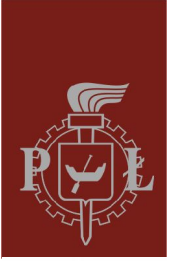


Politechnika Łódzka
Instytut Elektroniki

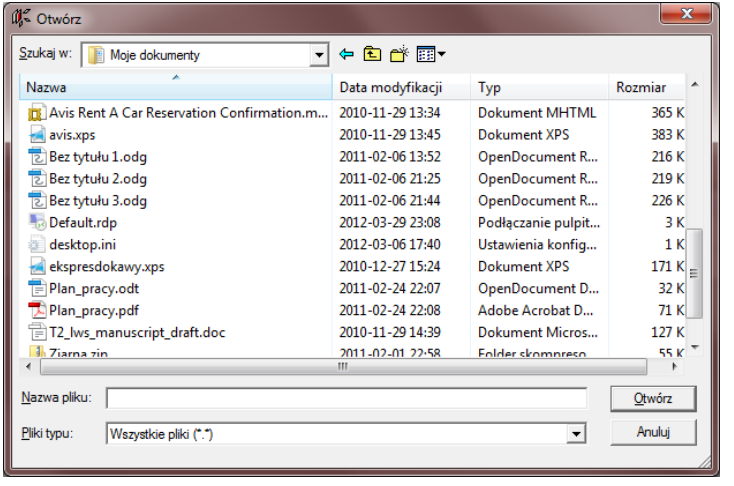
Programowanie telefonów z Windows Phone 7, cz. 4

Piotr M. Szczypiński
Instytut Elektroniki Politechniki Łódzkiej
http://www.eletel.p.lodz.pl/pms/
piotr.szczypinski@p.lodz.pl
Budynek B9, II piętro, pokój 217A

Materiał na dziś

1. Zapis i odczyt plików
   - Gdzie się podziały okna dialogowe Otwórz/Zapisz?
   - Co to jest przestrzeń izolowana plików
2. Transfer plików w tle
3. Zarządzanie aplikacjami i ich stany
4. Agenci, przypomnienia i alarmy

Zapis i odczyt plików



Gdzie się podziały okna dialogowe Otwórz/Zapisz?

Aplikacja nie ma dostępu do ogólnego systemu plików ☹. Musi się ona ograniczyć do korzystania z wydzielonej dla niej izolowanej przestrzeni plików (*isolated storage*).

Search MSDN with Bing

- MSDN Library
- .NET Development
- Silverlight
- .NET Framework Class Library for Silverlight
- System.Windows.Controls
  - **OpenFileDialog Class**
    - OpenFileDialog Constructor
    - OpenFileDialog Methods
    - OpenFileDialog Properties

Note:

Silverlight does not have a browse folder dialog box and you cannot use the **OpenFileDialog** to just select a folder.

Note:

The Silverlight plug-in does not support **OpenFileDialog** in full-screen mode. In most cases, displaying this dialog box in full-screen mode will cause the plug-in to revert to embedded mode. To avoid issues on some browsers, you should exit full-screen mode before using this class. For more information, see Full-Screen Support.

Platform Notes

Silverlight for Windows Phone

OpenFileDialog is not supported in Silverlight for Windows Phone.

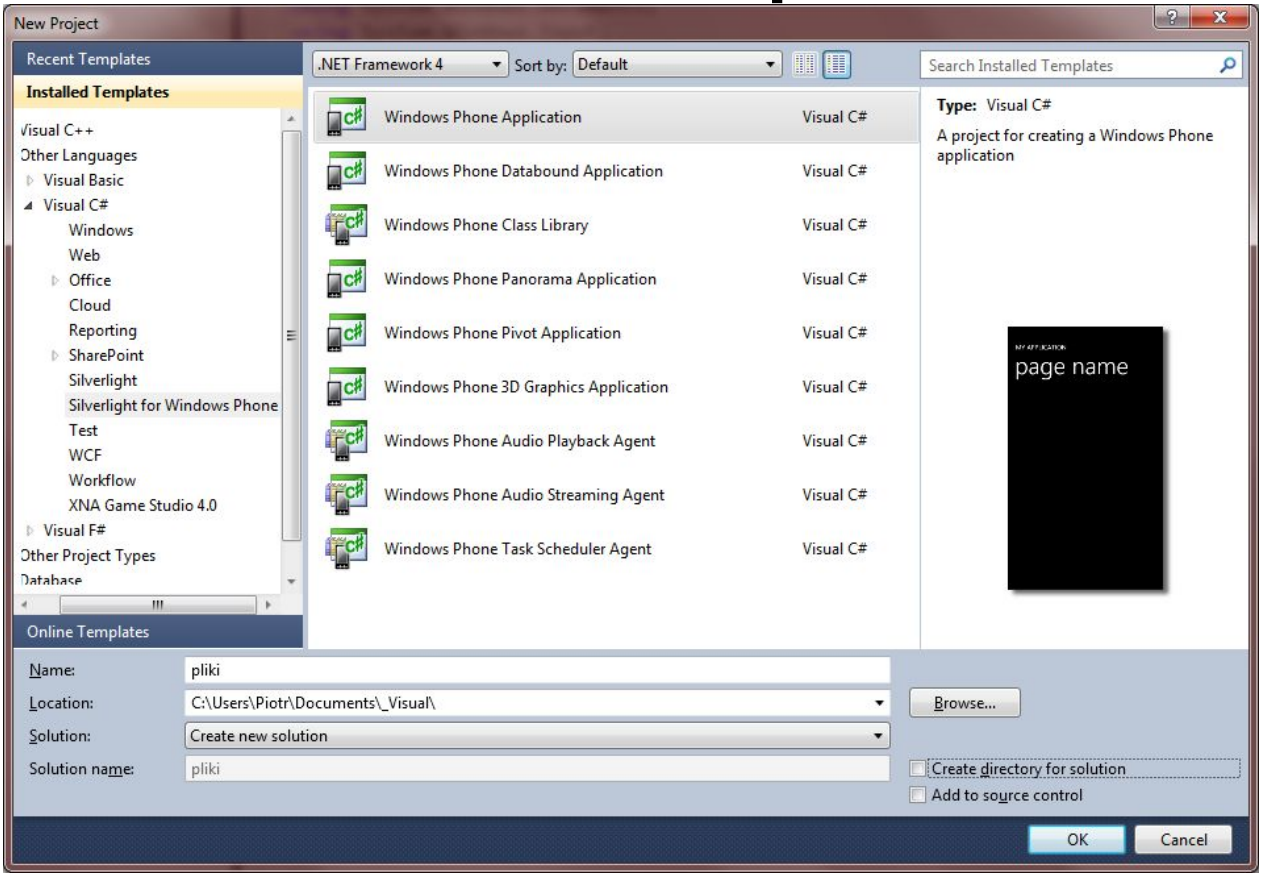
Examples

The following example shows how to display the dialog box, test the user's selection, and then process the file.

XAML

```
<UserControl x:Class="SL_OpenFileDialog_CS.Page"
    xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
    Width="400" Height="300">
    <Grid x:Name="LayoutRoot" Background="White">
        <Button x:Name="bOpenFileDialog" Content="Open File"
                Height="30" Width="60" Margin="10"
                HorizontalAlignment="Left" VerticalAlignment="Top"
                Click="bOpenFileDialog_Click" />

        <TextBox x:Name="tbResults" Text="Silverlight Results"
                Height="30" Width="300" Margin="10,50"
                HorizontalAlignment="Left" VerticalAlignment="Top"
                Background="Beige" />
    </Grid>
</UserControl>
```

Przestrzeń izolowana plików



Przestrzeń izolowana plików

```
using System.IO;
using System.IO.IsolatedStorage;

...
```

// Zapis do pliku:

```
private void button1_Click(object sender, RoutedEventArgs e)
{
    IsolatedStorageFile plik = IsolatedStorageFile.GetUserStoreForApplication();
    plik.CreateDirectory("MojKatalog");
    using (var isoFileStream =
           new IsolatedStorageFileStream(
                    "MojKatalog/MojPlik.txt", FileMode.OpenOrCreate, plik))
    {
        using (var isoFileWriter = new StreamWriter(isoFileStream))
        {
            isoFileWriter.WriteLine(textBox1.Text);
        }
    }
}
```

The **using** keyword:
directive - to create an alias for a namespace or to import types defined in namespaces
statement - defines a scope at the end of which an object will be disposed.

// Odczyt z pliku:

```
private void button2_Click(object sender, RoutedEventArgs e)
{
    IsolatedStorageFile moj_plik = IsolatedStorageFile.GetUserStoreForApplication();
    try
    {
        using (var isoFileStream =
               new IsolatedStorageFileStream(
                        "MojKatalog/MojPlik.txt", FileMode.Open, moj_plik))
        {
            using (var isoFileReader = new StreamReader(isoFileStream))
            {
                textBlock1.Text = isoFileReader.ReadLine();
            }
        }
    }
    catch
    {
        textBlock1.Text = "Aaa... brak pliku.";
    }
}
```

... a w C można to zrobić za pomocą trzech funkcji:
fopen(), fread(), fclose()

Transfer plików w tle

Windows Phone od wersji 7.1 udostępnia mechanizm transferu plików w tle pomiędzy telefonem a serwerami internetowymi.

Obsługa transferu za pomocą HTTP i HTTPS metodami GET lub POST, transfer FTP nie jest obsługiwany.

Liczba równoczesnych transferów ograniczona do pięciu. Są też liczne ograniczenia co do transferów związane z rodzajem połączeń (WiFi, 3G, GPRS), wielkością plików oraz zasilaniem.

