MURDOCH UNIVERSITY
PERTH, WESTERN AUSTRALIA

Discipline of Information Technology, Media and Communication College of Art, Business, Law and Social Sciences (ABLSS)

ICT365 ASSIGNMENT 1
CHECK LIST

Surname (Family Name): _____Lau_____

Given Names: _____Andreas_____

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Tutor's Name: _____Mr. Kai Loke_____

Assignment Due Date: _____5/3/2022_____   **Date Submitted:** _____24/02/2022_____

Your assignment should meet the following requirements. Please confirm this (by ticking boxes) before submitting your assignment.

- ☑ All details above are complete.
- ☑ I acknowledge and agree that the assessor of this assignment may, for the purpose of assessing this assignment, reproduce this assignment and provide a copy to another academic staff member.
- ☑ I am aware of Murdoch University's assessment policy 8.1.8 that states that "Unit Coordinators have the right to submit any assignment to the University's plagiarism detection software if they suspect plagiarism."
- ☑ I have read and understood the requirements for submission of assignments specified in the Unit Information and Learning Guide.
- ☑ I have read and understood the requirements for documenting and submitting this assignment that are specified in the assignment question sheet of this assignment.
- ☑ You understand that the zip file must be submitted to ICT365 Unit LMS.
- ☑ You have kept a copy of this assignment, including the zip file.

Project Description

This project is a C# project to create a system to conduct research on people who are affected by mental cognitive issues. My aim is to read data from .XML file and .gpx file to display the details into the maps on the window form. Users can perform the following features that I have implemented:

1. Gmap is used to load the google map

2. XElement to read both XML and gpx file

3. GMarkerType to create markers

4. Users can add several more events into the SOAP file and retrieve information about the events.

5. Users can view the events from the SOAP file, that are occurring in the Google Map

6. System can display events such as text, icons, images, text, and videos on the Google map.

7. Users can also view events by performing left-click on the event.

8. I have also implemented nine window forms to allow the users to have a better user experience.

   - Windows Form Application:

     • FormMain – displays map, add events and add person

     • FormEvent – displays menu for user to select the events that they wish to add

     • addPersonForm – add person onto the map

     • FacebookForm – add facebook post onto the map

     • ImageForm – add image onto the map

     • TracklogForm – add tracklog journey onto the map

     • TweetForm – add twitter tweet onto the map

     • VideoForm – add video onto the map

9. User can move around the map with the cursor by holding down right-click on his/her mouse

10. User can add an event with an option 'Add Event' pop out after performing left-click on his/her mouse

Evaluation

What is working:

Basic Features:

1. Task 1 – My SOAP XML file contains at least 20 different events which include at least two tracklogs. Each event follows a specific structure and is all formatted correctly.

2. Task 2 – Create a Windows form GUI using Visual Studio 2022. The project can display the events in Singapore and Malaysia from the SOAP XML file on the canvas area/map.

3. Task 3 – Using LINQ to XML to load the data from the SOAP file into an appropriate collection object. Also, using C# Dictionary as the format of my collection.

4. Task 4 – Every single event which is stored in the SOAP XML file, is displayed on the canvas with suitable icons. Each event has its own icon and track log that is drawn using lines to plot the points of the log.

5. Task 5 – Clicking on the canvas would give the user an option to "Add Event", or to "Retrieve Information" and insert it into the SOAP file. If "Retrieve Information", it will indicate which of the current events are being accessed, and display the information:

   - Draw a line from the start position to end position

6. Additional features – Adding person into the system

What is not working:

1. I am not sure, but I may have missed out on something.

Brief Description - Solution

EventForms folder:

- FacebookForm.cs
- ImageForm.cs
- PersonForm.cs
- TracklogForm.cs
- TweetForm.cs
- VideoForm.cs

Events folder:
- Event.cs
- EventFacebook.cs
- EventImage.cs
- EventPerson.cs
- EventTracklog.cs
- EventTweet.cs
- EventVideo.cs

Resources folder:
- All images are stored here

UnitTestA1 folder:
- TestAddEvents.cs
- TestEvents.cs

Other files that are under the ICT365_A1_Andreas_Lau folder:
- EventDB.cs
- EventFactory.cs
- EventTypes.cs
- FactoryForm.cs
- FormEvent.cs
- FormMain.cs
- MapController.cs
- Person.cs
- PersonDB.cs
- Program.cs

1. Task 1 – I had to modify the XML file, lifelog-events.xml, with 20 different events with two of them being tracklogs. I have added different coordinates and information of events that contain the same format as the XML file. This XML file can be located under /bin/debug/data.

2. Task 2 – I have created 9 forms that hold all events (listed above). FormMain is created for the Google Map. Users can access the events that are occurring on the Google Map. FormEvent will pop up as a new window when the user performs a 'left-click' action on his mouse and selects "Add Event". This FormEvent will allow the user to select specific new events to add to the map. For example, if the user selects the Facebook icon, the user will be re-directed to the Facebook window form to enter his/her input. Likewise, when the user selects other events, the system will redirect the user to their respective events.

3. Task 3 – Each event will follow a certain structure based on eventID. The event class will hold six subclasses for every event, and all are inheriting event interfaces. I have created **five** event classes from different files under 'Event' folder, which handles the reading for all the events and store them in an appropriate collection of objects. EventDB class holds all Dictionaries which are used to format the collection of objects. The XML file is loaded by using XElement.load and each element of that XML document is put into IEnumerable which can be used to access different elements. Firstly, there is one 'foreach' loop that loops through every element or event in the SOAP XML file that will search for the specific event and another different event can also be found in the location. When it is trying to loop through every element, it references from Events.cs to search every element or event in the SOAP XML file, lifelog-events.xml.

4. Task 4 – I displayed the events icon on the canvas through the **five** event forms under 'EventForms' folder. All events are similarly designed. However, for example, in ImageForm, picturebox is displayed and the user can upload image with a specific file type such as .jpg, .jpeg, .gif and .png. In each form, a new picture box is created, and each attribute is associated with the specific event in the XML file. I added a mainMap_OnMarkerClick to each event so that the icons will retrieve and display the information when clicked. The mouse click event takes two parameters, latitude, and longitude of the icon, to display the radius when the icon is clicked. The user can hover around the map

by holding the right-click of his mouse and moving the map he wishes to add an event.

5. Task 5 – The user can perform a 'left-click' action on his mouse which prompts the user to add a new event to the SOAP file. The second form, FormEvent, contains **five** different picture options that are associated with different events. Each picture option will have a mouse click function that will direct to specific events and display that specific event. The cancel button will only exit FormEvent but FormMain will still remain. However, the save button in every event form will act as "Add Event" button. It has a click listener handler that determines the event is added. 'EventDB' class contain functions that add each type of event to the XML file, depending on the event things are sent such as text. When the event is added, it contains all the information for that event and creates the respective event contents in it.

6. Additional tasks – The program allows the user to add a person at FormMain (located at the bottom right). When you add a person, it will save the record of a person and display in the listbox. Once added and the user selects the person icon in the FormEvent, it will direct the user to PersonForm. The user can select the person in its combobox which was added in the addPersonForm. Likewise, it is designed the similarly to other events.

