ReSharper Course Exercises

Exercises for the ReSharper course at Making Waves, May 24th 2012.

Files for exercises can be found at http://bit.ly/resharperexercises

First Exercise

In the Basic solution. Create the 2 following classes:

- Plan
- · Document

The Plan class should take a name (string), some documents (IEnumerable<Document>) and a security classification (Basic.Support.SecurityClassification) in it's constructor and expose them as read-only properties.

One solution could look like this:

Plan.cs

Document.cs

```
namespace Basic
{
    public class Document
    {
    }
}
```

Focus Solution Explorer	Alt + Ctrl + L
Locate in Solution Explorer	Alt + Shift + L
Open context menu	Shift + F10
Focus Code Window	ESC
Focus Code Window (more stable)	Alt + W , 1
Open menu underlined with <x></x>	Alt + <x></x>

Go to ...

Find the shortest sequence of keys to navigate to following items. See example below.

Example - Shortest Sequence

The shortest sequence of keys to navigate to

• The file templates/roles.htm

would be:

- Ctrl + Shift + T (Go to file)
- rht (matches roles.htm)
- Enter
- 1. The class IActivateHandlers interface in the Rebus namespace
- 2. The class QuickNotes class in the BlogEngine.Core.Notes namespace
- 3. The file blog. js file in the Scripts/Header/ folder
- 4. The class BlogReader in the BlogEngine.Core.API.BlogML namespace
- 5. The declaration of the LoginRequired css class in the Styles/Global.css file
- 6. The Page Load method in the Account/login.aspx.cs file
- 7. The staticContent xml section in the web.config file
- 8. The Application_Error method in the Global.asax file
- 9. The cancelReply method in the Scripts/Header/blog.js file
- 10. The Add method of the BlogEngine.Core.Providers.BlogFileSystemProviderCollection class
- 11. The class that starts with U in the same namespace as XmlFileSystemProvider

Primary shortcuts



Supporting shortcuts

Locate in Solution Explorer Alt + Shift + L

Code Analysis

Navigate to the ContextClass in the CodeAnalysis solution.

The class contains various ReSharper issues.

- Hints shown as a short dotted green line beneath the code
- Suggestions shown as a green squiggly line beneath the code
- Dead code shown as faded grey text
- Warnings shown as a blue squiggly line beneath the code
- Errors shown as red text or red squiggly lines

Do the following

- 1. Navigate to the 2 errors and fix them. What's wrong?
- 2. Navigate through the suggestions in the file and see what ReSharper is suggesting. Do you agree?
- 3. Go through the hints of the file (no shortcut). Does it make sense to apply any of them?
- features.

Note: The inspection options can be changed either in the ReSharper options or directly through the Quick fix nenu. These can also be shared at solution level through source control with the new ReSharper 6.x collaboration

Quick fix	Alt + Enter
Go to next suggestion	Alt + PageDown
Go to previous suggestion	Alt + PageUp
Go to next error	Alt + Shift + PageDown
Go to previous error	Alt + Shift + PageUp

Generate Code

Open the GenerateCode class in the Basic project.

- 1. From the constructor of GenerateCode call a the non-existant private method like so: Create(name, tags)
- 2. Use Quick fix to create the method
- 3. From the Create method instantiate a non-existant class like so: new CodeCollection (name, tags)
- 4. Use Quick fix to create the class + constructor
- 5. Assign the parameters of the CodeCollection to fields using Quick fix
- 6. Delete the constructor
- 7. Use Generate code to re-create the constructor
- 8. Use Generate code to create a read-only property for the name field
- 9. Generate a property for the tags field
- 10. Generate equality members for the class depending on the name field
- 11. Generate delegating methods for the Add method and the Count properties of the tags list

Primary shortcuts





Rename

Navigate to the H class the Basic project.

- Rename variable e -> lastIndex
- Rename parameter j -> arrayLength
- 3. Rename method A -> BuildRandomArray
- 4. Rename variable d -> i

Figure out what variables (and rename them) should have the following names of the remaining c, H, g and f.

