+Portal+engine>
- <https://docs.kentico.com/display/K9/Using+and+configuring+web+parts>
- <https://docs.kentico.com/display/K9/Preparing+widgets+for+users>
- <https://docs.kentico.com/display/K9/Adding+page+content+through+widgets>

# Kentico Database Repository

This section contains sample questions involving the Kentico database repository in SQL Server. These questions may cover (but are not limited to) database schemas, specific database tables, properties, columns, and foreign keys, as well as SQL scripts and queries.

## Questions

- 1) When a Live site user registers or creates an account, which of the following database tables contains the user account information? (Select the most-correct answer)
  - a) CMS\_User
  - b) CMS\_MembershipUser
  - c) CMS\_UserSite
  - d) COM\_Customer
  
- 2) For each language version of a document, the **CMS\_document** table contains which one of the following? (Select the most-correct answer)
  - a) One column of data
  - b) One row of data
  - c) One foreign key
  - d) One database schema
  
- 3) Which one of the following database tables contains the page type-specific fields for the BlogPost page type? This is a page type that is shipped with Kentico. (Select the most-correct answer)
  - a) Blogs\_BlogPost
  - b) CMS\_BlogPost
  - c) CONTENT\_Blog
  - d) CONTENT\_BlogPost

## Answers

- 1) **A.** When a Live site user registers or creates an account, the user account information (such as User name, First name, E-mail address, and password) is stored in the **CMS\_User** table.

The **CMS\_MembershipUser** table (Answer B) assigns users to memberships, where each record associates the user as a member of a specified membership.

The **CMS\_UserSite** table (Answer C) assigns users to sites for login purposes.

The **COM\_Customer** table (Answer D) only stores user account information when a user makes an online purchase and creates an account during the checkout (or Add to Shopping Basket) process.

- 2) **B.** The **CMS\_document** table contains one row of data for each language version of a page. Each column in this table (Answer A) represents one specific page, where a row is added for each localized published version of the page. The foreign keys in this table (Answer C) contain various fields that specify background or supplementary properties about a particular page, such as DocumentCreatedByUserID, DocumentCheckedOutByUserID, DocumentModifiedByUserID, DocumentPageTemplateID, and DocumentWorkflowStepID. A database schema (Answer D) defines the structure of all database objects.
- 3) **D.** The **CONTENT\_BlogPost** database table defines the fields for the BlogPost page type. The **Blogs\_BlogPost** table (Answer A) and **CMS\_BlogPost** table (Answer B) do not exist. The **CONTENT\_Blog** table (Answer C) defines the fields for the Blog page type (an entirely new blog with its own, separate blog posts).

## Resources

- <https://docs.kentico.com/display/K9/Database+table+API>
- <https://docs.kentico.com/display/K9/Working+with+database+queries+in+the+API>

# Page Templates

This section contains sample questions about page templates in Kentico. These questions may cover (but are not limited to) specific template types and properties, template development models, specific template controls, and template design aspects.

## Questions

- 1) Kentico supports all of the following page template types **except**: (Select the most-correct answer)
  - a) ASPX pages
  - b) Dashboard pages
  - c) JSP pages
  - d) Portal pages
- 2) If a specific ASPX page template is used for a page, which of the following page tabs in the Pages application will be lacking? (Select the most-correct answer)
  - a) Page
  - b) Design
  - c) Form
  - d) Properties
- 3) The `<asp:ContentPlaceHolder../>` control can be placed in a standard page template. (True/False)
  - a) True
  - b) False

## Answers

- 1) **C.** Kentico does not support JSP (JavaServer Pages) as a page template type. However, it supports ASPX pages (Answer A), Dashboard pages (Answer B), and Portal Engine pages (Answer D) as template types.
- 2) **B.** If you use ASPX page templates with the Portal Engine in Kentico, you will not be able to use the features and functionality (such as adding and removing web parts and widgets) provided by the **Design** tab in the Pages application. The **Page** tab (Answer A) is available for editing the text on a page. The **Form** tab (Answer C) is available for modifying the fields of a page. The **Properties** tab (Answer D) is available for viewing various page properties, such as the specific CSS stylesheet applied to a page, the page type on which a page is based, who (which user account) created a page, and the alias path for a page.

- 3) **B (False).** The `<asp:ContentPlaceHolder../>` control cannot be placed in a standard page template. This control can be placed in a Master page template (only once on each page template), can display a page in different language cultures, and is a placeholder for content in pages that inherit from the template.

