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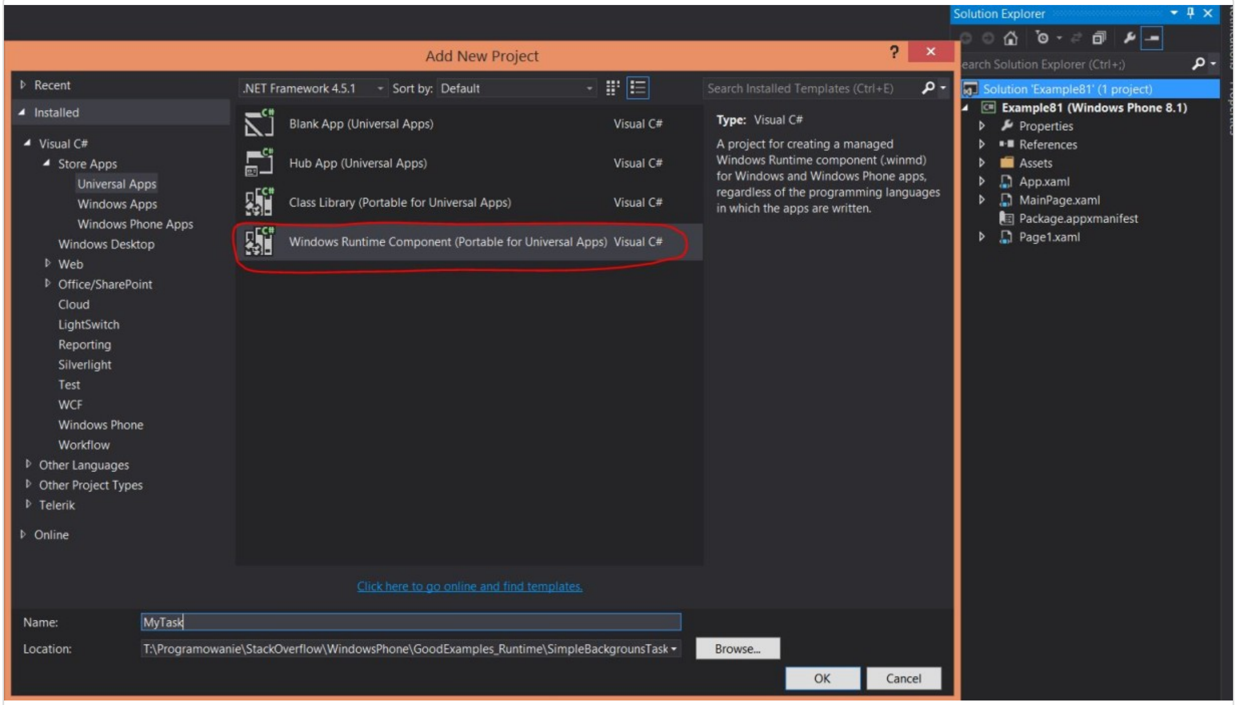
How to add a BackgroundTask

June 8, 2014 Blog Romasz

Here is a step by step tutorial about adding a sample *BackgroundTask* to your solution. The presented procedure is the same for: Windows Phone 8.1 Silverlight, Runtime and Windows Universal Apps. All the needed informaion you will also find at MSDN.

What is a *BackgroundTask?* In short – it's a lightweight code that the OS run in the background. Its purpose can be various and it can nicely extend your App. In this example we would write an App for Windows Phone 8.1 Runtime (but as I've mentioned before the steps are the same for other platforms). We will write a *BackgroundTask* that will send a *Toast message* from background. Where to start?