- random
- numbers
- swapIndex
- temp
- ArrayShuffler

Primary shortcuts

Refactor: Rename | Ctrl + R , Ctrl + R

Supporting shortcuts

Introduce and Inline variables

Open the Variables class in the Basic project.

In the IntroduceVariable method introduce the following variables

- 1. 0 to firstPage
- numberOfPages 1 to lastPage
- 3. Math.Min(Math.Max(firstPage, page), lastPage) to currentPage
- 4. currentPage * itemsPerPage to firstItemInPage
- 5. ((currentPage + 1) * itemsPerPage) 1 to lastItemInPage
- 6. new[] { firstItemInPage, lastItemInPage } to itemRange

In the InlineVariable method:

7. Inline all the variables one at a time and watch the effects.

Refactor this	Ctrl + Shift + R
Refactor: Introduce variable	Ctrl + R , Ctrl + V
Refactor: Inline variable	Ctrl + R , Ctrl + I

Import Completion

Open the ImportCompletion class in the Basic project.

In the ImportCompletion method:

- 1. Instantiate a new DataProcessor () using Import completion to import the Basic.Support.Proc namespace
- 2. Change the Console.WriteLine call to output list.FirstOrDefault() (extension method) instead of list using Import completion to import the System.Linq namespace
- 3. Instantiate a System. Threading. Timeout
- 4. Instantiate a System. Security. SecureString

In the IntroduceVariableImportCompletionCombo method, find the shortest keysequence for writing the following statements using Import completion followed by Introduce variable. (see example below)

- 5. var stringBuilder = new StringBuilder();
- 6. var dictionary = new HybridDictionary();
- 7. var collection = new BlockingCollection<ConcurrentQueue<Guid>>>();
- 8. var compressionMode = CompressionMode.Compress;

Example - Import/Introduce combo

Combining Import completion and Introduce variable. Shortest key sequence for writing in a file where the System. Text namespace is not imported:

• var stringBuilder = new StringBuilder();

would be:

- n e w Space
- s b u i (matches StringBuilder)
- Alt + Shift + Space (Activate Import completion)
- (inserts auto-closing paren)
- Ctrl + R, Ctrl + V (introduce variable)
- Enter (picks var in type selector)
- Enter (picks stringBuilder in name selector)

Refactor: Introduce variable	Ctrl + R , Ctrl + V
Import completion	Alt + Shift + Space
Refactor this	Ctrl + Shift + R

Find Usages and Highlight

Investigate the following using Find usages

- 1. Where is the DumpProvider method from the FileSystemUtilities class used?
- 2. Which .aspx files use the CheckRightsForAdminCommentsPages method in the WebUtils class?
- 3. From which .aspx files can the SaveToDatastore method of the XmlBlogProvider class be invoked? (multiple Find usages)

Navigate to the BlogEngine.Core.Web.Navigation.Pager class and look at the Pager constructor (note: there is more than 1 Pager class)

- 4. Try to reason about what happens to the page parameter within the constructor
- 5. Try again with Find usages
- 6. Try again with Highlight usages
- 7. What works better? Nothing, Find usages or Highlight usages?

Navigate to the ContextBeginRequest method in the UrlRewrite class. Using Highlight usages or Find usages figure out

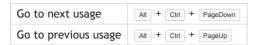
- 8. What is the last line that the path local variable is used in?
- 9. What is the last line that the url local variable is used in?

Navigate to the BlogEngine.Core.Web.Navigation.Pager Class

- 10. Try to reason about who calls the Pager constructor
- 11. Try again with Highlight usages
- 12. Try again with Find usages
- 13. What works better? Nothing, Find usages or Highlight usages?

Primary shortcuts





Solution Explorer Refactorings

Open the Tennis.cs file in the Tennis solution. This file contains an implementation of the variations of the rules of Tennis in different tournaments.