Search MSDN with Bing

- MSDN Library
- Development Tools and Languages
- Windows Phone Development
- Application Features
  - Background File Transfers for Windows Ph
  - **Background File Transfers Overview fo**
  - Background File Transfer Best Practices fo
  - How to: Implement Background File Trans

Background File Transfers Overview for Windows Phone

Windows Phone

March 22, 2012

With Windows Phone OS 7.1, applications are able to queue up one or more file uploads or downloads over HTTP that will be executed in the background, even when the application is no longer running in the foreground. The APIs used for initiating file transfers should be used to query the status existing transfers and provide progress indicators for the end user. For a step-by-step walkthrough of creating an application that uses background file transfers, see How to: Implement Background File Transfers for Windows Phone.

The Background Transfer APIs

The background transfer service APIs can be found in the Microsoft.Phone.BackgroundTransfer namespace. The primary programming elements you will use are the BackgroundTransferRequest and the BackgroundTransferService classes. The **BackgroundTransferRequest** object represents a single transfer request including the target and destination file paths, the transfer method, and the current status of a transfer. The **BackgroundTransferService** object is used to initiate new transfers and to query for or remove existing file transfers.

Supported Transfer Methods

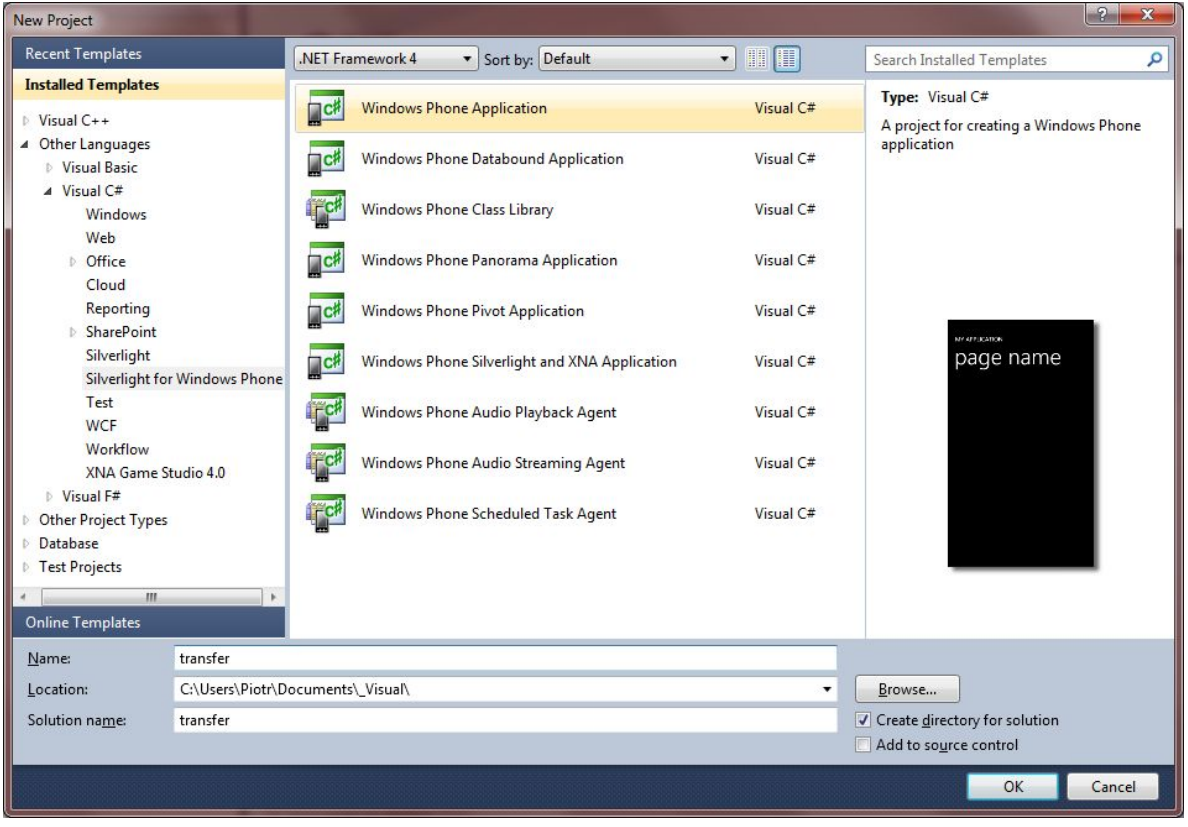
The Background Transfer Service only supports transfers using HTTP and HTTPS. FTP is unsupported. You can upload and download files in the background with the **BackgroundTransferService**. The GET HTTP method is supported for downloading files, and the POST method is supported for downloading or uploading files. Set the method for a transfer by using the Method property of the **BackgroundTransferRequest** object.

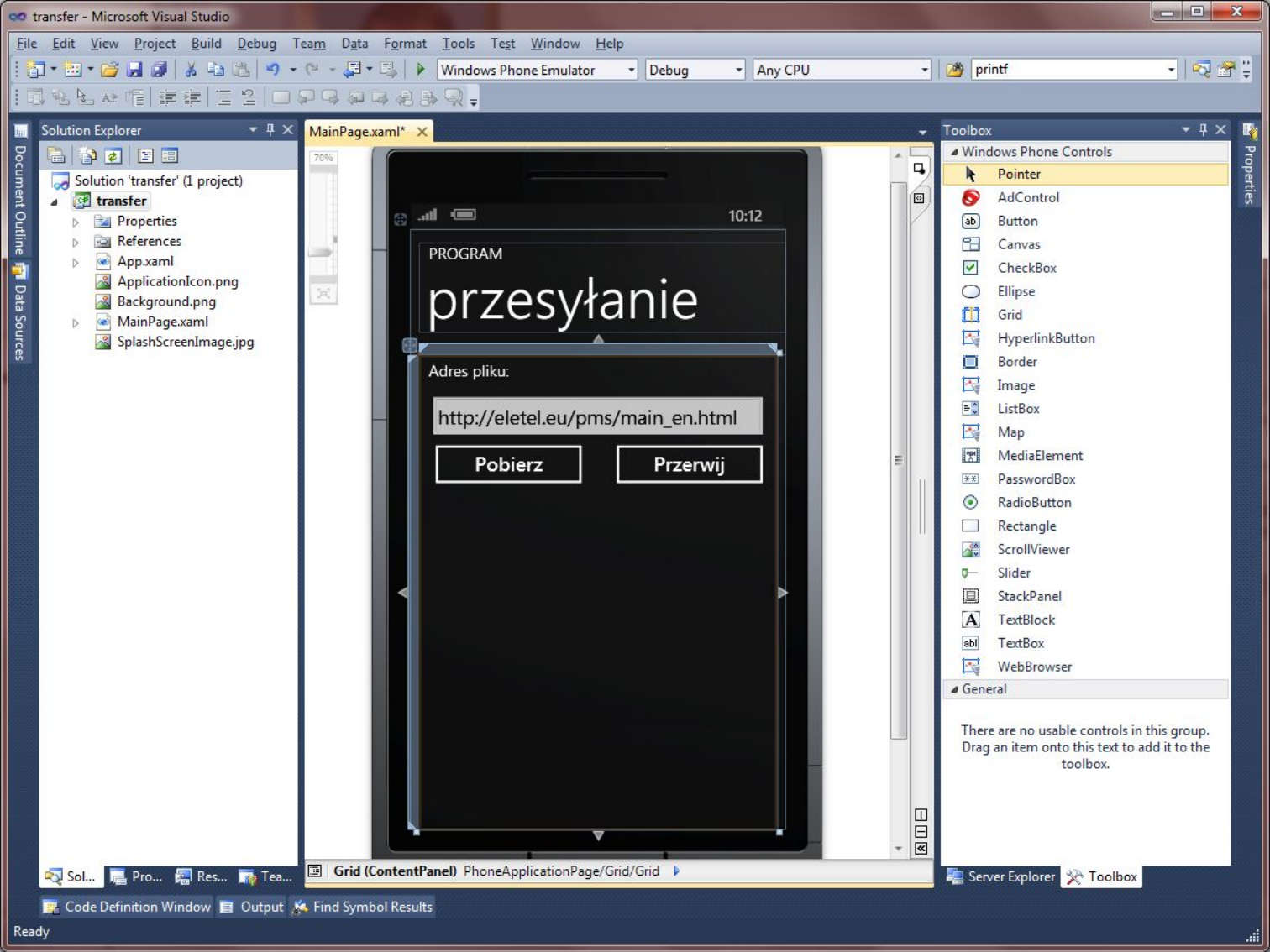
File System Restrictions

All background transfers require a local file path. Downloads require a destination path that specifies the location at which the downloaded file will be saved. Uploads require a source path that specifies the location from which the file will be uploaded. All local paths for background transfers must be within the isolated storage for your application within a root directory named "/shared/transfers". This directory is created by the operating system upon application installation, but if your application deletes or renames this directory, you must re-create it before initiating any file transfers. You can create any additional directory structure you choose underneath the root "/shared/transfers" directory, and you can copy or move files after the transfer is complete to ensure that the background transfer service does not modify the files, but attempting to initiate a transfer using a path outside of the "/shared/transfers" directory will throw an exception.