Test Evidence

Main Form
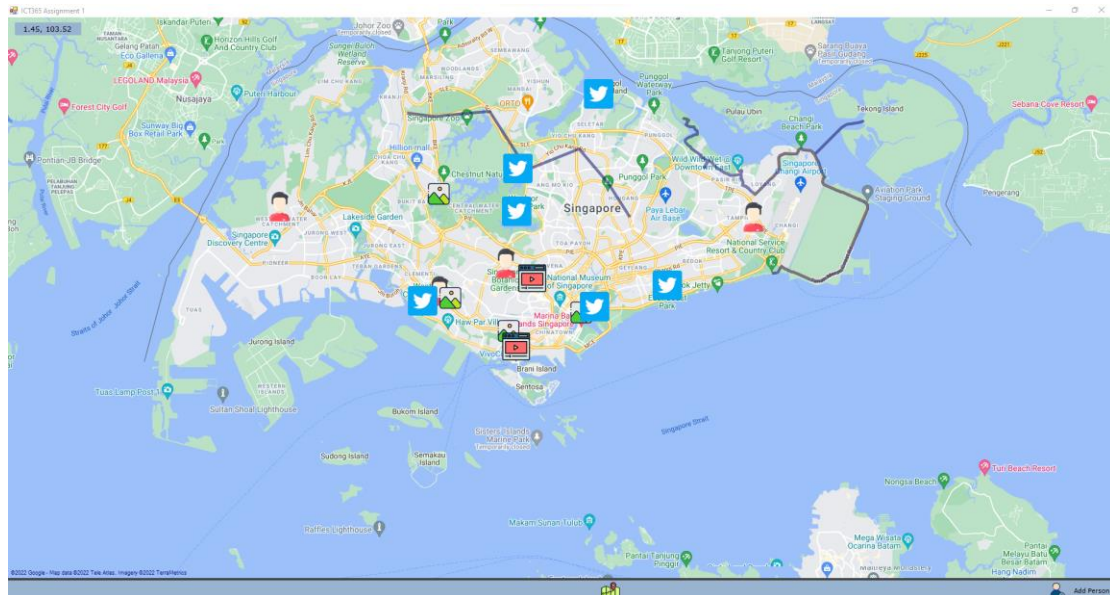
When the user perform left-click on the map (anywhere in the map)
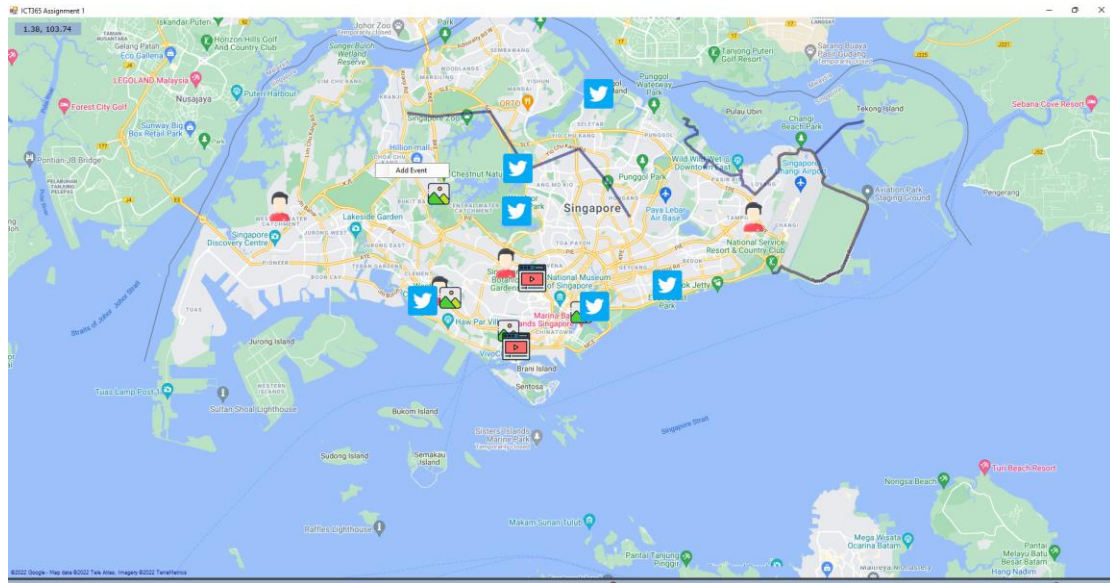
When the user selects 'Add Event'
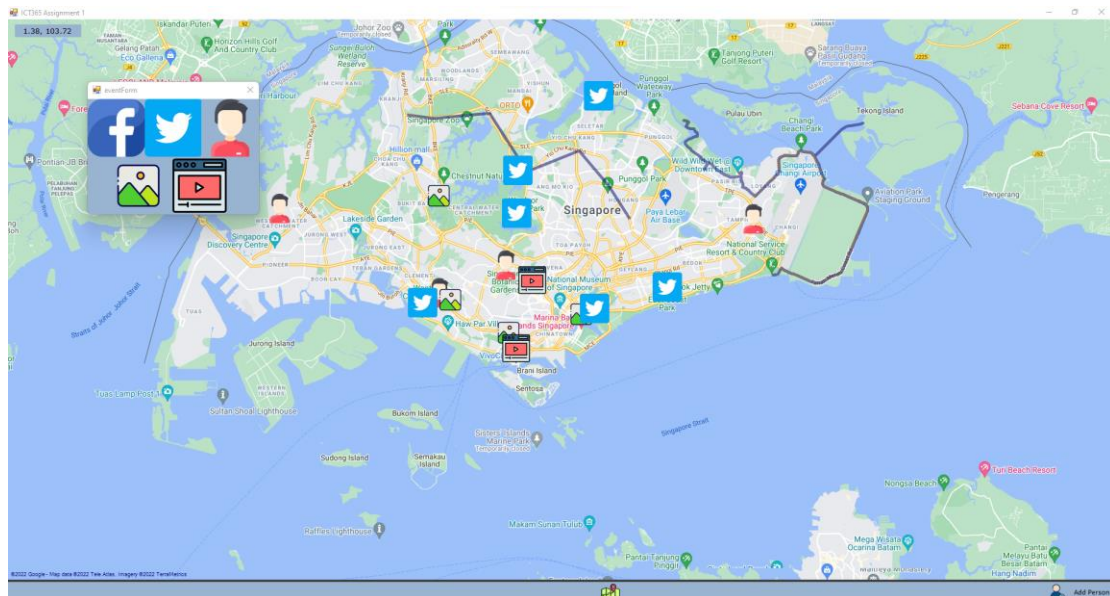
When the user selects 'Facebook' on the menu or selects the 'Facebook' icon on the map.
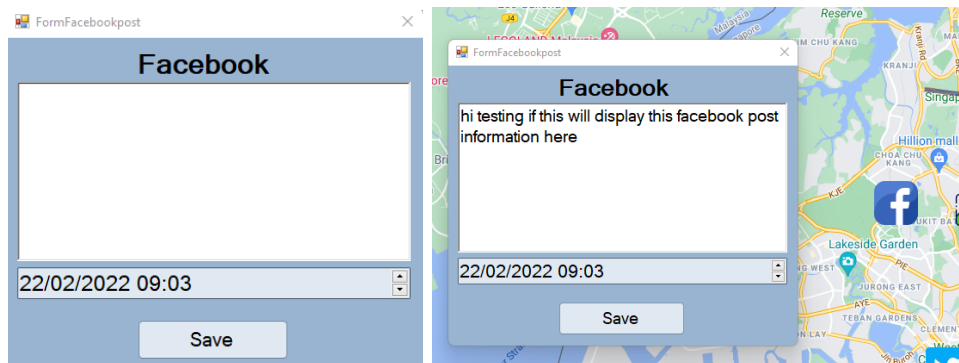
When the user selects 'Twitter' on the menu or selects the 'Twitter' icon on the map.
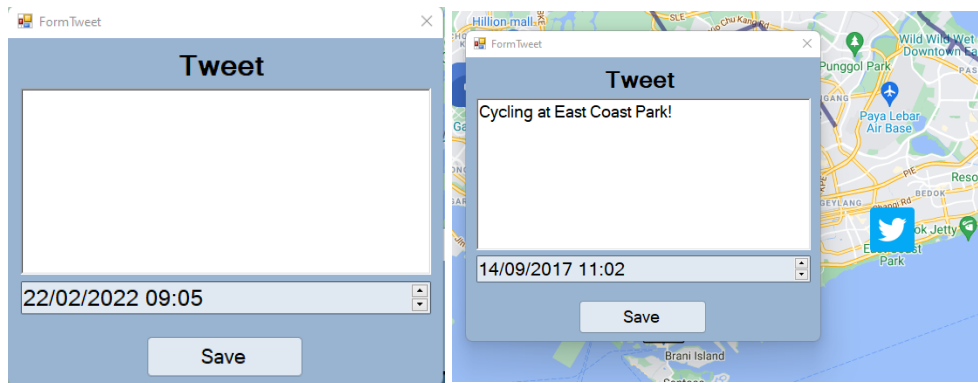
When user selects 'Image' on the menu or selects the 'Image' icon on the map.

d
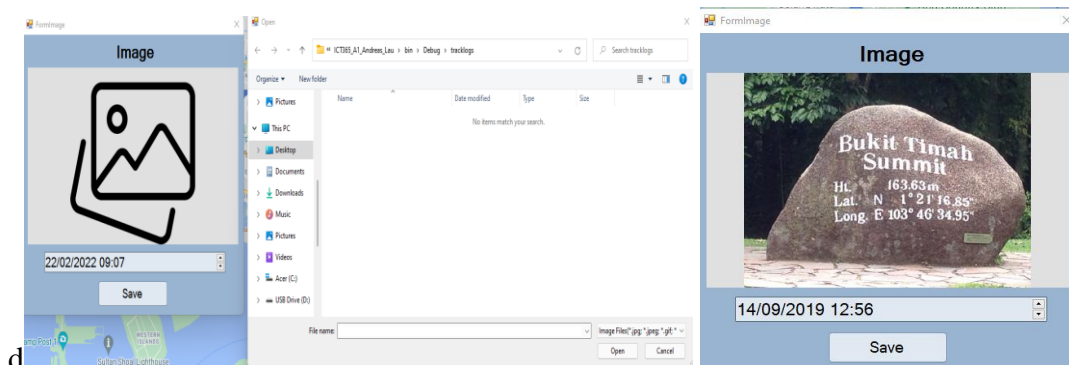
When user selects 'Video' on the menu or selects the 'Video' icon on the map.
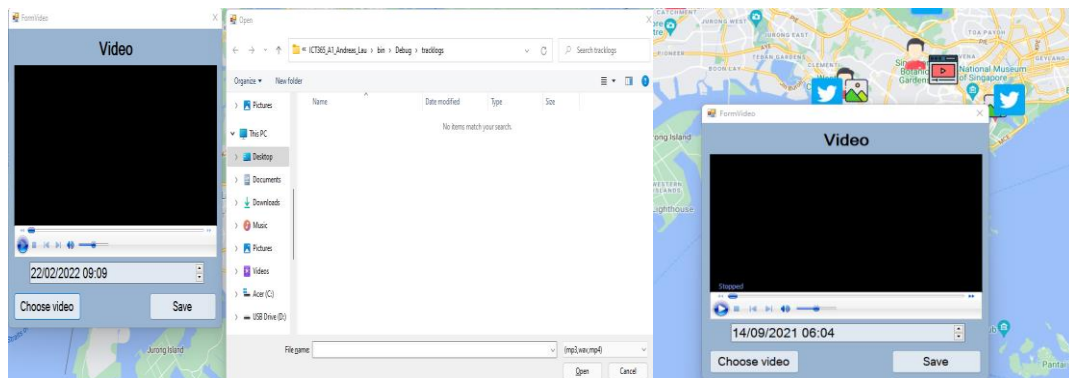
When the user selects the 'Person' on the menu or selects the 'Person' icon on the map.

<u>When the user selects the 'Tracklog' icon at the bottom of the main page</u>

(**Before adding 2 tracklog events**)
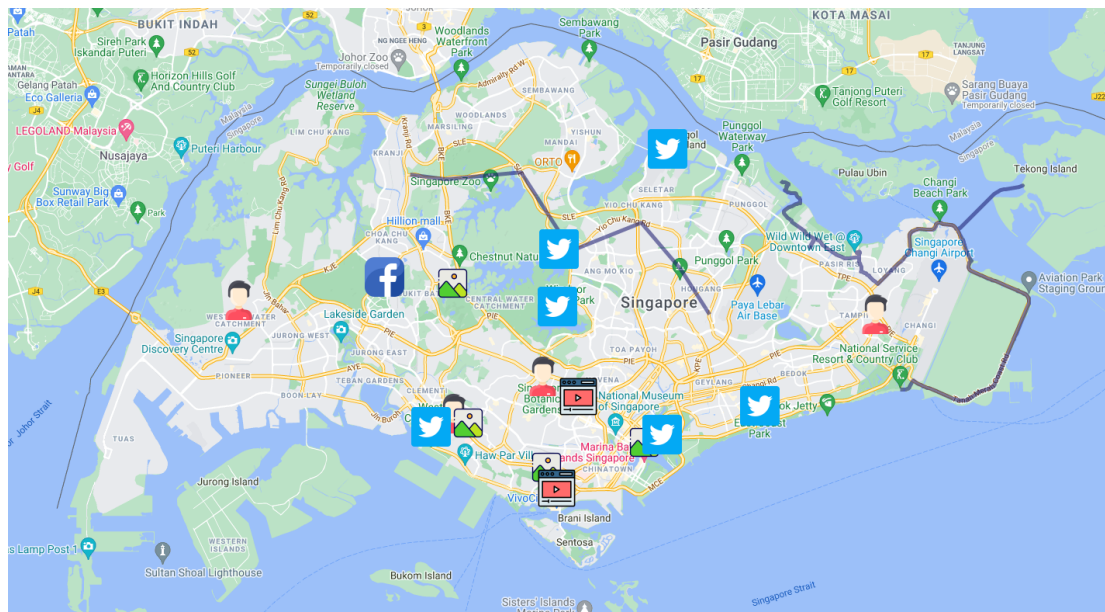
(**After adding 2 tracklog events**)
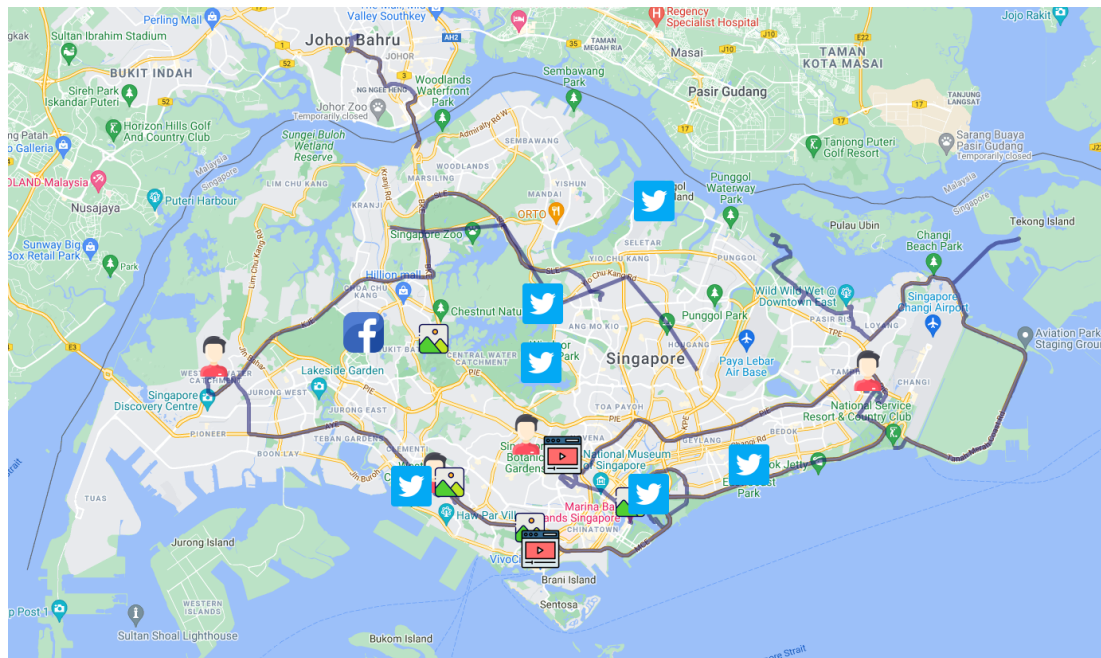
When the user selects 'Add Person' icon at the bottom of the main page