1. Fisrt we have to add a new RuntimeComponent to our solution. To do this, right click on your solution in *Solution explorer* window in Visual Studio. Then click *Add*, *New project…* and choose *Windows Runtime Component* (Pic. 1) - depending on your purpose it can be *portable or windows phone*.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Test
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Workflow
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Telerik
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Sort by: Default
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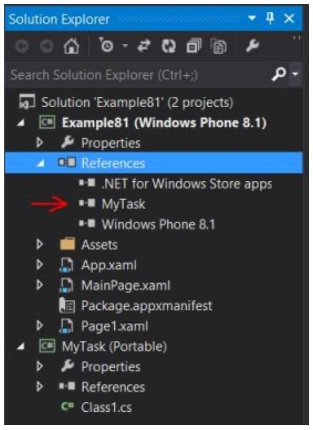
Blank App (Universal Apps) Visual C#
Hub App (Universal Apps) Visual C#
Class Library (Portable for Universal Apps) Visual C#
Windows Runtime Component (Portable for Universal Apps) Visual C#
Type: Visual C#
A project for creating a managed Windows Runtime component (.winmd) for Windows and Windows Phone apps, regardless of the programming languages in which the apps are written.
Click here to go online and find templates.
Browse...
OK
Cancel
Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'Example81' (1 project)
Example81 (Windows Phone 8.1)
Properties
References
Assets
App.xaml
MainPage.xaml
Package.appxmanifest
Page1.xaml

Name: MyTask
Location: T:\Programowanie\StackOverflow\WindowsPhone\GoodExamples_Runtime\SimpleBackgrounsTask

Pic. 1 Add WinRT Component

2. Once we have the new project added, we need to add a reference (Pic. 2) to it in our main project in which we will register our *BackgroundTask* – without this step, our App will crash once we try to run the background code.

3. Here comes the time to define our *BackgroundTask*. Of course the purpose of it depends on our needs. Let our task inform the User that it is running – for this we will implement a *Toast message*. We shall also remember that to make it work we need to set our App as *Toast capable* – open *Package.appxmanifest* file, chose *Application* tab, in section *Notifications* set App as toast capable. The simple code of our task can look like this:



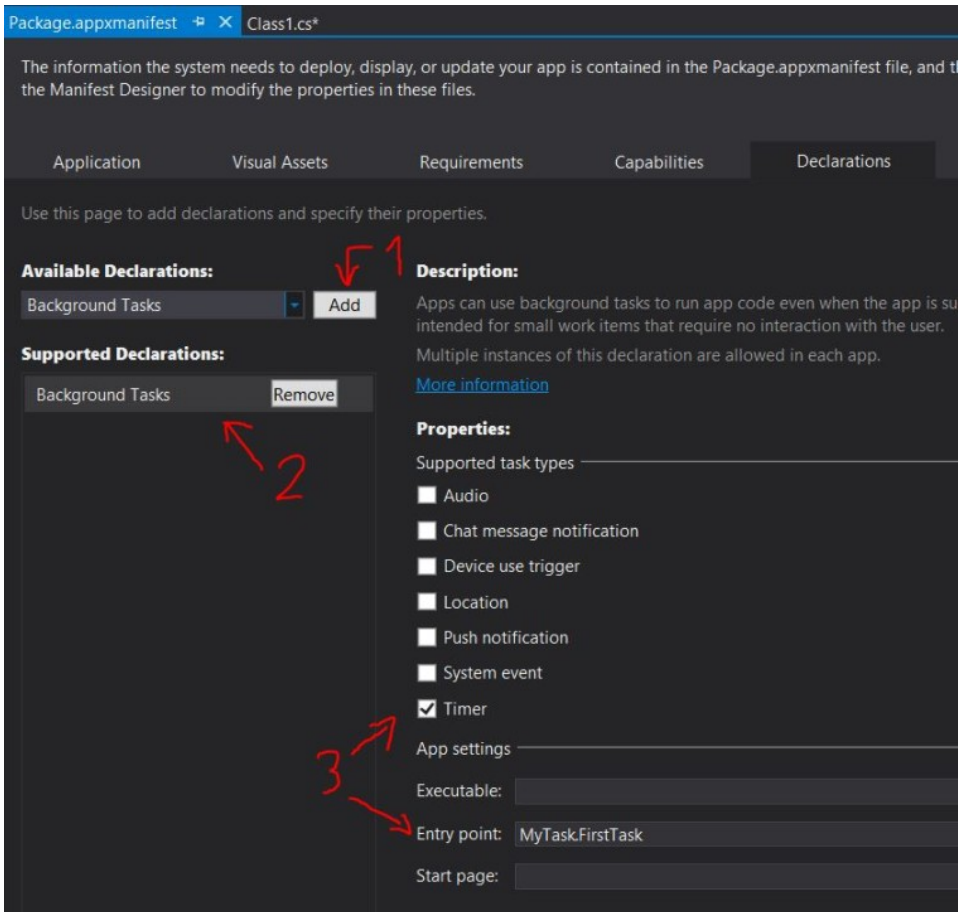
Pic. 2 Add reference

```
namespace MyTask
{
    public sealed class FirstTask : IBackgroundTask
    {
        public void Run(IBackgroundTaskInstance taskInstance)
        {
            // simple example with a Toast, to enable this go to manifest file
            // and mark App as TastCapable - it won't work without this
            // The Task will start but there will be no Toast.
            ToastTemplateType toastTemplate = ToastTemplateType.ToastText02;
            XmlDocument toastXml = ToastNotificationManager.GetTemplateContent(toastTemplate);
            XmlNodeList textElements = toastXml.GetElementsByTagName("text");
            textElements[0].AppendChild(toastXml.CreateTextNode("My first Task - Yeah"));
            textElements[1].AppendChild(toastXml.CreateTextNode("I'm a message from your background
task!"));
            ToastNotificationManager.CreateToastNotifier().Show(new ToastNotification(toastXml));
        }
    }
}
```