## Resources

- <https://docs.kentico.com/display/K9/Managing+page+templates>
- <https://docs.kentico.com/display/K9/Developing+websites+using+ASPX+templates>

# Macro Expressions

This section contains sample questions about macro expressions in Kentico. These questions may cover (but are not limited to) syntax, parameters, and return values.

## Questions

- 1) All of the following macro expressions will return the string "kenticocertified", **except** for? (Select all correct answers)
  - a) `{% "KENTICO" + "certified" |(tolower) %}`
  - b) `{% str = ""; foreach (x in "KENTICOCERTIFIED") { str += x.ToLower() }; str %}`
  - c) `{% kenticocertified %}`
  - d) `{% "kenticocertified" %}`
  
- 2) The macro expression `{% "6" + "7" %}` returns which one of the following numbers? (Select the most-correct answer)
  - a) 13
  - b) 42
  - c) 76
  - d) 67
  
- 3) The macro expression `{% z = 0; for (i = 0; i < 8; i++) { z += 1 }; z %}` returns which one of the following numbers?
  - a) 0
  - b) 8
  - c) 12345678
  - d) 87654321

## Answers

- 1) **C.** The macro expression `{% kenticocertified %}` is a context (data) macro that will not render anything because the value(s) to display must be enclosed within quotation marks. This way the text "kenticocertified" is treated as a variable.

The `{% "KENTICO" + "certified" |(tolower) %}` macro expression (Answer A) will render the string

"kenticocertified" because the values are properly enclosed within quotation marks; although the value "KENTICO" has all capital letters, this macro includes the "tolower" function that converts all characters to lowercase.

The `{% str = ""; foreach (x in "KENTICOCERTIFIED") { str += x.ToLower(); str } %}` macro expression (Answer B) will render the string "kenticocertified" because again, the value to display is properly enclosed within quotation marks; although the value

"KENTICOCERTIFIED" has all capital letters, this macro performs a cycle where each iteration converts one letter in the value to lowercase.

The `{% "kenticocertified" %}` macro expression (Answer D) will render the string "kenticocertified" because the values are properly enclosed within quotation marks.

- 2) **D.** Although the `{% "6" + "7" %}` macro expression uses the "+" (addition/sum) operator, it renders as "67" because the values are enclosed within quotation marks and thus, concatenated as two strings. The number "13" (Answer A) would be rendered if the values were not enclosed within quotation marks. The number "42" (Answer B) would be rendered if the "\*" (multiplication) operator were used instead of the "+" (addition/sum) operator. The number "76" (Answer C) cannot be rendered using this macro expression because there is no operator for transposing values.
- 3) **B.** The `{% z = 0; for (i = 0; i < 8; i++) { z += 1 }; z %}` macro expression uses the **for** flow control command to specify 8 iterations of a cycle (as defined by the expressions "**i = 0; i < 8; i++**"). Since the value **z** starts at 0 and gets incremented by 1 (as defined by the expression "**z += 1**") for each iteration, the final **z** value returned is "8".

The macro expression does not return the number "0" (Answer A) because the **z** value is incremented by 1 (as defined by the expression "**z += 1**") for each iteration through the cycle, and there are 8 iterations (as defined by the expressions "**i = 0; i < 8; i++**").

To return the number "12345678" (Answer C), the macro expression would not display only the final **z** value; it would simply display a concatenated list of numbers for each iteration through the cycle using `{% z = 0; for (i = 0; i < 8; i++) { z += 1 } %}`.

To return the number "87654321" (Answer D), the macro expression would have to be rewritten as `{% z = 9; for (i = 8; i > 0; i--) { z -= 1 } %}`.

## Resources

- <https://docs.kentico.com/display/K9/Macro+expressions>

# Transformations

This section contains sample questions about transformations. These questions may cover (but are not limited to) formatting, functions, and methods.

## Questions

- 1) You can use a transformation to perform all of the following tasks **except** which one? (Select the most-correct answer)
  - a) Retrieve page data
  - b) Transform page data
  - c) Display page data
  - d) Display custom data
  
- 2) The proper naming format for localizing a transformation named "TransformationA" into French is "TransformationA\_Localize\_Fr-Fr" or "Fr-Fr\_TransformationA".  
(True/False)
  - a) True
  - b) False
  
- 3) Which of the following methods **cannot** be used in transformations? (Select all correct answers)
  - a) `< %# Eval("NewsTitle") %>`
  - b) `< %# Eval<string>("NodeAliasPath") %>`
  - c) `< %# EvalImage("NewsTeaser") %>`
  - d) `< %# EvalCDATA("NewsText") %>`

## Answers

- 1) **A.** Transformations do not retrieve data from a database. They are typically applied to data that has been retrieved from a database (to transform that data for presentation and rendering). You apply transformations by predefining the transformation code and saving them as system objects, and then assign them to web part or controls through the appropriate properties.