Reserved Headers

Transfer plików w tle




transfer - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Format Tools Test Window Help
Windows Phone Emulator
Debug
Any CPU
printf
Solution Explorer
Solution 'transfer' (1 project)
transfer
Properties
References
App.xaml
ApplicationIcon.png
Background.png
MainPage.xaml
SplashScreenImage.jpg
MainPage.xaml*
10:12
PROGRAM
przesyłanie
Adres pliku:
http://eletel.eu/pms/main_en.html
Pobierz
Przerwij
Grid (ContentPanel) PhoneApplicationPage/Grid/Grid
Toolbox
Windows Phone Controls
Pointer
AdControl
Button
Canvas
CheckBox
Ellipse
Grid
HyperlinkButton
Border
Image
ListBox
Map
MediaElement
PasswordBox
RadioButton
Rectangle
ScrollViewer
Slider
StackPanel
TextBlock
TextBox
WebBrowser
General
There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.
Server Explorer
Toolbox
Code Definition Window
Output
Find Symbol Results
Ready

Transfer plików w tle

```
using Microsoft.Phone.BackgroundTransfer;
using System.IO;
using System.IO.IsolatedStorage;


...


        public MainPage()
        {
            InitializeComponent();
            using (IsolatedStorageFile isoStore =
                                    IsolatedStorageFile.GetUserStoreForApplication())
            {
                if (!isoStore.DirectoryExists("/shared/transfers"))
                {
                    isoStore.CreateDirectory("/shared/transfers");
                }
            }
        }
```

Transfer plików w tle

```
private void button1_Click(object sender, RoutedEventArgs e)
{
    if (BackgroundTransferService.Requests.Count() >= 1)
    {
        MessageBox.Show("Oj, za duzo pobran :-(");
        return;
    }

    Uri transferUri = new Uri(
                        Uri.EscapeUriString(textBox1.Text), UriKind.RelativeOrAbsolute);

    BackgroundTransferRequest transferRequest = new BackgroundTransferRequest(transferUri);
    transferRequest.Method = "GET"; //opcjonalnie = "POST";

    Uri downloadUri = new Uri("shared/transfers/plik.txt", UriKind.RelativeOrAbsolute);
    transferRequest.DownloadLocation = downloadUri;


    transferRequest.TransferPreferences = TransferPreferences.AllowCellular;
    transferRequest.TransferPreferences = TransferPreferences.AllowBattery;
    transferRequest.TransferPreferences = TransferPreferences.AllowCellularAndBattery;
```

```
        try
        {
            BackgroundTransferService.Add(transferRequest);
        }
        catch (Exception)
        {
            MessageBox.Show("Nie moge dodac... :-(");
        }
    }
```

Transfer plików w tle


```
private void button2_Click(object sender, RoutedEventArgs e)
{
    foreach (var transfer in BackgroundTransferService.Requests)
    {
        BackgroundTransferRequest transferToRemove =
                        BackgroundTransferService.Find(transfer.RequestId);
        try
        {
            BackgroundTransferService.Remove(transferToRemove);
        }
        catch (Exception)
        {
            MessageBox.Show("Nie moge usunac... :-(");
        }
    }
}
```

Transfer plików w tle

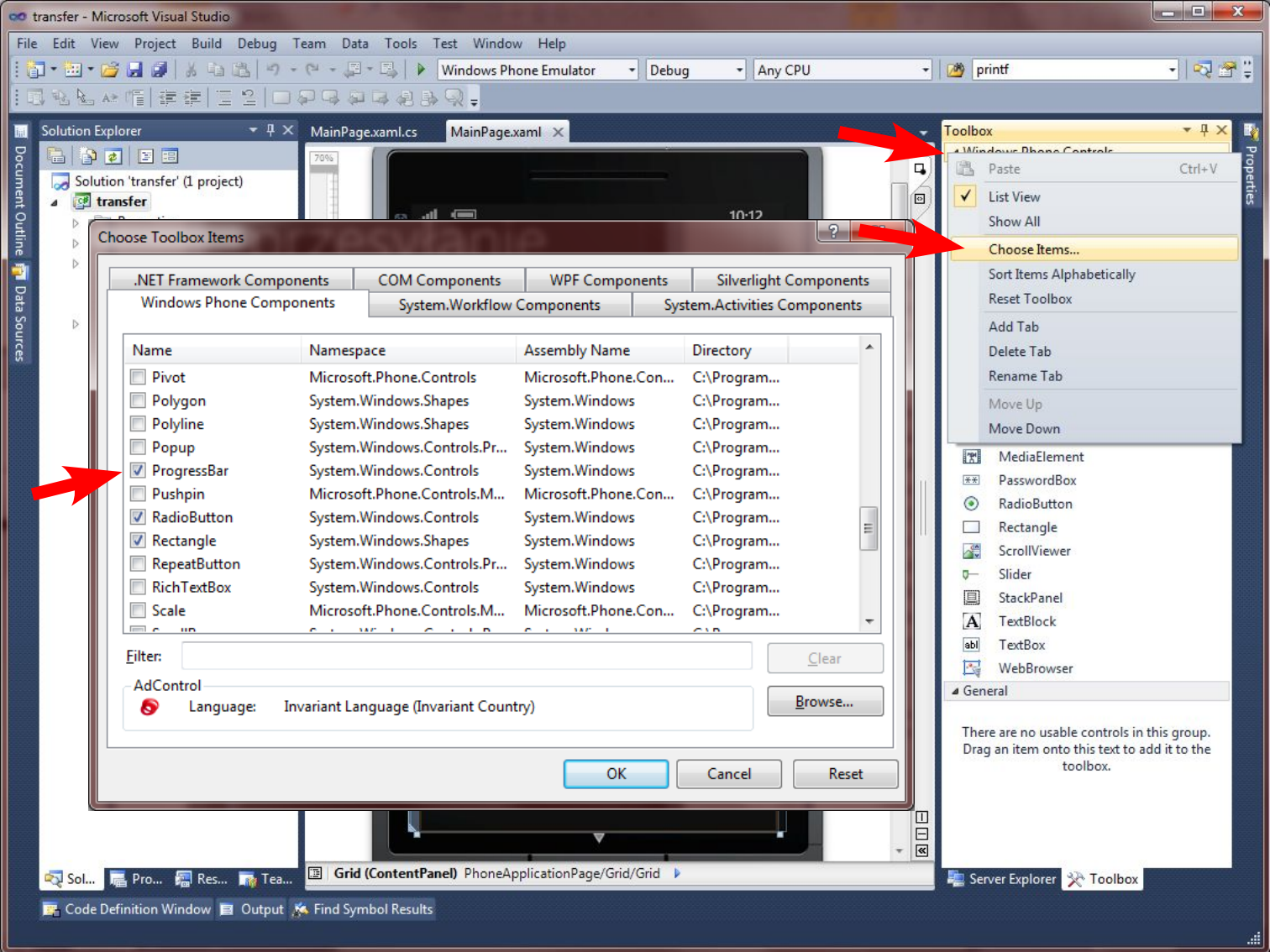
Zrobione:

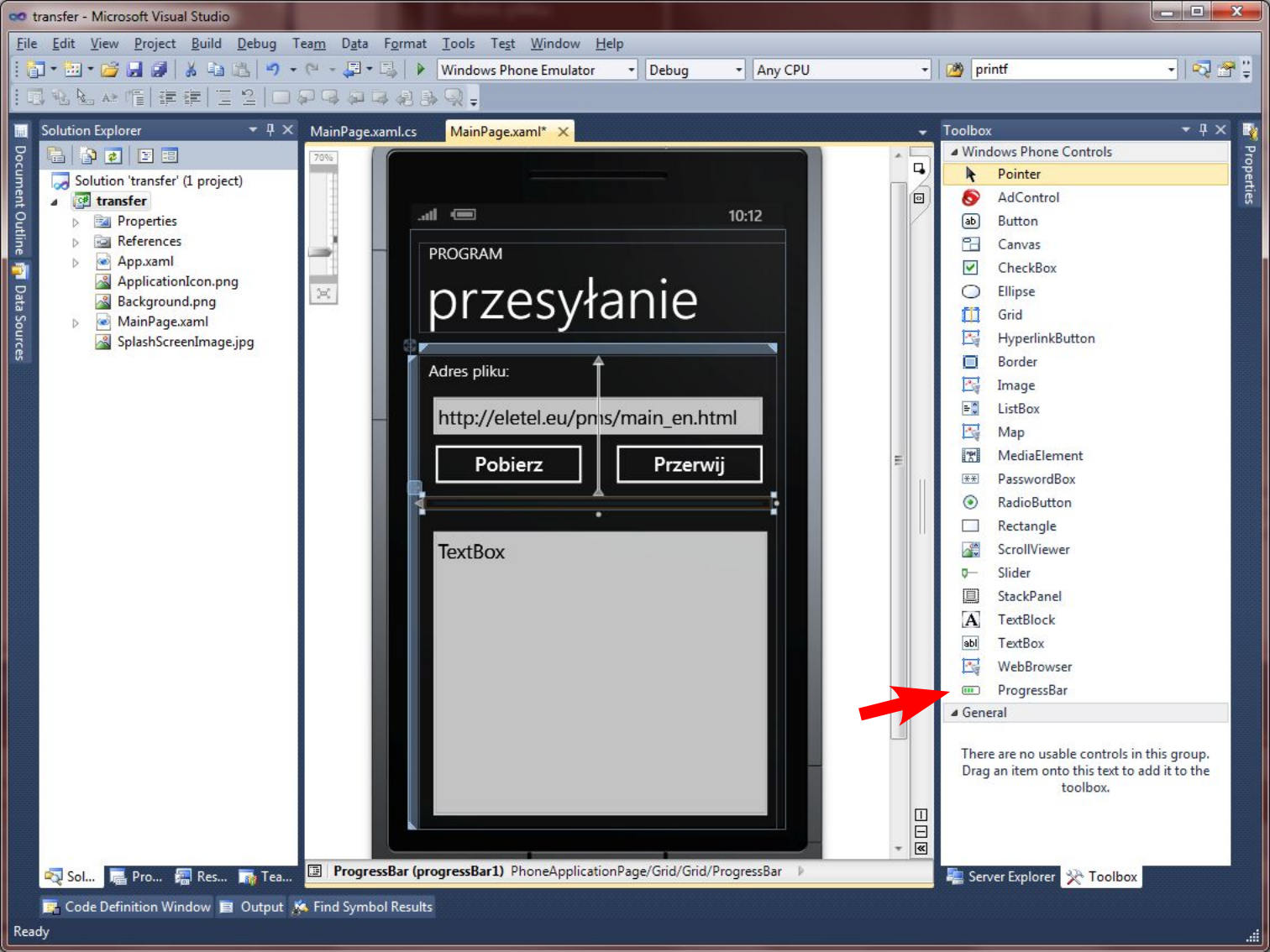
Pobieranie można rozpocząć i przerwać.