Unit Testing Results

- In TestEvents.cs, it test if it is valid events.
- In TestAddEvents.cs, if the Twitter 'text' is not 'test', it will be successful
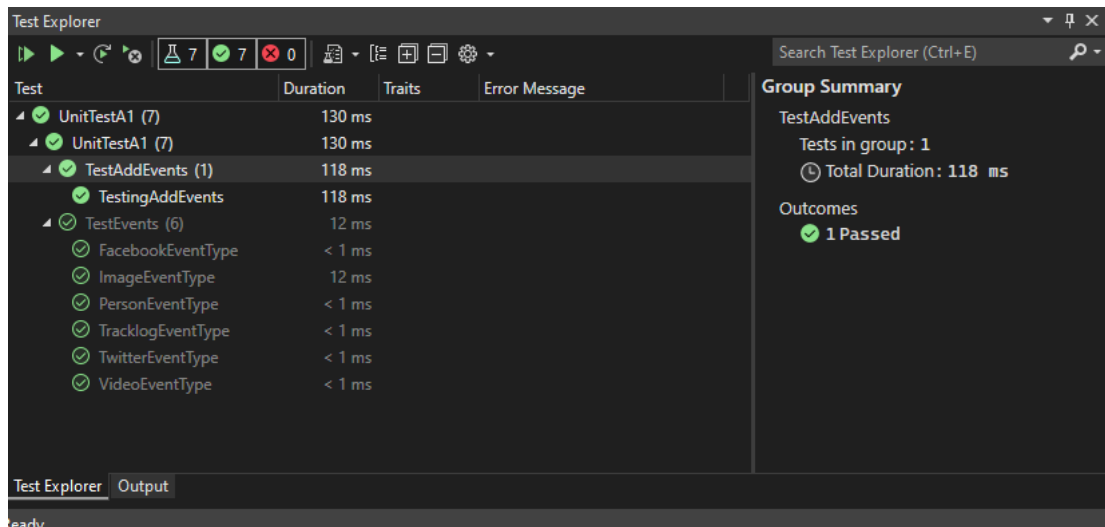
- In TestEvents.cs, it tests if it is valid events.

- In TestAddEvents.cs, if the Twitter 'text' is 'test', it will not be successful
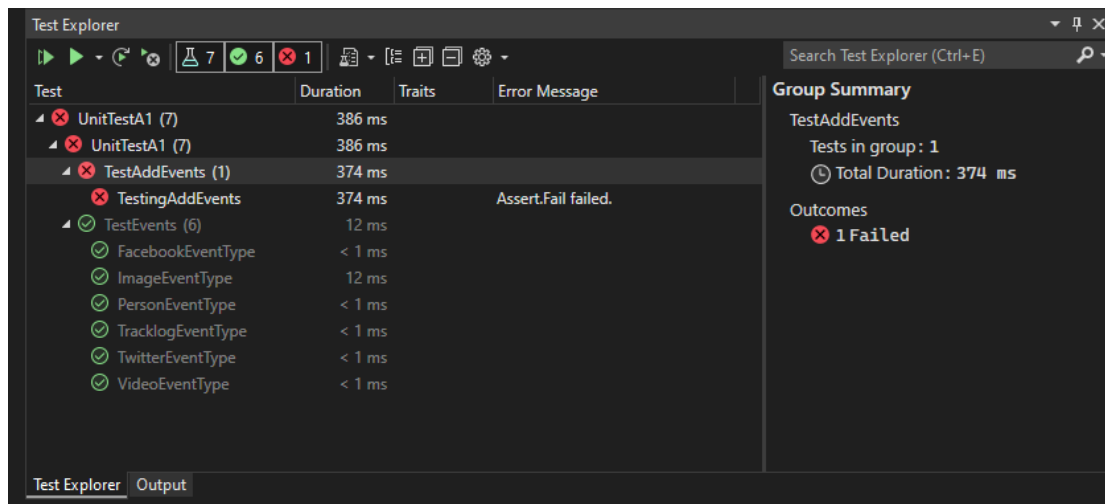
Third Party Code Listing

Gmap – Used for Google Maps in FormMain.cs

WMPLib – Used for Windows Media Player on FormVideo.cs

Source Code Listing

EventForms folder:

- FacebookForm.cs (Design)

```csharp
namespace Assignment1
{
    partial class FacebookForm
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
```

```csharp
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.label1 = new System.Windows.Forms.Label();
            this.messageBox = new System.Windows.Forms.RichTextBox();
            this.dateTimePicker1 = new
System.Windows.Forms.DateTimePicker();
            this.saveButton = new System.Windows.Forms.Button();
            this.SuspendLayout();
            //
            // label1
            //
            this.label1.AutoSize = true;
            this.label1.Font = new System.Drawing.Font("Microsoft Sans
Serif", 20.25F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label1.Location = new System.Drawing.Point(122, 9);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(142, 31);
            this.label1.TabIndex = 0;
            this.label1.Text = "Facebook";
            //
            // messageBox
            //
            this.messageBox.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.messageBox.Location = new System.Drawing.Point(11,
43);
            this.messageBox.Name = "messageBox";
            this.messageBox.Size = new System.Drawing.Size(383, 174);
            this.messageBox.TabIndex = 1;
            this.messageBox.Text = "";
            //
            // dateTimePicker1
            //
            this.dateTimePicker1.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.dateTimePicker1.Location = new
System.Drawing.Point(11, 223);
            this.dateTimePicker1.Name = "dateTimePicker1";
            this.dateTimePicker1.Size = new System.Drawing.Size(383,
31);
            this.dateTimePicker1.TabIndex = 2;
            //
```

```csharp
            // saveButton
            //
            this.saveButton.Cursor = System.Windows.Forms.Cursors.Hand;
            this.saveButton.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.saveButton.Location = new System.Drawing.Point(128,
274);
            this.saveButton.Name = "saveButton";
            this.saveButton.Size = new System.Drawing.Size(147, 39);
            this.saveButton.TabIndex = 3;
            this.saveButton.Text = "Save";
            this.saveButton.UseVisualStyleBackColor = true;
            this.saveButton.Click += new
System.EventHandler(this.saveButton_Click);
            //
            // FacebookForm
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveCaption;
            this.ClientSize = new System.Drawing.Size(406, 325);
            this.Controls.Add(this.saveButton);
            this.Controls.Add(this.dateTimePicker1);
            this.Controls.Add(this.messageBox);
            this.Controls.Add(this.label1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.FixedSingle;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "FacebookForm";
            this.Text = "FormFacebookpost";
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.RichTextBox messageBox;
        private System.Windows.Forms.DateTimePicker dateTimePicker1;
        private System.Windows.Forms.Button saveButton;
    }
}
```

- <u>FacebookForm.cs (Code)</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can add facebook post into the map.

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
```

```csharp
using System.Windows.Forms;

namespace Assignment1
{
    public partial class FacebookForm : Form
    {
        private Coord location;
        private bool edit;
        private string eventID;

        FacebookForm()
        {
            InitializeComponent();

            dateTimePicker1.Format = DateTimePickerFormat.Custom;
            dateTimePicker1.CustomFormat = "dd/MM/yyyy hh:mm";
            dateTimePicker1.ShowUpDown = true;
            messageBox.SelectionFont = new Font("Verdana", 12,
FontStyle.Regular);
            edit = false;
        }

        public FacebookForm(EventFacebook ev) : this()
        {
            messageBox.Text = ev.Text;
            dateTimePicker1.Value = ev.StartTime;
            edit = true;
            eventID = ev.EventID;
            location = ev.Location;
        }

        public FacebookForm(Coord loc) : this()
        {
            location = loc;
        }

        private void saveButton_Click(object sender, EventArgs e)
        {
            var eventObj = new EventFacebook();
            eventObj.Type = eventTypes.facebook.GetString();
            eventObj.Text = messageBox.Text;
            eventObj.Location = location;
            eventObj.StartTime = dateTimePicker1.Value;
            eventObj.EndTime = dateTimePicker1.Value;

            if (edit) {
                EventDB.SetEvent(eventObj, eventID);
            }
            else
            {
                EventDB.AddEvent(eventObj);
                MapController.AddMarker(location.X, location.Y,
eventObj.Icon);
            }

            this.Close();
        }
    }
}
```

- <u>ImageForm.cs (Design)</u>

```csharp
namespace Assignment1
{
    partial class ImageForm
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.saveButton = new System.Windows.Forms.Button();
            this.dateTimePicker1 = new
System.Windows.Forms.DateTimePicker();
            this.label1 = new System.Windows.Forms.Label();
            this.imageShowcase = new System.Windows.Forms.PictureBox();

((System.ComponentModel.ISupportInitialize)(this.imageShowcase)).BeginI
nit();
            this.SuspendLayout();
            //
            // saveButton
            //
            this.saveButton.Cursor = System.Windows.Forms.Cursors.Hand;
            this.saveButton.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.saveButton.Location = new System.Drawing.Point(161,
367);
            this.saveButton.Name = "saveButton";
            this.saveButton.Size = new System.Drawing.Size(147, 39);
            this.saveButton.TabIndex = 11;
            this.saveButton.Text = "Save";
            this.saveButton.UseVisualStyleBackColor = true;
            this.saveButton.Click += new
System.EventHandler(this.saveButton_Click);
            //
            // dateTimePicker1
            //
            this.dateTimePicker1.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.dateTimePicker1.Location = new
System.Drawing.Point(47, 324);
            this.dateTimePicker1.Name = "dateTimePicker1";
```