The purpose of a transformation is to change and control how data gets displayed. So transformations can transform page data (Answer B), display page data (Answer C), or display custom data (Answer D).

They can also be used to perform other tasks such as displaying XML data, processing field values, converting data into a specific format, and specifying different output formats for individual items based on page type or hierarchy level (in the case of hierarchical transformations).

- 2) **B (False).** To localize a transformation named "TransformationA" into French, you must use the naming format of "TransformationA\_Fr-Fr".
- 3) **C.** The `EvalImage` method does not exist. To render an image, you can use for example the `GetEditableImage` method, which renders an image tag with its source pointing to the editable image web part's content on the particular page.

## Resources

- <https://docs.kentico.com/display/K9/Writing+transformations>

# Workflow and Versioning

This section contains sample questions about workflow and versioning. These questions may cover (but are not limited to) workflow creation and definition, workflow steps, workflow properties, approval and publication, page versioning, version comparison, and rollback.

## Questions

- 1) You can find the content locking options for check-in/check-out in all of the following administration interfaces, **except** for: (Select the most-correct answer)
  - a) Pages application -> **Form** tab
  - b) Pages application -> **Page** tab
  - c) Pages application -> Properties -> **Security** tab
  - d) Pages application -> Properties -> **Versions** tab
  
- 2) In Kentico, you can apply versioning to your custom queries. (True/False)
  - a) True
  - b) False
  
- 3) To archive documents, a user needs which one of the following permissions? (Select the most-correct answer)
  - a) Manage workflow
  - b) Modify
  - c) Archive
  - d) Destroy

## Answers

- 1) **C.** In the Pages application, when you select a page in the Content tree and go to **Properties**, the **Security** tab only lets you set **Permissions** and **Access** rights for the document; there are no content locking options in this particular administration interface.

When workflow is enabled, content locking options appear in the Pages application at the top of the **Form** tab (Answer A), the **Page** tab (Answer B), and Properties -> **Versions** tab (Answer D).

- 2) **A (True).** You can apply Kentico versioning to your custom queries using the object versioning functionality; however, you must enable it first in the Settings application.

- 3) **A.** To be able to archive documents, a user needs **Manage workflow** permissions for the Content module. You can grant these permissions in the **Permissions** application.

The Modify permission (Answer B) allows a user to perform many actions (such as creating a new page, editing a page, copying a page, and approving/rejecting a page), but to archive a page, the user must also have the Manage workflow permission granted. The Archive permission (Answer C) does not exist in Kentico. The Destroy permission (Answer D) allows a user to delete particular versions of a page, or the entire version history.

## Resources

- <https://docs.kentico.com/display/K9/Configuring+workflows>
- <https://docs.kentico.com/display/K9/Using+workflows>

# System Management

This section contains sample questions about Kentico system management. These questions may cover (but are not limited to) the event log, system modules, integration bus, and capacity planning.

## Questions

- 1) When the event log reaches its maximum size, which one of the following occurs by default? (Select the most-correct answer)
  - a) It is cleared by a scheduled task at regular intervals (which you can specify in the web.config file).
  - b) It is reduced to half its maximum size.
  - c) It is reduced by the product of the maximum size multiplied by the coefficient specified in the web.config file.
  - d) The oldest item is deleted before a new item is logged.
  
- 2) With the Integration bus module, if the TaskDataTypeEnum enumeration is set to SimpleSnapshot, main object will be synchronized together with translation data as well as child objects. (True/False)
  - a) True
  - b) False
  
- 3) You cannot configure the smart search module to search within custom tables. (True/False)
  - a) True
  - b) False

## Answers

- 1) **C.** When the event log reaches its maximum size, by default, it is reduced by the product of the maximum size multiplied by the **CMSLogKeepPercent** value/coefficient that you can specify in the web.config file.

While you can create a scheduled task that clears the event log at regular intervals (Answer A), this configuration is not the default setting. The system does not automatically purge half of the events (Answer B) in the event log when maximum capacity is reached. And the system does not delete an old event for each new event logged (Answer D).

- 2) **B (False).** The TaskDataTypeEnum.SimpleSnapshot value specifies that only main object and

translation data will be synchronized. To synchronize also child objects, TaskDataTypeEnum.Snapshot value should be used.