In the Solution Explorer do the following:

- 1. Split up the Tennis.cs file using Refactor this Move types into matching files
- 2. Create Tournament and Models folders using Generate file (Solution Explorer)
- 3. Move files into the folder structure shown below using either
 - Cut / Paste + Refactor this Adjust namespaces
 - Refactor this Move to folder
- 4. Which method do you like better?
- Tournament
 - TournamentAustralianOpen.cs
 - TournamentDouble.cs
 - · TournamentUSOpen.cs
 - o ITournamentRules.cs
- Models
 - · TennisGame.cs
 - TennisSet.cs
 - TennisMatch.cs
- 1 Tip: If you want to start over on this task simply copy the contents of original.txt into a Tennis.cs file.

Primary shortcuts

Refactor this Generate file (Solution Explorer) Refactor: Move to folder (Solution Explorer) Ctrl + Shift + R Alt + Ins Ctrl + Shift + R

Supporting shortcuts

Locate in Solution Explorer Alt + Shift + L

Move Code

Navigate to the OutOfOrderMethods class in the Basic project.

1. Reorder the methods alphabetically using move code.

In the E method:

- 2. Move the calculation of theOtherValue into the first if block.
- 3. Move the try/ catch block out of the first if block.
- 4. Change following expressions to mention variable names before constants:
 - 13 * theNumber should be theNumber * 13
 - 42 == theNumber should be theNumber == 42
 - o null != data should be data != null

Primary shortcuts



Go to next class member	Alt	+	Down
Go to previous class member	Alt	+	Up

Navigate Hierarchies

Navigate to the Navigate method of the NavigateHierachies class.

- 1. Examine the Type Hierarchy of IEntity
- 2. What is the difference between Go to implementation and Go to derived on the IPet.Speak method?
- 3. Where does Go to implementation on IEntity. Id followed by Go to base take you? Why?

Navigate to the RebusHierarchyLesson class. Using hierarchy navigation (Go to declaration / Go to implementation / Go to base / Go to derived) figure out

Remember that you can consult the Type Hierachy.

- 4. From SimpleHandlerActivator how can you get to IActivateHandlers
- 5. From IActivateHandlers how can you get to WindsorContainerAdapter
- 6. From WindsorContainerAdapter how can you get to IContainerAdapter

Without leaving RebusHierarchyLesson figure out the following from the Lesson method.

- (i) Hint: Go to derived shows a list of possible navigation targets for whatever's under the caret.
- 7. Using Type Hierachy, which class implementing IActivateHandlers does not implement IContainerAdapter
- 8. Number of classes and interfaces implementing IActiveHandlers
- 9. Out of the these how many implement the GetHandlerInstancesFor<T>
- 10. Number of classes and interfaces implementing IHandleMessages<T>
- Tip: If you navigate to a file and want to go back to where you were, you can either use Close current file or Go back (Visual Studio).

Primary shortcuts

Go to declaration	F12
Go to implementation	Ctrl + F12
Go to base	Alt + Home
Go to derived	Alt + End
Show type hierarchy	Ctrl + E , Ctrl + H

Inspect this	Alt + Ctrl + Shift + A
Close current file	Ctrl + F4
Go back (Visual Studio)	Ctrl + -

Inspect This

Navigate to the Inspector class in the Basic project.



1 Tip: Remember that the inspection window can be docked and that Show Preview on the Right is useful.

- 1. Explore the value destination of importantValue in the Main method. Where does it end up?
- 2. Explore the value origin of the value variable in the Main method. What values are printed?



First Exercise Revisited

Repeat the first exercise, but try to incorporate the things you've learned in the previous exercises. Below you'll find a list of the shortcuts that might be helpful for faster flows.

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Generate file (Solution Explorer)	Alt + Ins
Generate code	Alt + Ins
Import completion	Alt + Shift + Space
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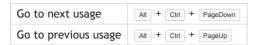
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Supporting shortcuts

Locate in Solution Explorer Alt + Shift + L

Move Code

Navigate to the OutOfOrderMethods class in the Basic project.