```csharp
            this.dateTimePicker1.Size = new System.Drawing.Size(383,
31);
            this.dateTimePicker1.TabIndex = 10;
            //
            // label1
            //
            this.label1.AutoSize = true;
            this.label1.Font = new System.Drawing.Font("Microsoft Sans
Serif", 20.25F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label1.Location = new System.Drawing.Point(193, 9);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(94, 31);
            this.label1.TabIndex = 8;
            this.label1.Text = "Image";
            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            //
            // imageShowcase
            //
            this.imageShowcase.BackColor =
System.Drawing.Color.FromArgb(((int)(((byte)(224)))),
((int)(((byte)(224)))), ((int)(((byte)(224)))));
            this.imageShowcase.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.imageShowcase.Location = new System.Drawing.Point(12,
49);
            this.imageShowcase.Name = "imageShowcase";
            this.imageShowcase.Size = new System.Drawing.Size(445,
264);
            this.imageShowcase.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.imageShowcase.TabIndex = 13;
            this.imageShowcase.TabStop = false;
            this.imageShowcase.Click += new
System.EventHandler(this.imageShowcase_Click);
            //
            // ImageForm
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveCaption;
            this.ClientSize = new System.Drawing.Size(469, 418);
            this.Controls.Add(this.imageShowcase);
            this.Controls.Add(this.saveButton);
            this.Controls.Add(this.dateTimePicker1);
            this.Controls.Add(this.label1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.FixedSingle;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "ImageForm";
            this.Text = "FormImage";

((System.ComponentModel.ISupportInitialize)(this.imageShowcase)).EndIni
t();
            this.ResumeLayout(false);
            this.PerformLayout();

        }
```

```csharp
                #endregion

        private System.Windows.Forms.Button saveButton;
        private System.Windows.Forms.DateTimePicker dateTimePicker1;
        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.PictureBox imageShowcase;
    }
}
```

- <u>ImageForm.cs (Functions)</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can add pictures into the map.

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Assignment1
{
    public partial class ImageForm : Form
    {
        private string eventID;
        private Coord location;
        private string fileName;
        private bool edit;

        public ImageForm()
        {
            InitializeComponent();

            dateTimePicker1.Format = DateTimePickerFormat.Custom;
            dateTimePicker1.CustomFormat = "dd/MM/yyyy hh:mm";
            dateTimePicker1.ShowUpDown = true;
            fileName = null;
            imageShowcase.Image = Properties.Resources.imageDefault;
            edit = false;
        }

        public ImageForm(EventImage ev) : this()
        {
            imageShowcase.Image = new Bitmap(ev.Filepath);
            dateTimePicker1.Value = ev.StartTime;
            edit = true;
            eventID = ev.EventID;
            location = ev.Location;
        }

        public ImageForm(Coord loc) : this()
        {
            location = loc;
        }

        private void saveButton_Click(object sender, EventArgs e)
        {
            if (fileName != null)
            {
```

```csharp
                var eventObj = new EventImage();
                eventObj.Type = eventTypes.image.GetString();
                eventObj.Location = location;
                eventObj.StartTime = dateTimePicker1.Value;
                eventObj.EndTime = dateTimePicker1.Value;
                eventObj.Filepath = fileName;

                if (edit)
                {
                    EventDB.SetEvent(eventObj, eventID);
                }
                else
                {
                    EventDB.AddEvent(eventObj);
                    MapController.AddMarker(location.X, location.Y,
eventObj.Icon);
                }

                this.Close();
            }
        }

        private void imageShowcase_Click(object sender, EventArgs e)
        {
            // Source code: https://www.c-
sharpcorner.com/UploadFile/mirfan00/uploaddisplay-image-in-picture-box-
using-C-Sharp/
            OpenFileDialog open = new OpenFileDialog();          //
Open file explorer to select a file
            open.Filter = "Image Files(*.jpg; *.jpeg; *.gif;
*.png)|*.jpg; *.jpeg; *.gif; *.png;";
            if (open.ShowDialog() == DialogResult.OK)            //
If loading file is successfull
            {
                imageShowcase.Image = new Bitmap(open.FileName);    //
Set video player url to file name of opened file
                fileName = open.FileName;
            }
        }
    }
}
```

- <u>PersonForm.cs (Design)</u>

```csharp
namespace Assignment1
{
    partial class PersonForm
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }
```

```csharp
        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.imageShowcase = new System.Windows.Forms.PictureBox();
            this.saveButton = new System.Windows.Forms.Button();
            this.dateTimePicker1 = new
System.Windows.Forms.DateTimePicker();
            this.label1 = new System.Windows.Forms.Label();
            this.personCombobox = new System.Windows.Forms.ComboBox();
            this.dateTimePicker2 = new
System.Windows.Forms.DateTimePicker();
            this.label2 = new System.Windows.Forms.Label();
            this.label3 = new System.Windows.Forms.Label();
            this.relationLabel = new System.Windows.Forms.Label();
            this.detailsTextbox = new
System.Windows.Forms.RichTextBox();
            this.label5 = new System.Windows.Forms.Label();

((System.ComponentModel.ISupportInitialize)(this.imageShowcase)).BeginI
nit();
            this.SuspendLayout();
            //
            // imageShowcase
            //
            this.imageShowcase.Location = new System.Drawing.Point(12,
106);
            this.imageShowcase.Name = "imageShowcase";
            this.imageShowcase.Size = new System.Drawing.Size(445,
194);
            this.imageShowcase.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.imageShowcase.TabIndex = 18;
            this.imageShowcase.TabStop = false;
            //
            // saveButton
            //
            this.saveButton.Cursor = System.Windows.Forms.Cursors.Hand;
            this.saveButton.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.saveButton.Location = new System.Drawing.Point(170,
614);
            this.saveButton.Name = "saveButton";
            this.saveButton.Size = new System.Drawing.Size(147, 39);
            this.saveButton.TabIndex = 16;
            this.saveButton.Text = "Save";
            this.saveButton.UseVisualStyleBackColor = true;
            this.saveButton.Click += new
System.EventHandler(this.saveButton_Click);
            //
            // dateTimePicker1
            //
            this.dateTimePicker1.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
```

```csharp
            this.dateTimePicker1.Location = new
System.Drawing.Point(46, 504);
            this.dateTimePicker1.Name = "dateTimePicker1";
            this.dateTimePicker1.Size = new System.Drawing.Size(383,
31);
            this.dateTimePicker1.TabIndex = 15;
            //
            // label1
            //
            this.label1.AutoSize = true;
            this.label1.Font = new System.Drawing.Font("Microsoft Sans
Serif", 20.25F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label1.Location = new System.Drawing.Point(193, 11);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(106, 31);
            this.label1.TabIndex = 14;
            this.label1.Text = "Person";
            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            //
            // personCombobox
            //
            this.personCombobox.Font = new
System.Drawing.Font("Microsoft Sans Serif", 14.25F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.personCombobox.FormattingEnabled = true;
            this.personCombobox.Location = new System.Drawing.Point(12,
49);
            this.personCombobox.Name = "personCombobox";
            this.personCombobox.Size = new System.Drawing.Size(445,
32);
            this.personCombobox.TabIndex = 19;
            this.personCombobox.SelectedIndexChanged += new
System.EventHandler(this.personCombobox_SelectedIndexChanged);
            //
            // dateTimePicker2
            //
            this.dateTimePicker2.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.dateTimePicker2.Location = new
System.Drawing.Point(46, 569);
            this.dateTimePicker2.Name = "dateTimePicker2";
            this.dateTimePicker2.Size = new System.Drawing.Size(383,
31);
            this.dateTimePicker2.TabIndex = 20;
            //
            // label2
            //
            this.label2.AutoSize = true;
            this.label2.Font = new System.Drawing.Font("Calibri",
14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label2.Location = new System.Drawing.Point(46, 483);
            this.label2.Name = "label2";
            this.label2.Size = new System.Drawing.Size(86, 23);
            this.label2.TabIndex = 21;
            this.label2.Text = "Start time";
            //
            // label3
```

```csharp
            // 
            this.label3.AutoSize = true;
            this.label3.Font = new System.Drawing.Font("Calibri",
14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label3.Location = new System.Drawing.Point(46, 547);
            this.label3.Name = "label3";
            this.label3.Size = new System.Drawing.Size(78, 23);
            this.label3.TabIndex = 22;
            this.label3.Text = "End time";
            // 
            // relationLabel
            // 
            this.relationLabel.AutoSize = true;
            this.relationLabel.Font = new
System.Drawing.Font("Calibri", 12F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.relationLabel.Location = new System.Drawing.Point(12,
84);
            this.relationLabel.Name = "relationLabel";
            this.relationLabel.Size = new System.Drawing.Size(93, 19);
            this.relationLabel.TabIndex = 23;
            this.relationLabel.Text = "Relationship";
            // 
            // detailsTextbox
            // 
            this.detailsTextbox.Font = new
System.Drawing.Font("Microsoft Sans Serif", 14.25F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.detailsTextbox.Location = new System.Drawing.Point(12,
335);
            this.detailsTextbox.Name = "detailsTextbox";
            this.detailsTextbox.Size = new System.Drawing.Size(445,
145);
            this.detailsTextbox.TabIndex = 24;
            this.detailsTextbox.Text = "";
            // 
            // label5
            // 
            this.label5.AutoSize = true;
            this.label5.Font = new System.Drawing.Font("Calibri", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.label5.Location = new System.Drawing.Point(12, 313);
            this.label5.Name = "label5";
            this.label5.Size = new System.Drawing.Size(55, 19);
            this.label5.TabIndex = 25;
            this.label5.Text = "Details";
            // 
            // PersonForm
            // 
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveCaption;
            this.ClientSize = new System.Drawing.Size(469, 665);
            this.Controls.Add(this.label5);
            this.Controls.Add(this.detailsTextbox);
            this.Controls.Add(this.relationLabel);
            this.Controls.Add(this.dateTimePicker2);
            this.Controls.Add(this.personCombobox);
```

```csharp
            this.Controls.Add(this.imageShowcase);
            this.Controls.Add(this.saveButton);
            this.Controls.Add(this.dateTimePicker1);
            this.Controls.Add(this.label1);
            this.Controls.Add(this.label2);
            this.Controls.Add(this.label3);
            this.Name = "PersonForm";
            this.Text = "FormPerson";

((System.ComponentModel.ISupportInitialize)(this.imageShowcase)).EndIni
t();
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.PictureBox imageShowcase;
        private System.Windows.Forms.Button saveButton;
        private System.Windows.Forms.DateTimePicker dateTimePicker1;
        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.ComboBox personCombobox;
        private System.Windows.Forms.DateTimePicker dateTimePicker2;
        private System.Windows.Forms.Label label2;
        private System.Windows.Forms.Label label3;
        private System.Windows.Forms.Label relationLabel;
        private System.Windows.Forms.RichTextBox detailsTextbox;
        private System.Windows.Forms.Label label5;
    }
}
```

- <u>PersonForm.cs (Functions)</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can add person into the map. (Advanced features)

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Assignment1
{
    public partial class PersonForm : Form
    {
        private Coord location;
        private bool edit;
        private string eventID;

        public PersonForm()
        {
            InitializeComponent();

            personCombobox.DisplayMember = "Name";
            personCombobox.DataSource = PersonDB.GetPeople();
```