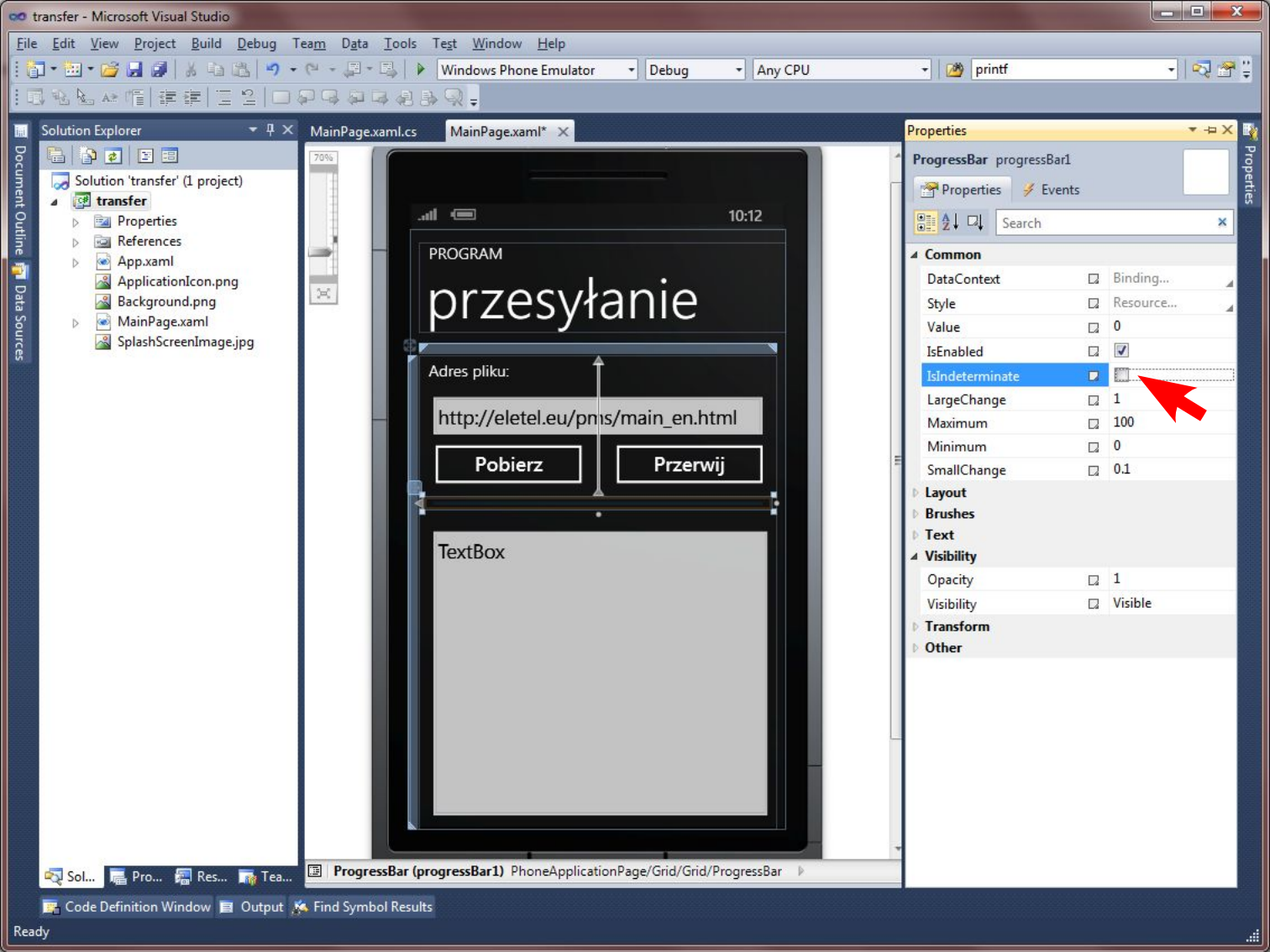
Do zrobienia:

Jakie jest zaawansowanie pobierania?

Jak stwierdzić czy plik został pobrany?


transfer - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Tools Test Window Help
Windows Phone Emulator
Debug
Any CPU
printf
Solution Explorer
Solution 'transfer' (1 project)
transfer
MainPage.xaml.cs
MainPage.xaml
Toolbox
Paste Ctrl+V
List View
Show All
Choose Items...
Sort Items Alphabetically
Reset Toolbox
Add Tab
Delete Tab
Rename Tab
Move Up
Move Down
Choose Toolbox Items
.NET Framework Components
COM Components
WPF Components
Silverlight Components
Windows Phone Components
System.Workflow Components
System.Activities Components
Name
Namespace
Assembly Name
Directory
Pivot
Polygon
Polyline
Popup
ProgressBar
Pushpin
RadioButton
Rectangle
RepeatButton
RichTextBox
Scale
Filter:
Clear
AdControl
Language: Invariant Language (Invariant Country)
Browse...
OK
Cancel
Reset
MediaElement
PasswordBox
RadioButton
Rectangle
ScrollViewer
Slider
StackPanel
TextBlock
TextBox
WebBrowser
General
There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.
Grid (ContentPanel) PhoneApplicationPage/Grid/Grid
Server Explorer
Toolbox
Code Definition Window
Output
Find Symbol Results


transfer - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Format Tools Test Window Help
Windows Phone Emulator
Debug
Any CPU
printf
Solution Explorer
Solution 'transfer' (1 project)
transfer
Properties
References
App.xaml
ApplicationIcon.png
Background.png
MainPage.xaml
SplashScreenImage.jpg
MainPage.xaml.cs
MainPage.xaml*
10:12
PROGRAM
przesyłanie
Adres pliku:
http://eletel.eu/pms/main_en.html
Pobierz
Przerwij
TextBox
Toolbox
Windows Phone Controls
Pointer
AdControl
Button
Canvas
CheckBox
Ellipse
Grid
HyperlinkButton
Border
Image
ListBox
Map
MediaElement
PasswordBox
RadioButton
Rectangle
ScrollViewer
Slider
StackPanel
TextBlock
TextBox
WebBrowser
ProgressBar
General
There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.
ProgressBar (progressBar1) PhoneApplicationPage/Grid/Grid/ProgressBar
Server Explorer
Toolbox
Code Definition Window
Output
Find Symbol Results
Ready

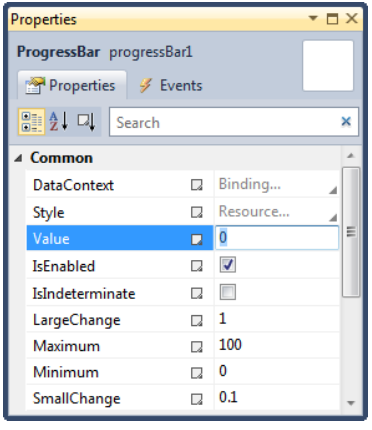

transfer - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Tools Test Window Help
Windows Phone Emulator
Debug
Any CPU
printf
Solution Explorer
Solution 'transfer' (1 project)
transfer
Properties
References
App.xaml
ApplicationIcon.png
Background.png
MainPage.xaml
SplashScreenImage.jpg
MainPage.xaml.cs
MainPage.xaml*
10:12
PROGRAM
przesyłanie
Adres pliku:
http://eletel.eu/pms/main_en.html
Pobierz
Przerwij
TextBox
ProgressBar (progressBar1) PhoneApplicationPage/Grid/Grid/ProgressBar
Properties
ProgressBar progressBar1
Properties
Events
Search
Common
DataContext
Binding...
Style
Resource...
Value
0
IsEnabled
IsIndeterminate
LargeChange
1
Maximum
100
Minimum
0
SmallChange
0.1
Layout
Brushes
Text
Visibility
Opacity
1
Visibility
Visible
Transform
Other
Code Definition Window
Output
Find Symbol Results
Ready

Transfer plików w tle

```
private void button1_Click(object sender, RoutedEventArgs e)
{


...



    foreach (var transfer in BackgroundTransferService.Requests)
    {
        transfer.TransferStatusChanged +=
                        new EventHandler<BackgroundTransferEventArgs>(ZmianaStatusu);
        transfer.TransferProgressChanged +=
                        new EventHandler<BackgroundTransferEventArgs>(ZmianaZaawansowania);
    }
}
```

Transfer plików w tle

```
void ZmianaZaawansowania(object sender, BackgroundTransferEventArgs e)
{
    progressBar1.Value =
         100 * e.Request.BytesReceived / e.Request.TotalBytesToReceive;
}
```