1. Reorder the methods alphabetically using move code.

In the E method:

- 2. Move the calculation of theOtherValue into the first if block.
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Primary shortcuts

Move code up	Alt + Ctrl + Shift + Up
Move code down	Alt + Ctrl + Shift + Down
Move code in	Alt + Ctrl + Shift + Right
Move code out	Alt + Ctrl + Shift + Left

Go to next class member	Alt	+	Down
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Navigate Hierarchies

Navigate to the Navigate method of the NavigateHierachies class.

- 1. Examine the Type Hierarchy of IEntity
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Open the ImportCompletion class in the Basic project.

In the ImportCompletion method:

- 1. Instantiate a new DataProcessor () using Import completion to import the Basic.Support.Proc namespace
- 2. Change the Console.WriteLine call to output list.FirstOrDefault() (extension method) instead of list using Import completion to import the System.Linq namespace
- 3. Instantiate a System. Threading. Timeout
- 4. Instantiate a System. Security. SecureString

In the IntroduceVariableImportCompletionCombo method, find the shortest keysequence for writing the following statements using Import completion followed by Introduce variable. (see example below)

- 5. var stringBuilder = new StringBuilder();
- 6. var dictionary = new HybridDictionary();
- 7. var collection = new BlockingCollection<ConcurrentQueue<Guid>>>();
- 8. var compressionMode = CompressionMode.Compress;

Example - Import/Introduce combo

Combining Import completion and Introduce variable. Shortest key sequence for writing in a file where the System. Text namespace is not imported:

• var stringBuilder = new StringBuilder();

would be:

- n e w Space
- s b u i (matches StringBuilder)
- Alt + Shift + Space (Activate Import completion)
- (inserts auto-closing paren)
- Ctrl + R, Ctrl + V (introduce variable)
- Enter (picks var in type selector)
- Enter (picks stringBuilder in name selector)

Refactor: Introduce variable	Ctrl + R , Ctrl + V
Import completion	Alt + Shift + Space
Refactor this	Ctrl + Shift + R

Find Usages and Highlight

Investigate the following using Find usages

- 1. Where is the DumpProvider method from the FileSystemUtilities class used?
- 2. Which .aspx files use the CheckRightsForAdminCommentsPages method in the WebUtils class?
- 3. From which .aspx files can the SaveToDatastore method of the XmlBlogProvider class be invoked? (multiple Find usages)

Navigate to the BlogEngine.Core.Web.Navigation.Pager class and look at the Pager constructor (note: there is more than 1 Pager class)

- 4. Try to reason about what happens to the page parameter within the constructor
- 5. Try again with Find usages
- 6. Try again with Highlight usages
- 7. What works better? Nothing, Find usages or Highlight usages?

Navigate to the ContextBeginRequest method in the UrlRewrite class. Using Highlight usages or Find usages figure out

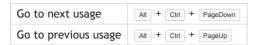
- 8. What is the last line that the path local variable is used in?
- 9. What is the last line that the url local variable is used in?

Navigate to the BlogEngine.Core.Web.Navigation.Pager Class

- 10. Try to reason about who calls the Pager constructor
- 11. Try again with Highlight usages
- 12. Try again with Find usages
- 13. What works better? Nothing, Find usages or Highlight usages?

Primary shortcuts





Solution Explorer Refactorings

Open the Tennis.cs file in the Tennis solution. This file contains an implementation of the variations of the rules of Tennis in different tournaments.

In the Solution Explorer do the following:

- 1. Split up the Tennis.cs file using Refactor this Move types into matching files
- 2. Create Tournament and Models folders using Generate file (Solution Explorer)
- 3. Move files into the folder structure shown below using either
 - Cut / Paste + Refactor this Adjust namespaces
 - Refactor this Move to folder
- 4. Which method do you like better?
- Tournament
 - TournamentAustralianOpen.cs
 - TournamentDouble.cs
 - · TournamentUSOpen.cs
 - o ITournamentRules.cs
- Models
 - · TennisGame.cs
 - TennisSet.cs
 - TennisMatch.cs
- 1 Tip: If you want to start over on this task simply copy the contents of original.txt into a Tennis.cs file.