```csharp
            dateTimePicker1.Format = DateTimePickerFormat.Custom;
            dateTimePicker1.CustomFormat = "dd/MM/yyyy hh:mm";
            dateTimePicker1.ShowUpDown = true;

            dateTimePicker2.Format = DateTimePickerFormat.Custom;
            dateTimePicker2.CustomFormat = "dd/MM/yyyy hh:mm";
            dateTimePicker2.ShowUpDown = true;
            relationLabel.Text =
PersonDB.GetPeople()[personCombobox.SelectedIndex].Relation;

            edit = false;
        }

        public PersonForm(EventPerson ev) : this()
        {
            var imageUrl =
PersonDB.GetPeople()[personCombobox.SelectedIndex].ImageUrl;
            if (!string.IsNullOrEmpty(imageUrl))
            {
                imageShowcase.Image = new Bitmap(imageUrl);
            }
            dateTimePicker1.Value = ev.StartTime;
            dateTimePicker2.Value = ev.EndTime;
            personCombobox.SelectedItem = ev.person;
            relationLabel.Text = ev.person.Relation;
            detailsTextbox.Text = ev.Details;
            edit = true;
            eventID = ev.EventID;
            location = ev.Location;
        }

        public PersonForm(Coord loc) : this()
        {
            location = loc;
        }

        private void saveButton_Click(object sender, EventArgs e)
        {
            var eventObj = new EventPerson();
            eventObj.Type = eventTypes.person.GetString();
            eventObj.Location = location;
            eventObj.person = personCombobox.SelectedItem as Person;
            eventObj.StartTime = dateTimePicker1.Value;
            eventObj.EndTime = dateTimePicker2.Value;
            eventObj.Details = detailsTextbox.Text;

            if (edit)
            {
                EventDB.SetEvent(eventObj, eventID);
            }
            else
            {
                EventDB.AddEvent(eventObj);
                MapController.AddMarker(location.X, location.Y,
eventObj.Icon);
            }

            this.Close();
        }

        private void personCombobox_SelectedIndexChanged(object sender,
EventArgs e)
        {
```

```
            relationLabel.Text =
PersonDB.GetPeople()[personCombobox.SelectedIndex].Relation;
            var imageUrl =
PersonDB.GetPeople()[personCombobox.SelectedIndex].ImageUrl;
            if (!string.IsNullOrEmpty(imageUrl))
            {
                imageShowcase.Image = new Bitmap(imageUrl);
            }
        }
    }
}
```

- <u>TracklogForm.cs (Design)</u>

```
namespace Assignment1
{
    partial class TracklogForm
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support – do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.dateTimePicker2 = new
System.Windows.Forms.DateTimePicker();
            this.saveButton = new System.Windows.Forms.Button();
            this.dateTimePicker1 = new
System.Windows.Forms.DateTimePicker();
            this.label2 = new System.Windows.Forms.Label();
            this.label3 = new System.Windows.Forms.Label();
            this.label1 = new System.Windows.Forms.Label();
            this.label5 = new System.Windows.Forms.Label();
            this.openFileDialog1 = new
System.Windows.Forms.OpenFileDialog();
            this.browseFile = new System.Windows.Forms.Button();
            this.txtFile = new System.Windows.Forms.TextBox();
            this.SuspendLayout();
            //
            // dateTimePicker2
            //
```

```csharp
            this.dateTimePicker2.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.dateTimePicker2.Location = new
System.Drawing.Point(10, 330);
            this.dateTimePicker2.Name = "dateTimePicker2";
            this.dateTimePicker2.Size = new System.Drawing.Size(367,
31);
            this.dateTimePicker2.TabIndex = 25;
            //
            // saveButton
            //
            this.saveButton.Cursor = System.Windows.Forms.Cursors.Hand;
            this.saveButton.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.saveButton.Location = new System.Drawing.Point(138,
393);
            this.saveButton.Name = "saveButton";
            this.saveButton.Size = new System.Drawing.Size(147, 39);
            this.saveButton.TabIndex = 24;
            this.saveButton.Text = "Save";
            this.saveButton.UseVisualStyleBackColor = true;
            this.saveButton.Click += new
System.EventHandler(this.saveButton_Click);
            //
            // dateTimePicker1
            //
            this.dateTimePicker1.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.dateTimePicker1.Location = new
System.Drawing.Point(10, 265);
            this.dateTimePicker1.Name = "dateTimePicker1";
            this.dateTimePicker1.Size = new System.Drawing.Size(367,
31);
            this.dateTimePicker1.TabIndex = 23;
            //
            // label2
            //
            this.label2.AutoSize = true;
            this.label2.Font = new System.Drawing.Font("Calibri",
14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label2.Location = new System.Drawing.Point(10, 244);
            this.label2.Name = "label2";
            this.label2.Size = new System.Drawing.Size(86, 23);
            this.label2.TabIndex = 26;
            this.label2.Text = "Start time";
            //
            // label3
            //
            this.label3.AutoSize = true;
            this.label3.Font = new System.Drawing.Font("Calibri",
14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label3.Location = new System.Drawing.Point(10, 308);
            this.label3.Name = "label3";
            this.label3.Size = new System.Drawing.Size(78, 23);
            this.label3.TabIndex = 27;
            this.label3.Text = "End time";
```

```csharp
//
// label1
//
this.label1.AutoSize = true;
this.label1.Font = new System.Drawing.Font("Microsoft Sans
Serif", 20.25F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
this.label1.Location = new System.Drawing.Point(75, 31);
this.label1.Name = "label1";
this.label1.Size = new System.Drawing.Size(239, 31);
this.label1.TabIndex = 28;
this.label1.Text = "Tracklog Journey";
//
// label5
//
this.label5.AutoSize = true;
this.label5.Font = new System.Drawing.Font("Calibri", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
this.label5.Location = new System.Drawing.Point(14, 86);
this.label5.Name = "label5";
this.label5.Size = new System.Drawing.Size(110, 19);
this.label5.TabIndex = 30;
this.label5.Text = "File Path (.gpx)";
//
// openFileDialog1
//
this.openFileDialog1.FileName = "openFileDialog1";
//
// browseFile
//
this.browseFile.Font = new System.Drawing.Font("Calibri",
12F, System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
this.browseFile.Location = new System.Drawing.Point(14,
182);
this.browseFile.Name = "browseFile";
this.browseFile.Size = new System.Drawing.Size(199, 32);
this.browseFile.TabIndex = 31;
this.browseFile.Text = "Browse files";
this.browseFile.UseVisualStyleBackColor = true;
this.browseFile.Click += new
System.EventHandler(this.browseFile_Click);
//
// txtFile
//
this.txtFile.Font = new System.Drawing.Font("Calibri", 12F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
this.txtFile.Location = new System.Drawing.Point(14, 125);
this.txtFile.Name = "txtFile";
this.txtFile.Size = new System.Drawing.Size(199, 27);
this.txtFile.TabIndex = 32;
//
// TracklogForm
//
this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
this.BackColor = System.Drawing.SystemColors.ActiveCaption;
this.ClientSize = new System.Drawing.Size(499, 439);
this.Controls.Add(this.txtFile);
```

```
                this.Controls.Add(this.browseFile);
                this.Controls.Add(this.label5);
                this.Controls.Add(this.label1);
                this.Controls.Add(this.dateTimePicker2);
                this.Controls.Add(this.saveButton);
                this.Controls.Add(this.dateTimePicker1);
                this.Controls.Add(this.label2);
                this.Controls.Add(this.label3);
                this.Name = "TracklogForm";
                this.Text = "TracklogForm";
                this.ResumeLayout(false);
                this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.DateTimePicker dateTimePicker2;
        private System.Windows.Forms.Button saveButton;
        private System.Windows.Forms.DateTimePicker dateTimePicker1;
        private System.Windows.Forms.Label label2;
        private System.Windows.Forms.Label label3;
        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.Label label5;
        private System.Windows.Forms.OpenFileDialog openFileDialog1;
        private System.Windows.Forms.Button browseFile;
        private System.Windows.Forms.TextBox txtFile;
    }
}
```

- <u>TracklogForm.cs (Functions)</u>

```
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can add tracklog event into the map.

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.IO;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Assignment1
{
    public partial class TracklogForm : Form
    {
        private string eventID;
        private Coord location;
        private string fileName;
        private bool edit;

        public TracklogForm()
        {
            InitializeComponent();

            dateTimePicker1.Format = DateTimePickerFormat.Custom;
            dateTimePicker1.CustomFormat = "dd/MM/yyyy hh:mm";
```

```csharp
            dateTimePicker1.ShowUpDown = true;
            dateTimePicker2.Format = DateTimePickerFormat.Custom;
            dateTimePicker2.CustomFormat = "dd/MM/yyyy hh:mm";
            dateTimePicker2.ShowUpDown = true;
            fileName = null;
            edit = false;
        }

        public TracklogForm(EventTracklog ev) : this()
        {
            dateTimePicker1.Value = ev.StartTime;
            dateTimePicker2.Value = ev.EndTime;
            edit = true;
            eventID = ev.EventID;
            location = ev.Location;
        }

        public TracklogForm(Coord loc) : this()
        {
            location = loc;
        }

        private void saveButton_Click(object sender, EventArgs e)
        {
            if (fileName != null)
            {
                var eventObj = new EventTracklog();
                eventObj.Type = eventTypes.tracklog.GetString();
                eventObj.Location = location;
                eventObj.StartTime = dateTimePicker1.Value;
                eventObj.EndTime = dateTimePicker2.Value;
                eventObj.Filepath = fileName;
                var routeList =
MapController.GPXtoPointList(eventObj.Filepath);
                if (edit)
                {
                    EventDB.SetEvent(eventObj, eventID);
                }
                else
                {
                    EventDB.AddEvent(eventObj);
                    MapController.AddRoute(routeList);
                    MapController.AddMarker(location.X, location.Y,
eventObj.Icon);
                }

                this.Close();
            }
        }

        private void browseFile_Click(object sender, EventArgs e)
        {
            OpenFileDialog dialog = new OpenFileDialog();
            dialog.Filter = "Tracklog Files(*.gpx;)|*.gpx;";
            dialog.Multiselect = false;
// Allow or deny user to upload more than one file
            if (dialog.ShowDialog() == DialogResult.OK)
// If loading file is successfull
            {
                String path = dialog.FileName;
// Set tracklog file to file name of opened file
                using (StreamReader reader = new StreamReader(new
FileStream(path, FileMode.Open), new UTF8Encoding()))
```

```
                    {
                        txtFile.Text = "tracklogs/" + dialog.SafeFileName;
                        fileName = "tracklogs/" + dialog.SafeFileName;
                    }
                }
            }
        }
    }
}
```

- TweetForm.cs (Design)

```csharp
namespace Assignment1
{
    partial class TweetForm
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support – do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.saveButton = new System.Windows.Forms.Button();
            this.dateTimePicker1 = new
System.Windows.Forms.DateTimePicker();
            this.messageBox = new System.Windows.Forms.RichTextBox();
            this.label1 = new System.Windows.Forms.Label();
            this.SuspendLayout();
            //
            // saveButton
            //
            this.saveButton.Cursor = System.Windows.Forms.Cursors.Hand;
            this.saveButton.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.saveButton.Location = new System.Drawing.Point(129,
278);
            this.saveButton.Name = "saveButton";
            this.saveButton.Size = new System.Drawing.Size(147, 39);
            this.saveButton.TabIndex = 7;
            this.saveButton.Text = "Save";
            this.saveButton.UseVisualStyleBackColor = true;
            this.saveButton.Click += new
System.EventHandler(this.saveButton_Click);
            //
```

