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A mapping application for fans of the Glasgow Commonwealth Games to use to find their current location, and the location of the venues, developed in Visual Studio 2012 for Windows Phone 8.

*I confirm that the code contained in this file (other than that provided or authorised) is all my own work and has not been submitted elsewhere in fulfillment of this or any other award.*

Signed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_

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# Code Explanation

*The following explanation provides a high level overview of the functions that Windows Phone 8 runs by default during normal interaction. It will reference other user defined methods, pages and classes that perform a wide range of actions. For more information on what these methods and classes do see “Explanation of User Defined Methods, Classes and Structs”. This explanation will assume the user opens the application by touching the icon, has their location services enabled and will open the Diary and previous host pages.*

Calls InitializeComponent that loads the pages and views associated with the class. Declares the variables and initializes arrays to a specific size. This respective method is called every time the user changes the app to a different page. Following this, MainPage will call the method “ShowUserLocation()” which attempts to find the users location by calling a dedicated method in the CoordinateConverter class. If the users location services are enabled, and if these coordinates can be found the App centres the map to the users locations, and will also draw a blue circle to indicate their location. If location services are displayed the map will instead default to Glasgow city centre.

The application will then call setupArray. This method creates an array of GeoCoordinates and an array of Strings, and specifies the values of the array at each index. The values of these elements are taken from AppConstants. These values need to be precise and uniform across the array and AppConstants as later the code will reference multiple arrays at the same index, and will require all indexes to be the same.

Once the arrays have been setup the application will then begin the process of overlaying the map with icons representing the multiple venues at the Commonwealth games. This process occurs over a number of methods.

The first method called is insertVenues. This method creates an array of images (to be overlaid) and assigns a resource (.png) to each element. The length of this array is the same length as the coordinate and string arrays. Within the loop the method “drawVen” is called, and it passes the image, the coordinates and the string to this method, at the same index in the array.

drawVen is called multiple times in the loop, and the parameters passed into this method related to a single venue. This method creates a number of elements, including a Polygon (a blank shape), ImageBrush (used to “paint” canvases), MapLayer and MapOverlay. It defines the points of the Polygon to create a triangle and fills it with the image that has been passed into this method. It then adds the Polygon to the MapOverlay, before adding the overlay to a new layer on the map.

Each polygon has an event attached to it that is activated when it is tapped. This event displays a message box that shows the information about the venue.

These methods all run within the constructor, and when the constructor has finished executing the user is free to interact with the Mobile App. If the user chooses to open up the “Previous Hosts” page then the view is changed and the constructor for that specific page is run. Previous Hosts” calls the same methods as MainPage, with the exception of GetUserLocation. Instead of assigning and passes variables pertaining to the venues, they instead are relevant to the previous hosts. The user can select one of the previous hosts from a menu. Each item in the menu has a unique event attached to it. This event will centre the map on the city that the user has chosen. A polygon is also displayed at these Coordinates, and if clicked will display the information on the event. The user can open the Diary page from Previous Hosts.

When open, the Diary page will load any previous entries using loadDiary. This method determines if there is an instance of IsolatedStorageSettings (a piece of protected, rewritable storage accessibly only to the application) exists. If it does the saved data is displayed in the TextBox. If the user has made an entry they can save their text by pressing the “save” button. This performs a check to see if an instance exists in storage. If not then one is created. If one exists then it is overridden.

### Extra features:

The following features were implemented above and beyond the specification:

* Find users Geoposition – uses location services (if enabled) to find the users location and centre the map at that point
* User Diary – allow the user to diarise their trip to the games.
* Directions – Allows the user to input two locations, and receiving driving instructions to get to their destination.
* Voice Control – Allows the user to open the application and certain views using their voice

## Explanation of User Defined Methods, Classes and Structs

There are a number of methods that the user has defined in order to develop this Application. This section will discuss in-depth the function of these methods.

**Main Page**

* ShowUserLocation()
  + This method initializes the games aspect ratio to allow the game to determine how to scale the 3D to 2D projection. It then initializes two cameras; the main and the secondary. For each camera position and rotation values are passed, as well as the speed. It ends by attach the camera to a Game Component.
* drawVen(BitmapImage venue, GeoCoordinate venuecoord, string venstring)
  + blah
* vPoly\_DoubleTap(Object sender, GestureEventArgs e, string vInfo
  + blah
* directions\_Click(object sender, EventArgs e)
  + blah
* cartMode\_Clicj(object sender, EventArgs e)
  + blah
* lightMode\_Click(object sender, EventArgs e)
  + Toggles whether or not MapColorMode is enabled or disabled.

**Diary**

* deleteDiary()
  + Displays a warning message box to the user, informing them that they can’t undo changes. If the user accepts this warning then the instance of IsolatedStrageSettings is deleted from storage, and the text from the TextBox is removed.

**Hosts**

* blah\_Click(object sender, EventArgs e)
  + blah
* AppConstants.cs
  + Blah
* CoordinateConverter.cs
  + Blah
* vComms.xml

*Each page will have a number of event listeners. As the functionality of their listens are often identical (move to a different page, change the centre of the map etc.) I will not go into detail onto these events. It is hoped that the comments within the code will help explain the functionality of these events.*

# Storyboards

See attached sheet

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