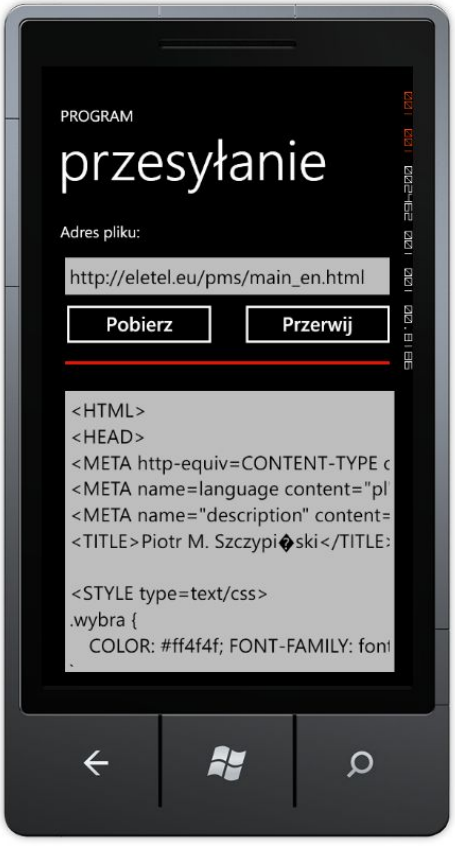


Transfer plików w tle

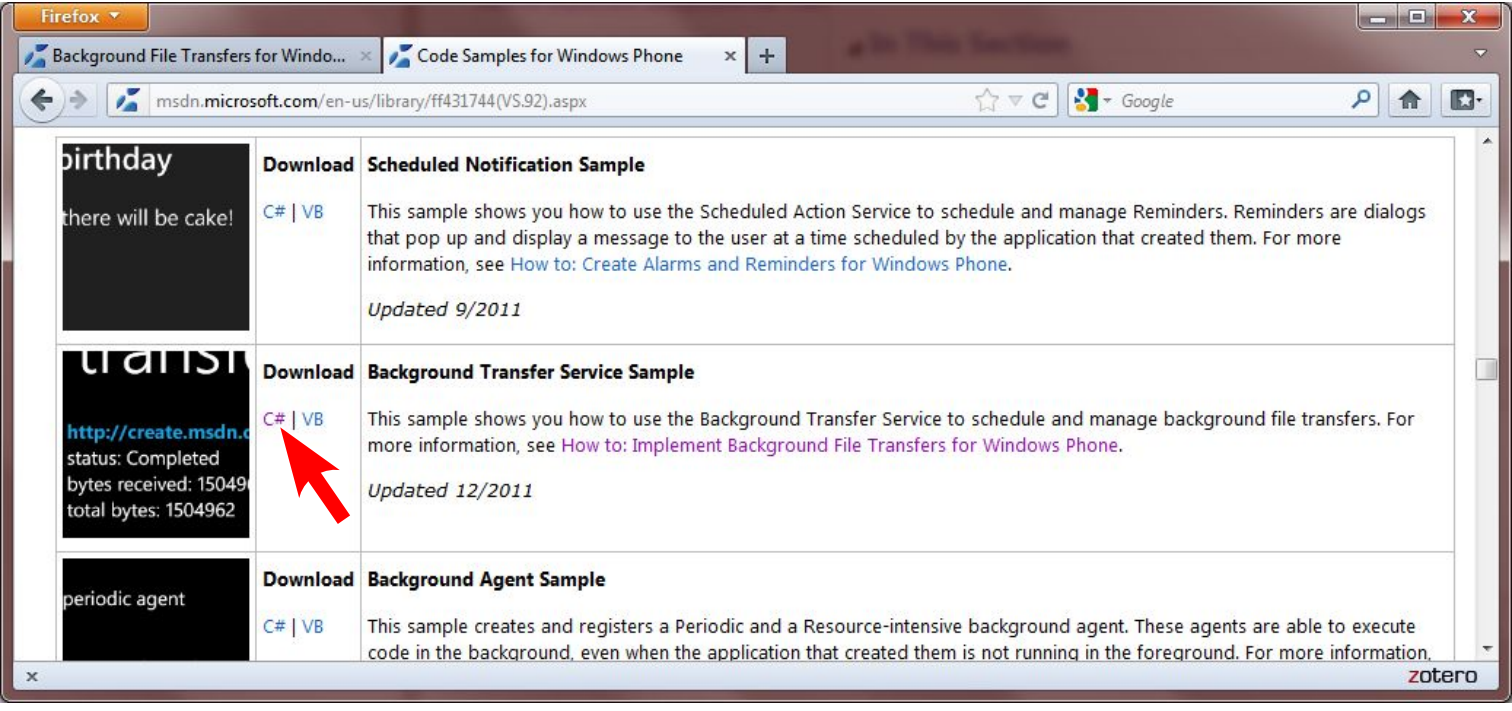
```
void ZmianaStatusu(object sender, BackgroundTransferEventArgs e)
{
    switch (e.Request.TransferStatus)
    {
        case TransferStatus.Completed:
            {
                BackgroundTransferRequest transferToRemove =
                                BackgroundTransferService.Find(e.Request.RequestId);
                try
                {
                    BackgroundTransferService.Remove(transferToRemove);
                }
                catch (Exception)
                {
                    MessageBox.Show("Nie moge usunac zakonczonego transferu... :-(");
                }
```

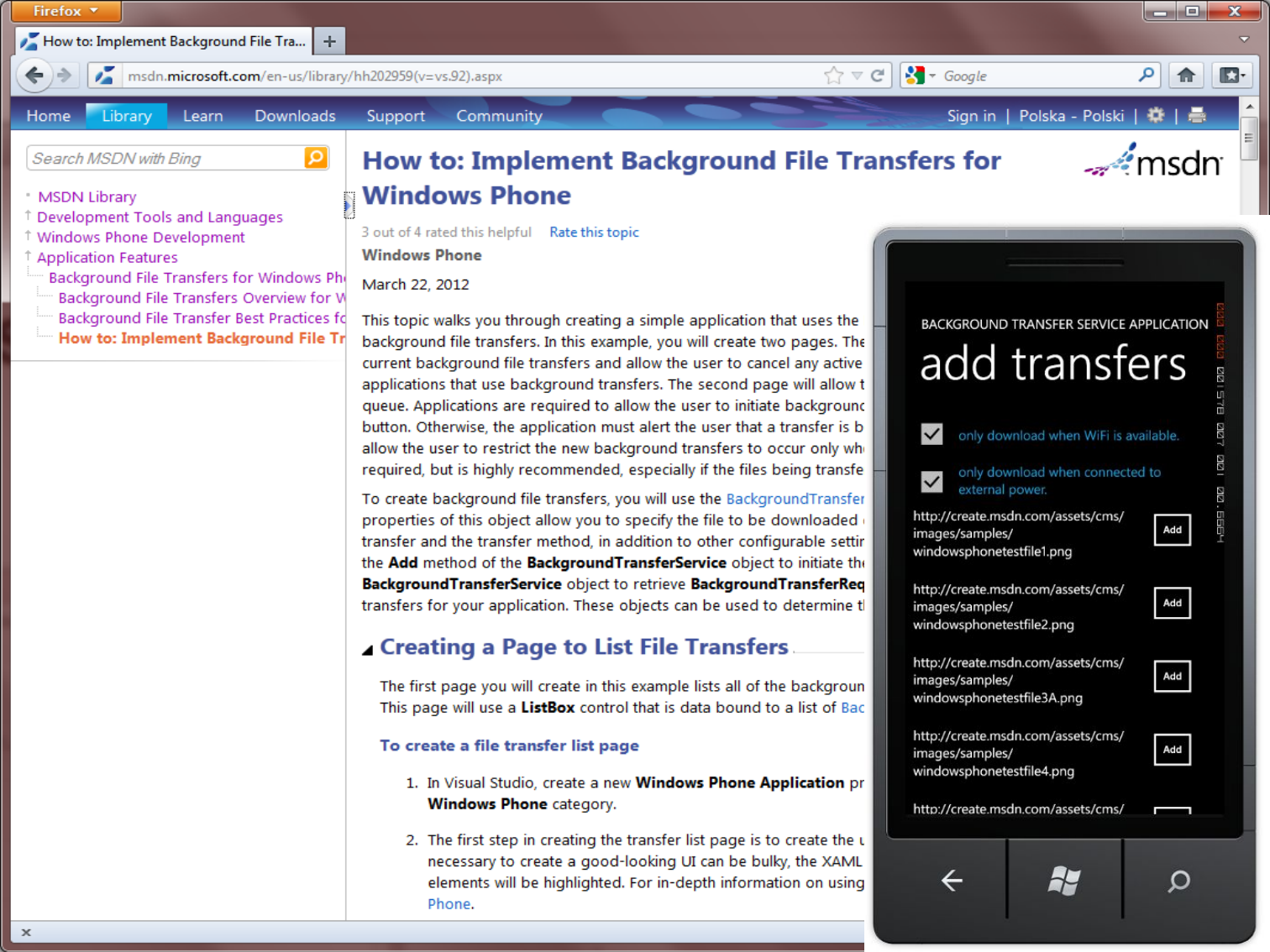
```
                if (e.Request.StatusCode == 200 || e.Request.StatusCode == 206)
                {
                    MessageBox.Show("Udalo sie... :-)");

// Tutaj dopisać kod
// otwierania pliku
// i wyświetlania
// jego zawartości
// w polu tekstowym
// textBox2

                }
                else
                {
                    MessageBox.Show("Pobieranie nie udalo sie... :-(");
                }
            }
            break;

        case TransferStatus.WaitingForExternalPower:
        case TransferStatus.WaitingForExternalPowerDueToBatterySaverMode:
        case TransferStatus.WaitingForNonVoiceBlockingNetwork:
        case TransferStatus.WaitingForWiFi:
            break;
    }
}
```