```csharp
            // dateTimePicker1
            //
            this.dateTimePicker1.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.dateTimePicker1.Location = new
System.Drawing.Point(12, 227);
            this.dateTimePicker1.Name = "dateTimePicker1";
            this.dateTimePicker1.Size = new System.Drawing.Size(383,
31);
            this.dateTimePicker1.TabIndex = 6;
            //
            // messageBox
            //
            this.messageBox.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.messageBox.Location = new System.Drawing.Point(12,
47);
            this.messageBox.Name = "messageBox";
            this.messageBox.Size = new System.Drawing.Size(383, 174);
            this.messageBox.TabIndex = 5;
            this.messageBox.Text = "";
            //
            // label1
            //
            this.label1.AutoSize = true;
            this.label1.Font = new System.Drawing.Font("Microsoft Sans
Serif", 20.25F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label1.Location = new System.Drawing.Point(153, 9);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(94, 31);
            this.label1.TabIndex = 4;
            this.label1.Text = "Tweet";
            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            //
            // TweetForm
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveCaption;
            this.ClientSize = new System.Drawing.Size(406, 325);
            this.Controls.Add(this.saveButton);
            this.Controls.Add(this.dateTimePicker1);
            this.Controls.Add(this.messageBox);
            this.Controls.Add(this.label1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.FixedSingle;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "TweetForm";
            this.Text = "FormTweet";
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion
```

```csharp
        private System.Windows.Forms.Button saveButton;
        private System.Windows.Forms.DateTimePicker dateTimePicker1;
        private System.Windows.Forms.RichTextBox messageBox;
        private System.Windows.Forms.Label label1;
    }
}
```

- <u>TweetForm.cs (Functions)</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can add their tweets into the map.

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Assignment1
{
    public partial class TweetForm : Form
    {
        private Coord location;
        private bool edit;
        private string eventID;

        public TweetForm()
        {
            InitializeComponent();

            dateTimePicker1.Format = DateTimePickerFormat.Custom;
            dateTimePicker1.CustomFormat = "dd/MM/yyyy hh:mm";
            dateTimePicker1.ShowUpDown = true;
            messageBox.SelectionFont = new Font("Verdana", 12,
FontStyle.Regular);
            edit = false;
        }

        public TweetForm(EventTweet ev) : this()
        {
            messageBox.Text = ev.Text;
            dateTimePicker1.Value = ev.StartTime;
            edit = true;
            eventID = ev.EventID;
            location = ev.Location;
        }

        public TweetForm(Coord loc) : this()
        {
            location = loc;
        }

        private void saveButton_Click(object sender, EventArgs e)
        {
            var eventObj = new EventTweet();
            eventObj.Type = eventTypes.tweet.GetString();
```

```
                eventObj.Text = messageBox.Text;
                eventObj.Location = location;
                eventObj.StartTime = dateTimePicker1.Value;
                eventObj.EndTime = dateTimePicker1.Value;

                if (edit)
                {
                    EventDB.SetEvent(eventObj, eventID);
                }
                else
                {
                    EventDB.AddEvent(eventObj);
                    MapController.AddMarker(location.X, location.Y,
eventObj.Icon);
                }

                this.Close();
            }
        }
}
```

- <u>VideoForm.cs (Design)</u>

```
namespace Assignment1
{
    partial class VideoForm
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// Required method for Designer support – do not modify
        /// the contents of this method with the code editor.
        private void InitializeComponent()
        {
            System.ComponentModel.ComponentResourceManager resources =
new System.ComponentModel.ComponentResourceManager(typeof(VideoForm));
            this.uploadButton = new System.Windows.Forms.Button();
            this.saveButton = new System.Windows.Forms.Button();
            this.dateTimePicker1 = new
System.Windows.Forms.DateTimePicker();
            this.label1 = new System.Windows.Forms.Label();
            this.videoPlayer = new AxWMPLib.AxWindowsMediaPlayer();

((System.ComponentModel.ISupportInitialize)(this.videoPlayer)).BeginIni
t();
            this.SuspendLayout();
            //
            // uploadButton
```

```csharp
            // 
            this.uploadButton.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.uploadButton.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.uploadButton.Location = new System.Drawing.Point(12,
369);
            this.uploadButton.Name = "uploadButton";
            this.uploadButton.Size = new System.Drawing.Size(147, 39);
            this.uploadButton.TabIndex = 17;
            this.uploadButton.Text = "Choose video";
            this.uploadButton.UseVisualStyleBackColor = true;
            this.uploadButton.Click += new
System.EventHandler(this.uploadButton_Click);
            // 
            // saveButton
            // 
            this.saveButton.Cursor = System.Windows.Forms.Cursors.Hand;
            this.saveButton.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.saveButton.Location = new System.Drawing.Point(310,
369);
            this.saveButton.Name = "saveButton";
            this.saveButton.Size = new System.Drawing.Size(147, 39);
            this.saveButton.TabIndex = 16;
            this.saveButton.Text = "Save";
            this.saveButton.UseVisualStyleBackColor = true;
            this.saveButton.Click += new
System.EventHandler(this.saveButton_Click);
            // 
            // dateTimePicker1
            // 
            this.dateTimePicker1.Font = new
System.Drawing.Font("Microsoft Sans Serif", 15.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.dateTimePicker1.Location = new
System.Drawing.Point(47, 326);
            this.dateTimePicker1.Name = "dateTimePicker1";
            this.dateTimePicker1.Size = new System.Drawing.Size(383,
31);
            this.dateTimePicker1.TabIndex = 15;
            // 
            // label1
            // 
            this.label1.AutoSize = true;
            this.label1.Font = new System.Drawing.Font("Microsoft Sans
Serif", 20.25F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label1.Location = new System.Drawing.Point(193, 11);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(88, 31);
            this.label1.TabIndex = 14;
            this.label1.Text = "Video";
            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            // 
            // videoPlayer
            // 
            this.videoPlayer.Enabled = true;
```

```csharp
            this.videoPlayer.Location = new System.Drawing.Point(13,
51);
            this.videoPlayer.Name = "videoPlayer";
            this.videoPlayer.OcxState =
((System.Windows.Forms.AxHost.State)(resources.GetObject("videoPlayer.O
cxState")));
            this.videoPlayer.Size = new System.Drawing.Size(445, 269);
            this.videoPlayer.TabIndex = 19;
            //
            // VideoForm
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveCaption;
            this.ClientSize = new System.Drawing.Size(469, 418);
            this.Controls.Add(this.videoPlayer);
            this.Controls.Add(this.uploadButton);
            this.Controls.Add(this.saveButton);
            this.Controls.Add(this.dateTimePicker1);
            this.Controls.Add(this.label1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.FixedSingle;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "VideoForm";
            this.Text = "FormVideo";
            this.FormClosed += new
System.Windows.Forms.FormClosedEventHandler(this.FormVideo_FormClosing)
;

((System.ComponentModel.ISupportInitialize)(this.videoPlayer)).EndInit(
);
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.Button uploadButton;
        private System.Windows.Forms.Button saveButton;
        private System.Windows.Forms.DateTimePicker dateTimePicker1;
        private System.Windows.Forms.Label label1;
        private AxWMPLib.AxWindowsMediaPlayer videoPlayer;
    }
}
```

- <u>VideoForm.cs (Functions)</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can add videos into the map.

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
```

```csharp
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Assignment1
{
    public partial class VideoForm : Form
    {
        private Coord location;
        private string fileName;
        private bool edit;
        private string eventID;

        public VideoForm()
        {
            InitializeComponent();
            dateTimePicker1.Format = DateTimePickerFormat.Custom;
            dateTimePicker1.CustomFormat = "dd/MM/yyyy hh:mm";
            dateTimePicker1.ShowUpDown = true;
            fileName = null;
        }

        public VideoForm(EventVideo ev) : this()
        {
            videoPlayer.URL = ev.Filepath;
            dateTimePicker1.Value = ev.StartTime;
            edit = true;
            eventID = ev.EventID;
            location = ev.Location;
        }

        public VideoForm(Coord loc) : this()
        {
            location = loc;
        }

        private void saveButton_Click(object sender, EventArgs e)
        {
            if (fileName != null)
            {
                var eventObj = new EventVideo();
                eventObj.Type = eventTypes.video.GetString();
                eventObj.Location = location;
                eventObj.StartTime = dateTimePicker1.Value;
                eventObj.EndTime = dateTimePicker1.Value;
                eventObj.Filepath = fileName;

                if (edit)
                {
                    EventDB.SetEvent(eventObj, eventID);
                }
                else
                {
                    EventDB.AddEvent(eventObj);
                    MapController.AddMarker(location.X, location.Y,
eventObj.Icon);
                }

                this.Close();
            }
        }

        private void uploadButton_Click(object sender, EventArgs e)
        {
```

```csharp
            // Source code: https://www.c-
sharpcorner.com/UploadFile/e628d9/playing-audio-and-video-files-using-
C-Sharp/
            OpenFileDialog open = new OpenFileDialog();
// Open file explorer to select a file
            open.Filter = "(mp3,wav,mp4)|*.mp3;*.wav;*.mp4|all
files|*.*";        // Determines which file types will be shown in the
file explorer
            if (open.ShowDialog() == DialogResult.OK)
// If loading file is successfull
            {
                videoPlayer.URL = open.FileName;
// Set video player url to file name of opened file
                fileName = open.FileName;
            }
        }

        private void FormVideo_FormClosing(object sender,
FormClosedEventArgs e)
        {
            videoPlayer.close();
        }
    }
}
```

Events folder:
- <u>Event.cs</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can retrieve and save XML elements.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using System.Drawing;

namespace Assignment1
{
    public abstract class Event
    {
        // Properties
        public string EventID { get; set; }
        public Coord Location { get; set; }
        public string EventName { get; set; }
        public DateTime StartTime { get; set; }
        public DateTime EndTime { get; set; }
        public Bitmap Icon { get; set; }
        public bool AddMarker { get; set; }
        public bool AddRoute { get; set; }

        protected int MarkerSize;

        public string Type { get; set; }

        // Methods
        public Event()
        {
            // Scale icon - 10% of original size
```

```csharp
            Icon = new Bitmap(Properties.Resources.unknown, new
Size(Properties.Resources.unknown.Width / 10,
Properties.Resources.unknown.Height / 10));
            Location = new Coord(0.0, 0.0);
            AddMarker = true;
            AddRoute = false;
            MarkerSize = 15;
        }

        // Load elements in XML file
        public virtual void LoadXElement(XNamespace ns, XElement
element)
        {
            double x = Convert.ToDouble(element.Descendants(ns +
"location").FirstOrDefault().Descendants(ns +
"long").FirstOrDefault().Value);
            double y = Convert.ToDouble(element.Descendants(ns +
"location").FirstOrDefault().Descendants(ns +
"lat").FirstOrDefault().Value);
            Location = new Coord(x, y);

            StartTime = DateTime.Parse(element.Descendants(ns + "start-
time").FirstOrDefault().Descendants(ns +
"datetimestamp").FirstOrDefault().Value);
            EndTime = DateTime.Parse(element.Descendants(ns + "end-
time").FirstOrDefault().Descendants(ns +
"datetimestamp").FirstOrDefault().Value);

            EventID = element.Descendants(ns +
"eventid").FirstOrDefault().Value;
        }

        // Save event to XML file based on elements
        public virtual XElement ToXML()
        {
            XElement element = new XElement("Event", new
XAttribute("type", Type),
                new XElement("eventid", EventID),
                new XElement("location",
                    new XElement("long", Location.X),
                    new XElement("lat", Location.Y)
                ),
                new XElement("start-time",
                    new XElement("datetimestamp",
StartTime.ToString("o"))
                ),
                new XElement("end-time",
                    new XElement("datetimestamp",
EndTime.ToString("o"))
                )
            );

            return element;
        }
    }
}
```