What is imortant in the code above:

- we need to define a sealed class that will implement *IBackgroundTask* interface – which means that we will have to write a public void *Run(IBackgroundTaskInstance taskInstance)* method, that will perform our background work.
- the name of the class and the namespace are imortant as we will have to specify the *entry point* of our *BackgroundTask* (see next step)
- our *Run* method can be *asynchronous*, in this case we will have to obtain a *BackgroundTaskDeferral* by using a *taskInstance.GetDeferral()* method. This will inform the OS that our background task might continue to perform work after the *Run* method returns. We must only remember to call *BackgroundTaskDeferral.Complete()* once we finish our job.

4. Now is the time to declare the *entry point* of our background task. To do this we need to open *Package.appxmanifest* file, find *Declarations* tab, choose *BackgroundTask* in dropdown menu and click *Add*. We should see it defined in the list below. We must also decide the type of our *BackgroundTask* - if it will be invoked upon *System event, Timer* or other. For the purpose of this example we will use *Timer* type – our task will be fired upon *TimeTrigger* event. All this you can see in the picture 3.


Package.appxmanifest ✕ Class1.cs*

The information the system needs to deploy, display, or update your app is contained in the Package.appxmanifest file, and t
the Manifest Designer to modify the properties in these files.

Application | Visual Assets | Requirements | Capabilities | Declarations

Use this page to add declarations and specify their properties.

Available Declarations: Background Tasks — Add

Supported Declarations: Background Tasks — Remove

Description:
Apps can use background tasks to run app code even when the app is su
intended for small work items that require no interaction with the user.
Multiple instances of this declaration are allowed in each app.
More information

Properties:
Supported task types
- [ ] Audio
- [ ] Chat message notification
- [ ] Device use trigger
- [ ] Location
- [ ] Push notification
- [ ] System event
- [x] Timer

App settings
Executable:
Entry point: MyTask.FirstTask
Start page:

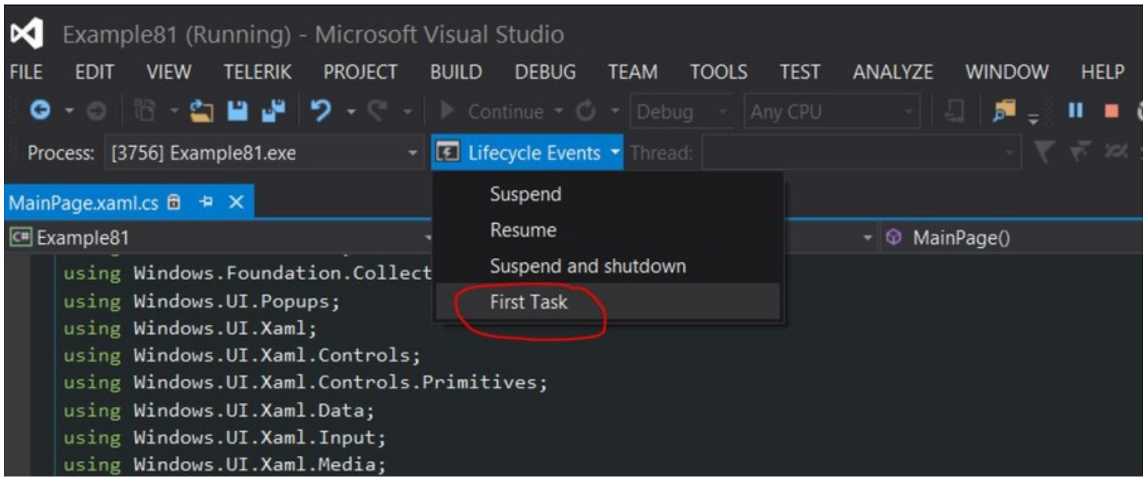
Pic. 3 Declarations

5. The time has come to register our *BackgroundTask*. First we shall check if the task is already registered, to do this we can enumerate *BackgroundTaskRegistration.AllTasks* , for the sake of simplicity, once we have found our task, we will just return from the method. To register the task we will use *BackgroundTaskBuilder* - we will need to specify its *entry point* (the same as we had set in *Declarations)*, provide a name of the task, set the *Trigger* (that will fire our task) and optionally we can specify *SystemCondition*. The sample code can look like this:

```
private async void RegisterBtn_Click(object sender, RoutedEventArgs e)
{
    string myTaskName = "FirstTask";

    // check if task is already registered
    foreach (var cur in BackgroundTaskRegistration.AllTasks)
        if (cur.Value.Name == myTaskName)
        {
            await (new MessageDialog("Task already registered")).ShowAsync();
            return;
        }

    // Windows Phone app must call this to use trigger types (see MSDN)
    await BackgroundExecutionManager.RequestAccessAsync();

    // register a new task
    BackgroundTaskBuilder taskBuilder = new BackgroundTaskBuilder { Name = "First Task", TaskEntryPoint = "MyTa
    taskBuilder.SetTrigger(new TimeTrigger(15, true));
    BackgroundTaskRegistration myFirstTask = taskBuilder.Register();

    await (new MessageDialog("Task registered")).ShowAsync();
}
```

In the code above, we have registered a task that will be fired upon *TimeTrigger* event. Althought we have set its *freshness time* to 15 minutes, it **doesn't** mean that it will be fired exacly after this time – OS has a build-in timer that runs background tasks in 30 minutes intervals on Windows Phone (15 minutes on Windows). We have also set the task as *OneShot,* which means that it will be fired once (not in 15-30 minute intervals).

Finally once we click the button (invoke the method), our *BackgroundTask* will be registered and it should be run after 15-30 minutes. But what to do to test it faster – do we, as developers, have to wait? No, there is quite an easy way to invoke the *BackgroundTask* earlier, upon demand. To do this we have to open the *Debug location* toolbar in Visual Studio, select our task from dropdown menu *Lifecycle events* (sometimes you may need to open the menu few times to refresh it) and once we click on the name it will be fired (Pic. 4).


Example81 (Running) - Microsoft Visual Studio
FILE EDIT VIEW TELERIK PROJECT BUILD DEBUG TEAM TOOLS TEST ANALYZE WINDOW HELP
Continue
Debug
Any CPU
Process: [3756] Example81.exe
Lifecycle Events
Thread:
MainPage.xaml.cs
Example81
MainPage()
Suspend
Resume
Suspend and shutdown
First Task

```
using Windows.Foundation.Collect
using Windows.UI.Popups;
using Windows.UI.Xaml;
using Windows.UI.Xaml.Controls;
using Windows.UI.Xaml.Controls.Primitives;
using Windows.UI.Xaml.Data;
using Windows.UI.Xaml.Input;
using Windows.UI.Xaml.Media;
```

Pic. 4 Test the Task

The complete working example you can download here – SimpleBackgrounsTask

BACKGROUND-TASK C# SILVERLIGHT UNIVERSAL-APPS WINDOWS-PHONE-8.1 WINDOWS-RUNTIME

This article has 2 comments

Ravi Kumar
April 10, 2015 at 11:32 am

Thank you so much for a great article, it really helped me in developing my first Windows Phone 8.1 app.

Romasz
April 11, 2015 at 6:20 am

It's nice to know that someone has found it usefull. Thank you for the comment.

Comments are closed.