Transfer plików w tle



Transfer plików w tle




Firefox
How to: Implement Background File Tra...
msdn.microsoft.com/en-us/library/hh202959(v=vs.92).aspx
Google
Home
Library
Learn
Downloads
Support
Community
Sign in | Polska - Polski
Search MSDN with Bing
MSDN Library
Development Tools and Languages
Windows Phone Development
Application Features
Background File Transfers for Windows Ph
Background File Transfers Overview for W
Background File Transfer Best Practices fo
How to: Implement Background File Tr
How to: Implement Background File Transfers for Windows Phone
msdn
3 out of 4 rated this helpful
Rate this topic
Windows Phone
March 22, 2012
This topic walks you through creating a simple application that uses the
background file transfers. In this example, you will create two pages. The
current background file transfers and allow the user to cancel any active
applications that use background transfers. The second page will allow t
queue. Applications are required to allow the user to initiate backgrounc
button. Otherwise, the application must alert the user that a transfer is b
allow the user to restrict the new background transfers to occur only wh
required, but is highly recommended, especially if the files being transfe
To create background file transfers, you will use the BackgroundTransfer
properties of this object allow you to specify the file to be downloaded
transfer and the transfer method, in addition to other configurable settir
the Add method of the BackgroundTransferService object to initiate th
BackgroundTransferService object to retrieve BackgroundTransferReq
transfers for your application. These objects can be used to determine t
Creating a Page to List File Transfers
The first page you will create in this example lists all of the backgroun
This page will use a ListBox control that is data bound to a list of Bac
To create a file transfer list page
1. In Visual Studio, create a new Windows Phone Application pr
Windows Phone category.
2. The first step in creating the transfer list page is to create the u
necessary to create a good-looking UI can be bulky, the XAML
elements will be highlighted. For in-depth information on using
Phone.
BACKGROUND TRANSFER SERVICE APPLICATION
add transfers
only download when WiFi is available.
only download when connected to external power.
http://create.msdn.com/assets/cms/images/samples/windowsphonetestfile1.png
Add
http://create.msdn.com/assets/cms/images/samples/windowsphonetestfile2.png
Add
http://create.msdn.com/assets/cms/images/samples/windowsphonetestfile3A.png
Add
http://create.msdn.com/assets/cms/images/samples/windowsphonetestfile4.png
Add
http://create.msdn.com/assets/cms/

Zarządzanie aplikacjami i ich stany

Uruchomionych (znajdujących się w pamięci) może być wiele procesów.

Tylko jeden jest aktywny (*foreground*), pozostałe są w stanie uśpienia (*dormant*).

Wyjątkiem są aplikacje (*agents*) działające w tle (*background*), które są okresowo pobudzane do działania.

Jeśli brak jest zasobów to proces najdłużej uśpiony jest usuwany (*tombstoned*)

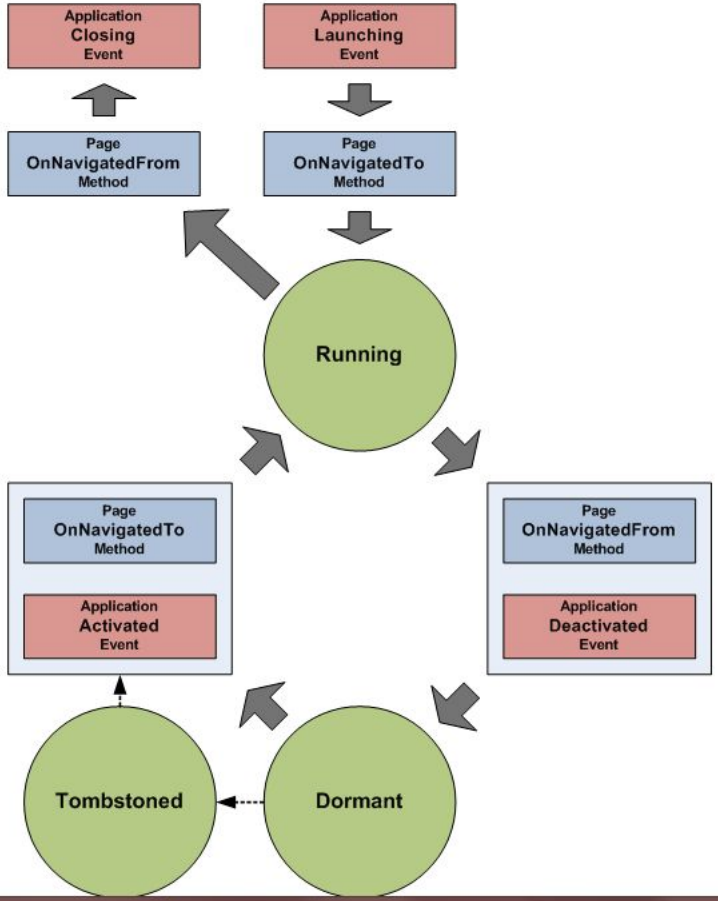
Wykrywanie zmiany stanów programu umożliwia zapisanie „wyglądu” programu podczas jego zamykania i odtworzenie tego „wyglądu” po ponownym uruchomieniu.

Search MSDN with Bing

- MSDN Library
- Development Tools and Languages
- Windows Phone Development
- Fundamental Concepts
  - Execution Model for Windows Phone
  - Execution Model Overview for Window
  - Execution Model Best Practices for Windo
  - How to: Preserve and Restore Page State
  - How to: Preserve and Restore Applicatio
  - Idle Detection for Windows Phone

The Windows Phone Application Lifecycle

The following image illustrates the lifecycle of a Windows Phone application. In this diagram, the circles are application states. The rectangles show either application- or page-level events where applications should manage their state.



Zarządzanie aplikacjami i ich stany

1. Utworzyć nowy projekt: Windows Phone Application (Silverlight)
2. Otworzyć plik App.xaml.cs i odnaleźć metody:

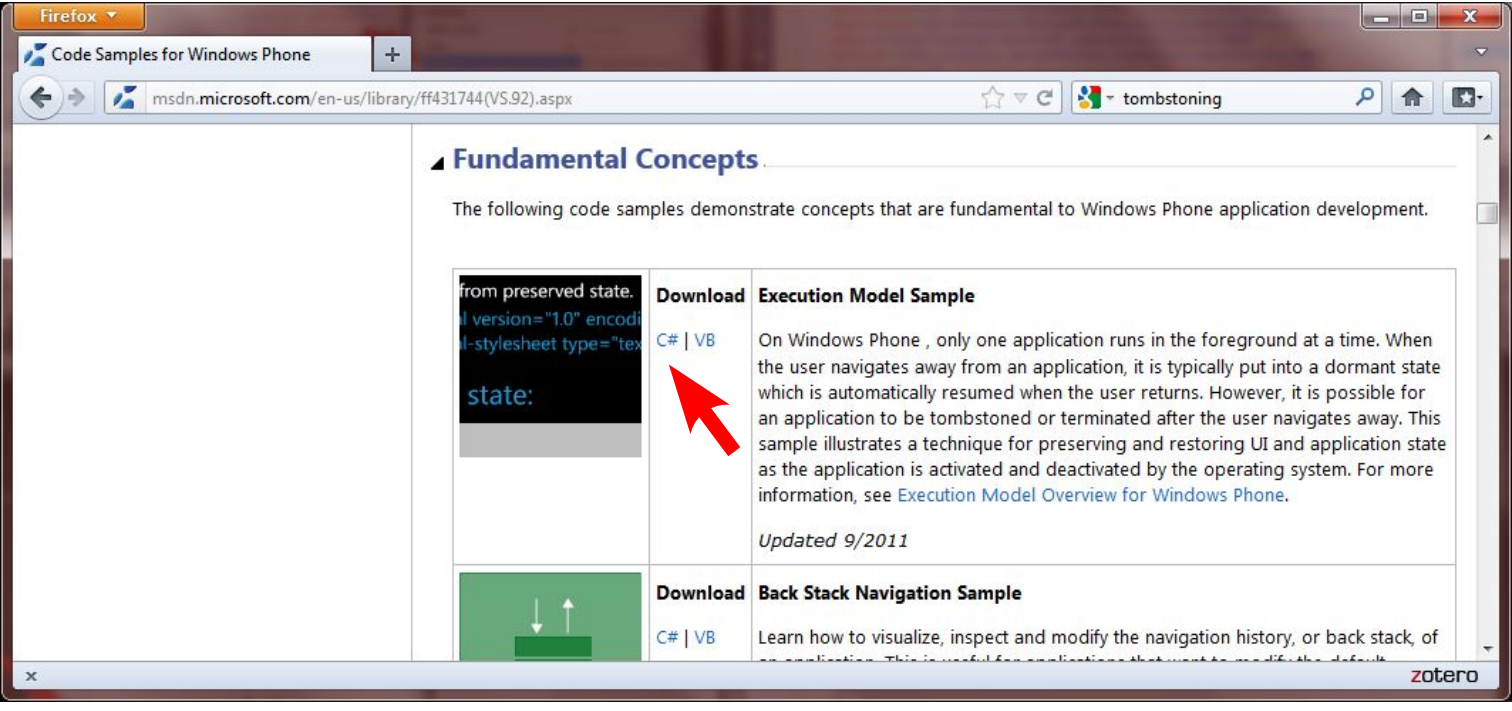
```
private void Application_Launching(object sender, LaunchingEventArgs e)
private void Application_Activated(object sender, ActivatedEventArgs e)
private void Application_Deactivated(object sender, DeactivatedEventArgs e)
private void Application_Closing(object sender, ClosingEventArgs e)
```