- <u>EventFacebook.cs</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
```

```csharp
// Purpose: Users can retrieve and save faceboook contents in XML
elements.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using System.Drawing;

namespace Assignment1
{
    public class EventFacebook : Event
    {
        public string Text { get; set; }

        public EventFacebook()
        {
            EventName = "Facebook";
            // Scale icon - 10% of original size
            Icon = new Bitmap(Properties.Resources.facebook, new
Size(Properties.Resources.facebook.Width / 10,
Properties.Resources.facebook.Height / 10));
        }

        public override void LoadXElement(XNamespace ns, XElement
element)
        {
            base.LoadXElement(ns, element);
            Text = element.Descendants(ns + "text").First().Value;
        }

        public override XElement ToXML()
        {
            var element = base.ToXML();
            element.Add(new XElement("text", Text));

            return element;
        }
    }
}
```

- EventImage.cs

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can retrieve and save image contents in XML elements.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using System.Drawing;

namespace Assignment1
{
    public class EventImage : Event
    {
        public string Text { get; set; }
```

```csharp
        public string Filepath { get; set; }

        public EventImage()
        {
            EventName = "Image";
            // Scale icon - 10% of original size
            Icon = new Bitmap(Properties.Resources.image, new
Size(Properties.Resources.image.Width / 10,
Properties.Resources.image.Height / 10));
        }

        public override void LoadXElement(XNamespace ns, XElement
element)
        {
            base.LoadXElement(ns, element);
            Filepath = element.Descendants(ns +
"filepath").First().Value;
        }

        public override XElement ToXML()
        {
            var element = base.ToXML();
            element.Add(new XElement("filepath", Filepath));

            return element;
        }
    }
}
```

- <u>EventPerson.cs</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can retrieve and save person details in XML elements.
(Advanced features)

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using System.Drawing;

namespace Assignment1
{
    public class EventPerson : Event
    {
        public Person person;

        public string Details { get; set; }

        public string Filepath { get; set; }

        public EventPerson()
        {
            EventName = "Person";
            // Scale icon - 10% of original size
            Icon = new Bitmap(Properties.Resources.person, new
Size(Properties.Resources.person.Width / 10,
Properties.Resources.person.Height / 10));
        }
```

```csharp
        public override void LoadXElement(XNamespace ns, XElement
element)
        {
            base.LoadXElement(ns, element);
            int personID = Convert.ToInt32(element.Descendants(ns +
"personid").First().Value);
            person = PersonDB.GetPersonById(personID);
            Details = element.Descendants(ns +
"details").First().Value;
        }

        public override XElement ToXML()
        {
            var element = base.ToXML();
            element.Add(new XElement("personid", person.PersonID));
            element.Add(new XElement("details", Details));

            return element;
        }
    }
}
```

- <u>EventTracklog.cs</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can retrieve and save tracklog contents in XML
elements.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using System.Drawing;

namespace Assignment1
{
    public class EventTracklog : Event
    {
        public string Filepath { get; set; }

        public EventTracklog()
        {
            EventName = "Track log";
            // Scale icon – 10% of original size
            Icon = new Bitmap(Properties.Resources.tracklog, new
Size(Properties.Resources.tracklog.Width / 10,
Properties.Resources.tracklog.Height / 10));
        }

        public override void LoadXElement(XNamespace ns, XElement
element)
        {
            base.LoadXElement(ns, element);
            Filepath = element.Descendants(ns +
"filepath").First().Value;
        }

        public override XElement ToXML()
```

```csharp
        {
            var element = base.ToXML();
            element.Add(new XElement("filepath", Filepath));

            return element;
        }
    }
}
```

- EventTweet.cs

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can retrieve and save twitter contents in XML
elements.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using System.Drawing;

namespace Assignment1
{
    public class EventTweet : Event
    {
        public string Text { get; set; }

        public EventTweet()
        {
            EventName = "Tweet";
            // Scale icon - 10% of original size
            Icon = new Bitmap(Properties.Resources.twitter, new
Size(Properties.Resources.twitter.Width / 10,
Properties.Resources.twitter.Height / 10));
        }

        public override void LoadXElement(XNamespace ns, XElement
element)
        {
            base.LoadXElement(ns, element);
            Text = element.Descendants(ns + "text").First().Value;
        }

        public override XElement ToXML()
        {
            var element = base.ToXML();
            element.Add(new XElement("text", Text));

            return element;
        }
    }
}
```

- EventVideo.cs

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Users can retrieve and save video contents in XML elements.

using System;
```

```csharp
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using System.Drawing;

namespace Assignment1
{
    public class EventVideo : Event
    {
        public string Filepath { get; set; }

        public EventVideo()
        {
            EventName = "Video";
            // Scale icon - 10% of original size
            Icon = new Bitmap(Properties.Resources.video, new
Size(Properties.Resources.video.Width / 10,
Properties.Resources.video.Height / 10));
        }

        public override void LoadXElement(XNamespace ns, XElement
element)
        {
            base.LoadXElement(ns, element);
            Filepath = element.Descendants(ns +
"filepath").First().Value;
        }

        public override XElement ToXML()
        {
            var element = base.ToXML();
            element.Add(new XElement("filepath", Filepath));

            return element;
        }
    }
}
```

Other files that are under the ICT365_A1_Andreas_Lau folder:
- addPersonForm.cs (Design)

```csharp
namespace Assignment1
{
    partial class addPersonForm
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }
```

```csharp
        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.label1 = new System.Windows.Forms.Label();
            this.personRelationship = new
System.Windows.Forms.RichTextBox();
            this.personName = new System.Windows.Forms.TextBox();
            this.label2 = new System.Windows.Forms.Label();
            this.label3 = new System.Windows.Forms.Label();
            this.addPersonButton = new System.Windows.Forms.Button();
            this.personPicturebox = new
System.Windows.Forms.PictureBox();
            this.personListbox = new System.Windows.Forms.ListBox();

((System.ComponentModel.ISupportInitialize)(this.personPicturebox)).Beg
inInit();
            this.SuspendLayout();
            //
            // label1
            //
            this.label1.AutoSize = true;
            this.label1.Font = new System.Drawing.Font("Microsoft Sans
Serif", 20.25F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label1.Location = new System.Drawing.Point(83, 9);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(186, 31);
            this.label1.TabIndex = 0;
            this.label1.Text = "Add a person";
            //
            // personRelationship
            //
            this.personRelationship.Font = new
System.Drawing.Font("Microsoft Sans Serif", 14.25F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.personRelationship.Location = new
System.Drawing.Point(12, 182);
            this.personRelationship.Name = "personRelationship";
            this.personRelationship.Size = new System.Drawing.Size(301,
33);
            this.personRelationship.TabIndex = 1;
            this.personRelationship.Text = "";
            //
            // personName
            //
            this.personName.Font = new System.Drawing.Font("Microsoft
Sans Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.personName.Location = new System.Drawing.Point(12,
93);
            this.personName.Name = "personName";
            this.personName.Size = new System.Drawing.Size(301, 29);
            this.personName.TabIndex = 0;
            //
            // label2
            //
            this.label2.AutoSize = true;
```

```
            this.label2.Font = new System.Drawing.Font("Microsoft Sans
Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label2.Location = new System.Drawing.Point(8, 66);
            this.label2.Name = "label2";
            this.label2.Size = new System.Drawing.Size(61, 24);
            this.label2.TabIndex = 4;
            this.label2.Text = "Name";
            //
            // label3
            //
            this.label3.AutoSize = true;
            this.label3.Font = new System.Drawing.Font("Microsoft Sans
Serif", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label3.Location = new System.Drawing.Point(8, 155);
            this.label3.Name = "label3";
            this.label3.Size = new System.Drawing.Size(113, 24);
            this.label3.TabIndex = 5;
            this.label3.Text = "Relationship";
            //
            // addPersonButton
            //
            this.addPersonButton.Font = new
System.Drawing.Font("Microsoft Sans Serif", 14.25F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.addPersonButton.Location = new
System.Drawing.Point(184, 274);
            this.addPersonButton.Name = "addPersonButton";
            this.addPersonButton.Size = new System.Drawing.Size(129,
34);
            this.addPersonButton.TabIndex = 2;
            this.addPersonButton.Text = "Add";
            this.addPersonButton.UseVisualStyleBackColor = true;
            this.addPersonButton.Click += new
System.EventHandler(this.addPersonButton_Click);
            //
            // personPicturebox
            //
            this.personPicturebox.BackColor =
System.Drawing.Color.FromArgb(((int)(((byte)(224)))),
((int)(((byte)(224)))), ((int)(((byte)(224)))));
            this.personPicturebox.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.personPicturebox.InitialImage = null;
            this.personPicturebox.Location = new
System.Drawing.Point(342, 45);
            this.personPicturebox.Name = "personPicturebox";
            this.personPicturebox.Size = new System.Drawing.Size(284,
263);
            this.personPicturebox.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.personPicturebox.TabIndex = 7;
            this.personPicturebox.TabStop = false;
            this.personPicturebox.Click += new
System.EventHandler(this.personPicturebox_Click);
            //
            // personListbox
            //
            this.personListbox.Font = new
System.Drawing.Font("Microsoft Sans Serif", 14.25F,
```

```
            System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.personListbox.FormattingEnabled = true;
            this.personListbox.ItemHeight = 24;
            this.personListbox.Location = new System.Drawing.Point(12,
324);
            this.personListbox.Name = "personListbox";
            this.personListbox.Size = new System.Drawing.Size(615,
148);
            this.personListbox.TabIndex = 3;
            this.personListbox.SelectedIndexChanged += new
System.EventHandler(this.personListbox_SelectedIndexChanged);
            //
            // addPersonForm
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveCaption;
            this.ClientSize = new System.Drawing.Size(639, 479);
            this.Controls.Add(this.personListbox);
            this.Controls.Add(this.personPicturebox);
            this.Controls.Add(this.addPersonButton);
            this.Controls.Add(this.label3);
            this.Controls.Add(this.label2);
            this.Controls.Add(this.personName);
            this.Controls.Add(this.personRelationship);
            this.Controls.Add(this.label1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.FixedSingle;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "addPersonForm";
            this.Text = "addPersonForm";

((System.ComponentModel.ISupportInitialize)(this.personPicturebox)).End
Init();
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.RichTextBox personRelationship;
        private System.Windows.Forms.TextBox personName;
        private System.Windows.Forms.Label label2;
        private System.Windows.Forms.Label label3;
        private System.Windows.Forms.Button addPersonButton;
        private System.Windows.Forms.PictureBox personPicturebox;
        private System.Windows.Forms.ListBox personListbox;
    }
}
```