In the **CMS.Synchronization** namespace, the TaskDataTypeEnum enumeration has three member objects that specify the type of data to process/synchronize:

- Simple - process the main object only.
- SimpleSnapshot - process the main object with translation information.
- Snapshot - process the object with child objects and bindings.

3) **B (False)**. By default, the smart search module is already configured to search within custom tables (for the sample Corporate Site). You can configure the settings and specify which custom tables to index in the **Smart search** application.

## Resources

- <https://docs.kentico.com/display/K9/Configuring+Kentico>

# E-commerce & Online Marketing

This section contains sample questions about the Kentico E-commerce Solution. These questions may cover (but are not limited to) E-commerce membership objects, product types, currency configuration, shopping cart functionality, and the Kentico Enterprise Marketing Solution (EMS).

## Questions

- 1) Which one of the following product types does Kentico E-commerce support? (Select the most-correct answer)
  - a) Bundle
  - b) Donation
  - c) Membership
  - d) All of the above
  
- 2) To add a custom payment gateway to the Kentico E-commerce Solution, you create a new class in the App\_Code folder. (True/False)
  - a) True
  - b) False
  
- 3) When configuring Contacts in On-line marketing, all of the following statements are true **except** for: (Select the most-correct answer)
  - a) You can enable automatic merging of Contacts from different sites if they share the same users.
  - b) You can enable automatic merging of Contacts on the same site if they share the same activities.
  - c) You can personalize the Notes stamp format used in Contact notes.
  - d) You can set rules for automatic deletion of Contacts.

## Answers

- 1) **D (All of the above)**. By default, Kentico E-commerce Solution supports all of the following product types:
  - Bundle (Answer A)
  - Donation (Answer B)
  - E-product
  - Membership (Answer C)
  - Product (basic product type from which the four types above are derived)

- 2) **A (True).** Just like any other custom code, such as event handlers or custom providers, you create your custom payment providers in App\_Code. The class must inherit from CMS.EcommerceProvider.CMSPaymentGatewayProvider
  
- 3) **B.** For Contact management in On-line marketing, you cannot enable automatic merging of Contacts on the same site if they share the same activities; you can only enable automatic merging of Contacts from different sites if they share the same users (Answer A). You can also personalize the format of the Notes stamp for Contact notes (Answer C) and set rules for the automatic deletion of Contacts (Answer D).

## Resources

- <https://docs.kentico.com/display/K9/E-commerce+features>
- <https://docs.kentico.com/display/K9/On-line+marketing+features>

# Security

This section contains questions about security practices when developing sites and managing user accounts in Kentico.

## Questions

- 1) Which one of the following security permissions has the highest priority (takes precedence over the others)? (Select the most-correct answer)
  - a) Deny
  - b) Inherited
  - c) Role
  - d) User
  
- 2) In Kentico, you can grant/apply security permissions to which one of the following items? (Select the most-correct answer)
  - a) IP addresses
  - b) Roles
  - c) Templates
  - d) Web parts
  
- 3) In Kentico, the default security on most pages is set to which one of the following configurations? (Select the most-correct answer)
  - a) Requires authentication No, Requires SSL No
  - b) Requires authentication Yes, Requires SSL Yes
  - c) Requires authentication Yes, Requires SSL No
  - d) Requires authentication Inherits, Requires SSL Inherits

## Answers

- 1) **A.** The **Deny** permission has the highest priority because Kentico supports the industry-standard approach of the role-based security model that restricts system access and actions to authorized users. As such, you must explicitly grant permissions for users to perform specific actions, else they are denied access by default. The system favors on the side of safety/security/denial over the susceptibility and vulnerability exposed by an open/allow model. Therefore, even if users are explicitly

granted specific permissions, such as Inherited permissions (Answer B), Role-level permissions (Answer C), and User-level permissions (Answer D), any **Deny** permissions will override what is granted. In terms of Kentico CMS security and permissions, denial ALWAYS trumps allow.

- 2) **B.** You grant permissions to security objects such as user accounts, memberships, and roles. You can also set permissions such that these objects can access specific documents, modules, and different areas of the administration interface.

By default, you cannot grant security permissions at the IP address level (Answer A), template level (Answer C), or web part level (Answer D).

- 3) **D.** The default security on most pages is set to inherit both authentication and SSL requirements/properties from the parent documents. Security on most pages do not automatically bypass authentication and SSL (Answer A), nor do they automatically require authentication and SSL (Answer B). Lastly, most pages do not automatically require authentication and bypass SSL (Answer C).

## Resources

- <https://docs.kentico.com/display/K9/Securing+websites>