3. Zmodyfikować ciała metod zgodnie z przykładem:

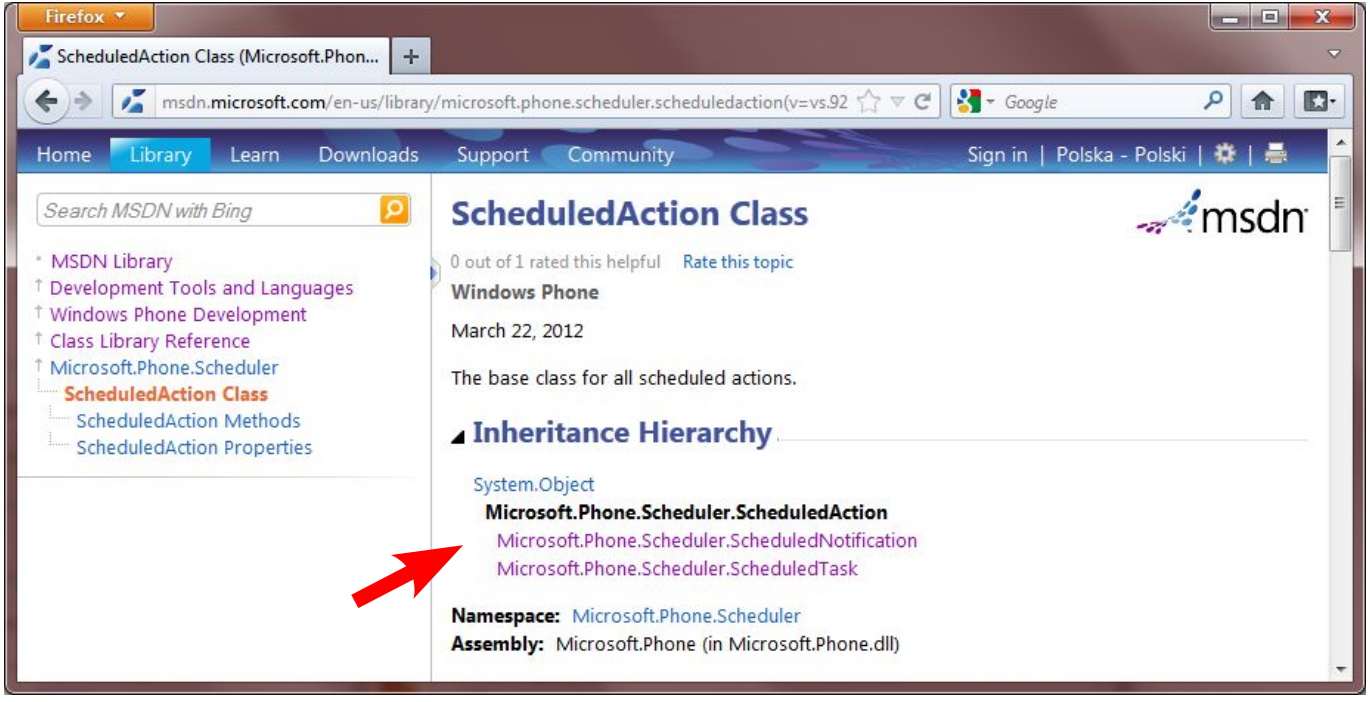
```
private void Application_Launching(object sender, LaunchingEventArgs e)
{
      MessageBox.Show("Zmiana stanu: Uruchomienie");
}
```

4. Zaobserwować pojawianie się komunikatów podczas uruchamiania, deaktywacji, aktywacji i zamykania programu.

Zarządzanie aplikacjami i ich stany



Agenci, przypomnienia i alarmy



Search MSDN with Bing

- MSDN Library
- Development Tools and Languages
- Windows Phone Development
- Application Features
  - Background Agents for Windows Phone
    - Background Agents Overview for Wind
    - Unsupported APIs for Background Agents
    - Background Agent Best Practices for Win
    - Toast Notifications for Background Agent
    - How to: Implement Background Agents fo

Background Agents Overview for Windows Phone

Windows Phone

March 22, 2012

Scheduled Tasks and background agents allow an application to execute code in the background, even when the application is not running in the foreground. The different types of Scheduled Tasks are designed for different types of background processing scenarios and therefore have different behaviors and constraints. This topic describes the scheduling, duration, and limitations of scheduled tasks.

Caution:

Background agents are not supported on 256-MB devices. For information on detecting whether your application is running on a 256-MB device, see How to: Disable Features of an Application for a 256-MB Device.

Types of Scheduled Tasks

The following are the types of Scheduled Tasks. Note that ScheduledTask derives from ScheduledAction. The code that runs in the background is placed in a class that derives from ScheduledTaskAgent, which derives from BackgroundAgent.

Scheduled Task Type	Description
PeriodicTask	*Periodic agents* run for a small amount of time on a regular recurring interval. Typical scenarios for this type of task include uploading the device's location and performing small amounts of data synchronization.
ResourceIntensiveTask	*Resource-intensive agents* run for a relatively long period of time when the phone meets a set of requirements relating to processor activity, power source, and network connection. A typical scenario for this type of task is synchronizing large amounts of data to the phone while it is not being actively used by the user.

Background Agent Lifecycle

An application may have only one background agent. This agent can be registered as a **PeriodicTask**, a **ResourceIntensiveTask**, or both. The schedule on which the agent runs depends on which type of task it is registered as. The details of the schedules are

Search MSDN with Bing

- MSDN Library
- Development Tools and Languages
- Windows Phone Development
- Application Features
  - Alarms and Reminders for Windows Phone
    - Alarms and Reminders Overview for Win
    - How to: Create Alarms and Reminders

How to: Create Alarms and Reminders for Windows Phone

Windows Phone

March 22, 2012

Use the Alarm and Reminder classes, which inherit from ScheduledNotification, and the ScheduledActionService class to create and register scheduled notifications with the system. Alarms and Reminders are scheduled to be launched at a specified time in the future and can be configured to launch on a recurring schedule. When a reminder is launched, a dialog is launched that shows a title and additional text content that your application specifies. If the user taps the reminder UI, your application is launched and is navigated to a page that you specify. You can use query string parameters to pass information into your application when it is launched. When an alarm is launched, the title "Alarm" is always displayed along with additional text content you provide. Alarms also allow you to specify a custom sound file that is played when it is launched. If the user taps the Alarm UI, the application that created it is launched and the initial application page is shown.

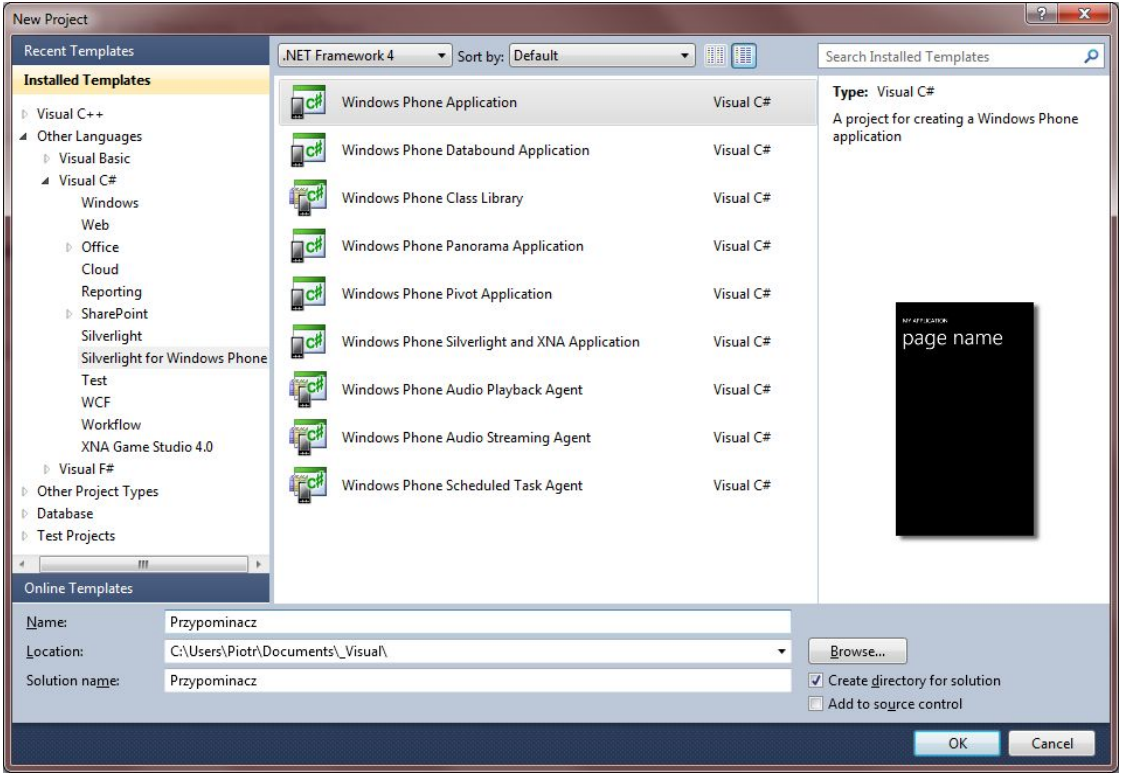
This topic walks you all the way through creating an application that uses alarms and reminders. The usage of these two types of scheduled notifications is very similar. Only a small part of the code in this example is different for alarms and reminders. In the following steps, you will implement three application pages:

1. Creating a Page to List Scheduled Notifications. This page displays a list of all alarms and reminders created and registered by the application. This page also allows you to delete notifications from the list.
2. Creating a Page to Add Scheduled Notifications. This page uses Silverlight controls to create an input form that allows the user to create new alarms and reminders.
3. Creating a Reminder-Launched Page. This is the page to which the application will navigate if it is launched as a result of the user tapping a reminder dialog. This page will display data passed to the page on the query string. This functionality applies only to reminders. Alarms always launch the initial application page and do not pass query string parameters.

Creating a Page to List Scheduled Notifications

The first page that you create in this example is a page that lists all of the alarms and reminders that are registered for your application. This example uses a ListBox control that is databound to an **IEnumerable** object containing the list of scheduled notifications. However, for the sake of simplicity, this example will not implement the full Model-View-ViewModel framework. For more information about this common Silverlight application pattern, see Implementing the Model-View-ViewModel Pattern in a Windows Phone Application.