Primary shortcuts

Refactor this Generate file (Solution Explorer) Refactor: Move to folder (Solution Explorer) Ctrl + Shift + R Alt + Ins Ctrl + Shift + R

Supporting shortcuts

Locate in Solution Explorer Alt + Shift + L

Move Code

Navigate to the OutOfOrderMethods class in the Basic project.

1. Reorder the methods alphabetically using move code.

In the E method:

- 2. Move the calculation of theOtherValue into the first if block.
- 3. Move the $\mathtt{try}/\mathtt{catch}$ block out of the first \mathtt{if} block.
- 4. Change following expressions to mention variable names before constants:
 - 13 * theNumber should be theNumber * 13
 - $^{\circ}$ 42 == theNumber should be theNumber == 42
 - o null != data should be data != null

Primary shortcuts

Move code up	Alt + Ctrl + Shift + Up
Move code down	Alt + Ctrl + Shift + Down
Move code in	Alt + Ctrl + Shift + Right
Move code out	Alt + Ctrl + Shift + Left

Go to next class member	Alt	+	Down
Go to previous class member	Alt	+	Up

Navigate Hierarchies

Navigate to the Navigate method of the NavigateHierachies class.

- 1. Examine the Type Hierarchy of IEntity
- 2. What is the difference between Go to implementation and Go to derived on the IPet.Speak method?
- 3. Where does Go to implementation on IEntity. Id followed by Go to base take you? Why?

Navigate to the RebusHierarchyLesson class. Using hierarchy navigation (Go to declaration / Go to implementation / Go to base / Go to derived) figure out

Remember that you can consult the Type Hierachy.

- 4. From SimpleHandlerActivator how can you get to IActivateHandlers
- 5. From IActivateHandlers how can you get to WindsorContainerAdapter
- 6. From WindsorContainerAdapter how can you get to IContainerAdapter

Without leaving RebusHierarchyLesson figure out the following from the Lesson method.

- (i) Hint: Go to derived shows a list of possible navigation targets for whatever's under the caret.
- 7. Using Type Hierachy, which class implementing IActivateHandlers does not implement IContainerAdapter
- 8. Number of classes and interfaces implementing IActiveHandlers
- 9. Out of the these how many implement the GetHandlerInstancesFor<T>
- 10. Number of classes and interfaces implementing IHandleMessages<T>
- Tip: If you navigate to a file and want to go back to where you were, you can either use Close current file or Go back (Visual Studio).

Primary shortcuts

Go to declaration	F12
Go to implementation	Ctrl + F12
Go to base	Alt + Home
Go to derived	Alt + End
Show type hierarchy	Ctrl + E , Ctrl + H

Inspect this	Alt + Ctrl + Shift + A
Close current file	Ctrl + F4
Go back (Visual Studio)	Ctrl + -

Inspect This

Navigate to the Inspector class in the Basic project.



1 Tip: Remember that the inspection window can be docked and that Show Preview on the Right is useful.

- 1. Explore the value destination of importantValue in the Main method. Where does it end up?
- 2. Explore the value origin of the value variable in the Main method. What values are printed?



First Exercise Revisited

Repeat the first exercise, but try to incorporate the things you've learned in the previous exercises. Below you'll find a list of the shortcuts that might be helpful for faster flows.

Quick fix	Alt + Enter
Generate file (Solution Explorer)	Alt + Ins
Generate code	Alt + Ins
Import completion	Alt + Shift + Space
Go to next suggestion	Alt + PageDown
Go to previous suggestion	Alt + PageUp
Go to next error	Alt + Shift + PageDown
Go to previous error	Alt + Shift + PageUp