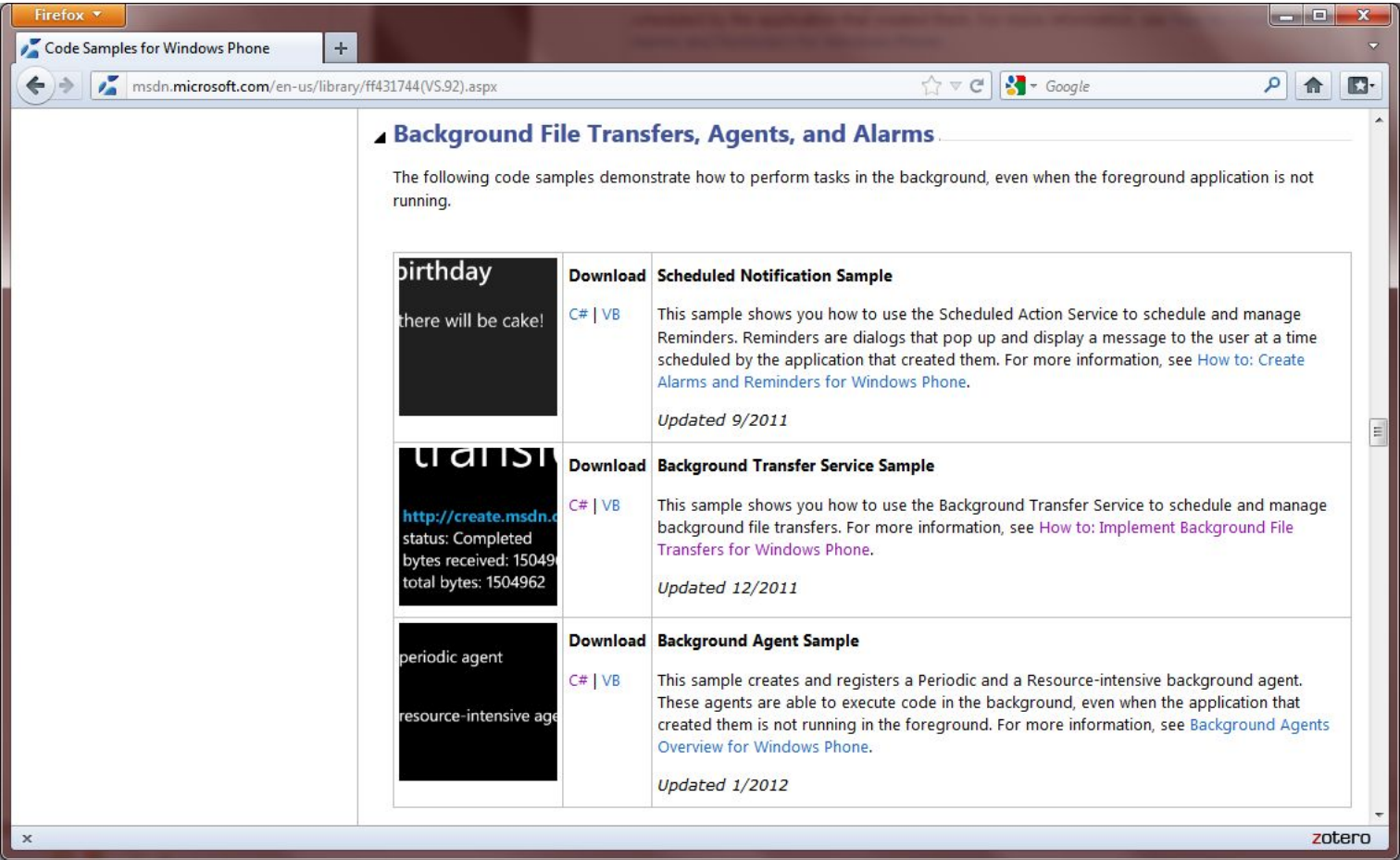
Agenci, przypomnienia i alarmy



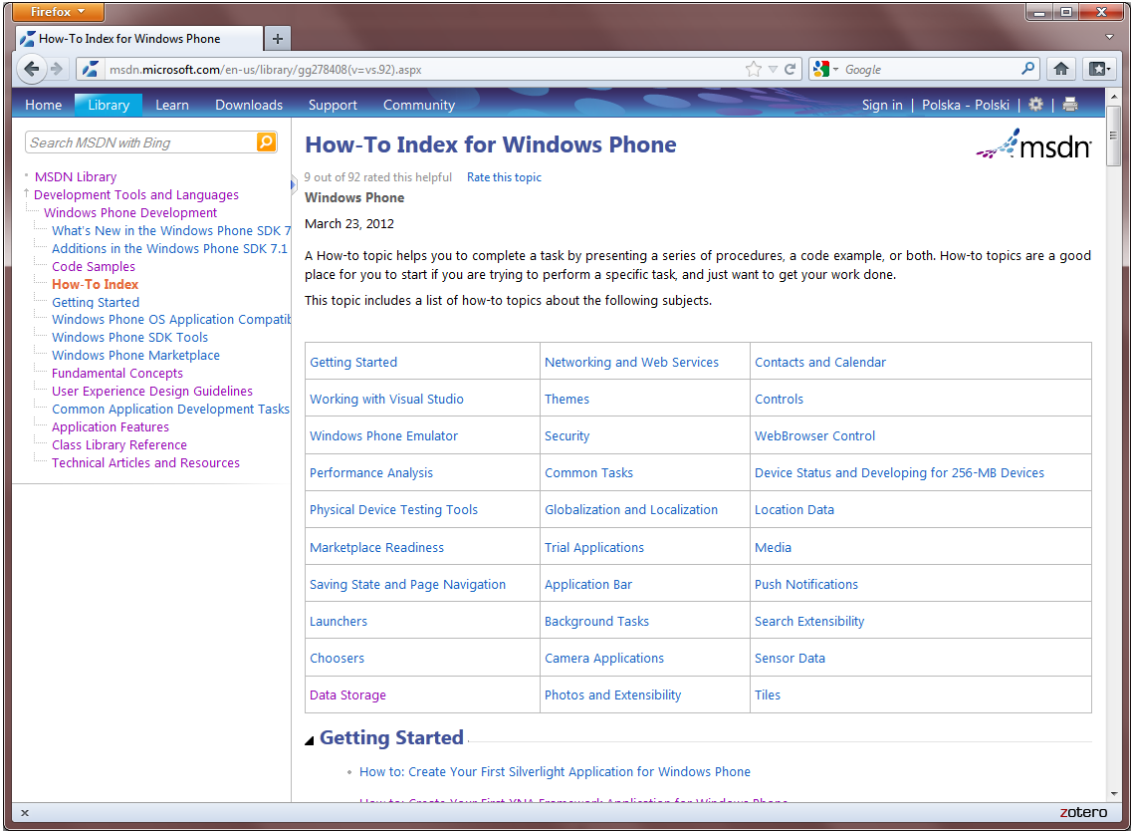
Agenci, przypomnienia i alarmy

```
using Microsoft.Phone.Scheduler;
...
private void button1_Click(object sender, RoutedEventArgs e)
{
    int sekundy;
    try {sekundy = Convert.ToInt32(textBox1.Text);}
    catch (Exception) {sekundy = 60;}

    Reminder reminder = new Reminder("przypom_123");
    reminder.Title = "Przypominacz";
    reminder.Content = "Idź na wykład";
    reminder.BeginTime = DateTime.Now.AddSeconds(sekundy);
    reminder.ExpirationTime = reminder.BeginTime.AddSeconds(15);
    reminder.RecurrenceType = RecurrenceInterval.None;
    //RecurrenceInterval.Daily, RecurrenceInterval.Weekly...

    reminder.NavigationUri =
           new Uri("/Strona.xaml ", UriKind.RelativeOrAbsolute);

    if (ScheduledActionService.Find("przypom_123") != null)
        ScheduledActionService.Remove("przypom_123");
    ScheduledActionService.Add(reminder);
}
```

Agenci, przypomnienia i alarmy



Więcej...


Firefox
How-To Index for Windows Phone
msdn.microsoft.com/en-us/library/gg278408(v=vs.92).aspx
Google
Home
Library
Learn
Downloads
Support
Community
Sign in | Polska - Polski
Search MSDN with Bing
MSDN Library
Development Tools and Languages
Windows Phone Development
What's New in the Windows Phone SDK 7
Additions in the Windows Phone SDK 7.1
Code Samples
How-To Index
Getting Started
Windows Phone OS Application Compatib
Windows Phone SDK Tools
Windows Phone Marketplace
Fundamental Concepts
User Experience Design Guidelines
Common Application Development Tasks
Application Features
Class Library Reference
Technical Articles and Resources
How-To Index for Windows Phone
msdn
9 out of 92 rated this helpful
Rate this topic
Windows Phone
March 23, 2012
A How-to topic helps you to complete a task by presenting a series of procedures, a code example, or both. How-to topics are a good place for you to start if you are trying to perform a specific task, and just want to get your work done.
This topic includes a list of how-to topics about the following subjects.
Getting Started
Networking and Web Services
Contacts and Calendar
Working with Visual Studio
Themes
Controls
Windows Phone Emulator
Security
WebBrowser Control
Performance Analysis
Common Tasks
Device Status and Developing for 256-MB Devices
Physical Device Testing Tools
Globalization and Localization
Location Data
Marketplace Readiness
Trial Applications
Media
Saving State and Page Navigation
Application Bar
Push Notifications
Launchers
Background Tasks
Search Extensibility
Choosers
Camera Applications
Sensor Data
Data Storage
Photos and Extensibility
Tiles
Getting Started
How to: Create Your First Silverlight Application for Windows Phone
zotero

...i na tym koniec
czwartej części wykładu