- addPersonForm.cs (Functions)

```
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
```

```csharp
// Purpose: Users can add new person into a combobox whereby the
PersonForm is able to retrieve this person from its combobox. (Advanced
features)

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Assignment1
{
    public partial class addPersonForm : Form
    {
        private string fileName;

        public addPersonForm()
        {
            InitializeComponent();
            personPicturebox.Image = Properties.Resources.imageDefault;

            personListbox.DisplayMember = "Name";

            foreach(Person person in PersonDB.people)
            {
                personListbox.Items.Add(person);
            }
            fileName = "";
        }

        private void personPicturebox_Click(object sender, EventArgs e)
        {
            // Source code: https://www.c-
sharpcorner.com/UploadFile/mirfan00/uploaddisplay-image-in-picture-box-
using-C-Sharp/
            OpenFileDialog open = new OpenFileDialog();
            open.Filter = "Image Files(*.jpg; *.jpeg; *.gif;
*.png)|*.jpg; *.jpeg; *.gif; *.png;";
            if (open.ShowDialog() == DialogResult.OK)
            {
                personPicturebox.Image = new Bitmap(open.FileName);
                fileName = open.FileName;
            }
        }

        private void addPersonButton_Click(object sender, EventArgs e)
        {
            var name = personName.Text;
            if (!String.IsNullOrEmpty(name)) {
                var relation = personRelationship.Text;
                Person person = new Person(name, relation, fileName);
                PersonDB.AddPerson(person);
                personListbox.Items.Add(person);
            }
        }

        private void personListbox_SelectedIndexChanged(object sender,
EventArgs e)
        {
```

```csharp
            personName.Text =
PersonDB.people[personListbox.SelectedIndex].Name;
            personRelationship.Text =
PersonDB.people[personListbox.SelectedIndex].Relation;
            var imageUrl =
PersonDB.people[personListbox.SelectedIndex].ImageUrl;

            if (!string.IsNullOrEmpty(imageUrl))
            {
                personPicturebox.Image = new Bitmap(imageUrl);
            }
        }
    }
}
```

- EventDB.cs

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: The 'EventDB.cs' class is used to store, retrieve and add
person objects.
// The class is also used to save and load these persons to XML files

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using GMap.NET;
using GMap.NET.MapProviders;
using GMap.NET.WindowsForms;
using GMap.NET.WindowsForms.Markers;

namespace Assignment1
{
    // DESIGN PATTERN: Singleton
    public class EventDB
    {
        private static EventDB instance = null;
        public static Dictionary<string, Event> eventDictionary;
        private static int Count { get; set; }

        public static EventDB Instance
        {
            get
            {
                if (instance == null)
                {
                    instance = new EventDB();
                }
                return instance;
            }
        }

        private EventDB()
        {
            eventDictionary = new Dictionary<string, Event>();
            Count = 0;
        }

        public static void AddEvent(Event eventItem)
```

```csharp
        {
            eventItem.EventID = Count.ToString();
            eventDictionary.Add(eventItem.EventID, eventItem);
            Count++;
        }

        public static Event GetEvent(string eventID)
        {
            return eventDictionary[eventID];
        }

        public static void SetEvent(Event eventObj, string eventID)
        {
            eventDictionary[eventID] = eventObj;
        }

        public void LoadXml(string xmlFile)
        {
            XDocument doc =
XDocument.Load(AppDomain.CurrentDomain.BaseDirectory + xmlFile);
            XNamespace ns = "http://www.xyz.org/lifelogevents";

            foreach (XElement event_ in doc.Descendants(ns + "Event"))
{
                var eventObj = EventFactory.GetEvent(ns, event_);
                if (eventObj != null)
                {
                    AddEvent(eventObj);
                }
            }
        }

        public void SaveXml(string xmlFile)
        {
            XDocument xmlDocument = new XDocument(new
XDeclaration("1.0", "utf-8", "yes"));
            XNamespace myNs = "http://www.xyz.org/lifelogevents";
            XNamespace SoapNs = "http://www.w3.org/2001/12/soap-
envelope";

            XElement soap = new XElement(SoapNs + "Envelope", new
XAttribute(XNamespace.Xmlns + "SOAP-ENV", SoapNs.NamespaceName), new
XAttribute(SoapNs + "encodingStyle", "http://www.w3.org/2001/12/soap-
encoding"));
            XElement root = new XElement(SoapNs + "Body");
            root.Add(new XAttribute(XNamespace.Xmlns + "lle", myNs));
            foreach(var eventItem in eventDictionary.Values)
            {
                root.Add(eventItem.ToXML());
            }

            soap.Add(root);
            xmlDocument.Add(soap);

            foreach (XElement el in root.Descendants())
            {
                el.Name = myNs + el.Name.LocalName;
            }
            xmlDocument.Save(AppDomain.CurrentDomain.BaseDirectory +
xmlFile);
        }

        public Event GetEventFromPoint(double x, double y)
```

```
        {
            foreach (Event eventItem in eventDictionary.Values)
            {
                if (eventItem.Location.X == x && eventItem.Location.Y
== y)
                {
                    return eventItem;
                }
            }

            return null;
        }

        public List<Coord> GetPointList()
        {
            List<Coord> coordList = new List<Coord>();
            foreach(Event eventItem in eventDictionary.Values)
            {
                coordList.Add(eventItem.Location);
            }

            return coordList;
        }
    }
}
```

- <u>EventFactory.cs</u>

```
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Displaying event information based on the event type

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;

namespace Assignment1
{
    //DESIGN PATTERN: Factory
    static class EventFactory
    {
        public static Event GetEvent(XNamespace ns, XElement element)
        {
            string eventType = element.Attribute("type").Value;
            var eventObj = GetEventObj(eventType);
            if (eventObj != null)
            {
                eventObj.LoadXElement(ns, element);
            }

            return eventObj;
        }

        public static Event GetEvent(string eventType)
        {
            return GetEventObj(eventType);
        }

        private static Event GetEventObj(string eventType)
```

```csharp
        {
            System.Diagnostics.Debug.WriteLine(eventType);
            switch (eventType)
            {
                case "tweet":
                    var tweetObj = new EventTweet();
                    tweetObj.Type = eventTypes.tweet.GetString();
                    return tweetObj;

                case "facebook":
                    var facebookObj = new EventFacebook();
                    facebookObj.Type = eventTypes.facebook.GetString();
                    return facebookObj;

                case "image":
                    var imageObj = new EventImage();
                    imageObj.Type = eventTypes.image.GetString();
                    return imageObj;

                case "video":
                    var videoObj = new EventVideo();
                    videoObj.Type = eventTypes.video.GetString();
                    return videoObj;

                case "tracklog":
                    var tracklogObj = new EventTracklog();
                    tracklogObj.Type = eventTypes.tracklog.GetString();
                    tracklogObj.AddMarker = true;
                    tracklogObj.AddRoute = true;
                    return tracklogObj;

                case "person":
                    var personObj = new EventPerson();
                    personObj.Type = eventTypes.person.GetString();
                    return personObj;

                default:
                    return null;
            }
        }
    }
}
```

- <u>EventTypes.cs</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Event type

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Assignment1
{
    public enum eventTypes
    {
        tweet,
        facebook,
        image,
        video,
```

```
            tracklog,
            person
        }

    static class EventTypes
    {
        public static string GetString(this eventTypes eventType)
        {
            switch (eventType)
            {
                case eventTypes.tweet:
                    return "tweet";

                case eventTypes.facebook:
                    return "facebook";

                case eventTypes.image:
                    return "image";

                case eventTypes.video:
                    return "video";

                case eventTypes.tracklog:
                    return "tracklog";

                case eventTypes.person:
                    return "person";

                default:
                    return null;
            }
        }
    }
}
```

- <u>FactoryForm.cs</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Load each respective event forms when user selects each
respective event icons.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Assignment1
{
    //DESIGN PATTERN: Factory
    static class FactoryForm
    {
        public static void OpenForm(string eventType, Event eventItem)
        {
            switch (eventType)
            {
                case "tweet":
                    new TweetForm(eventItem as
EventTweet).ShowDialog();
                    break;
```

```
                    case "facebook":
                        new FacebookForm(eventItem as
EventFacebook).ShowDialog();
                        break;

                    case "image":
                        new ImageForm(eventItem as
EventImage).ShowDialog();
                        break;

                    case "video":
                        new VideoForm(eventItem as
EventVideo).ShowDialog();
                        break;

                    case "person":
                        new PersonForm(eventItem as
EventPerson).ShowDialog();
                        break;
                }
            }
        }
}
```

- FormEvent.cs (Design)

```
namespace Assignment1
{
    partial class FormEvent
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        private void InitializeComponent()
        {
            this.components = new System.ComponentModel.Container();
            this.facebookPicturebox = new
System.Windows.Forms.PictureBox();
            this.twitterPicturebox = new
System.Windows.Forms.PictureBox();
            this.personPicturebox = new
System.Windows.Forms.PictureBox();
            this.videoPicturebox = new
System.Windows.Forms.PictureBox();
            this.imagePicturebox = new
System.Windows.Forms.PictureBox();
```

```csharp
            this.eventTooltip = new
System.Windows.Forms.ToolTip(this.components);

((System.ComponentModel.ISupportInitialize)(this.facebookPicturebox)).B
eginInit();

((System.ComponentModel.ISupportInitialize)(this.twitterPicturebox)).Be
ginInit();

((System.ComponentModel.ISupportInitialize)(this.personPicturebox)).Beg
inInit();

((System.ComponentModel.ISupportInitialize)(this.videoPicturebox)).Begi
nInit();

((System.ComponentModel.ISupportInitialize)(this.imagePicturebox)).Begi
nInit();
            this.SuspendLayout();
            //
            // facebookPicturebox
            //
            this.facebookPicturebox.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.facebookPicturebox.Image =
global::Assignment1.Properties.Resources.facebook;
            this.facebookPicturebox.ImageLocation = "";
            this.facebookPicturebox.Location = new
System.Drawing.Point(0, 0);
            this.facebookPicturebox.Name = "facebookPicturebox";
            this.facebookPicturebox.Size = new System.Drawing.Size(100,
100);
            this.facebookPicturebox.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.facebookPicturebox.TabIndex = 0;
            this.facebookPicturebox.TabStop = false;
            this.eventTooltip.SetToolTip(this.facebookPicturebox,
"Facebook");
            this.facebookPicturebox.Click += new
System.EventHandler(this.facebookPicturebox_Click);
            //
            // twitterPicturebox
            //
            this.twitterPicturebox.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.twitterPicturebox.Image =
global::Assignment1.Properties.Resources.twitter;
            this.twitterPicturebox.ImageLocation = "";
            this.twitterPicturebox.Location = new
System.Drawing.Point(99, 0);
            this.twitterPicturebox.Name = "twitterPicturebox";
            this.twitterPicturebox.Size = new System.Drawing.Size(100,
100);
            this.twitterPicturebox.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.twitterPicturebox.TabIndex = 1;
            this.twitterPicturebox.TabStop = false;
            this.eventTooltip.SetToolTip(this.twitterPicturebox,
"Twitter");
            this.twitterPicturebox.Click += new
System.EventHandler(this.twitterPicturebox_Click);
            //
            // personPicturebox
            //
```

```csharp
            this.personPicturebox.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.personPicturebox.Image =
global::Assignment1.Properties.Resources.person;
            this.personPicturebox.ImageLocation = "";
            this.personPicturebox.Location = new
System.Drawing.Point(197, 0);
            this.personPicturebox.Name = "personPicturebox";
            this.personPicturebox.Size = new System.Drawing.Size(100,
100);
            this.personPicturebox.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.personPicturebox.TabIndex = 2;
            this.personPicturebox.TabStop = false;
            this.eventTooltip.SetToolTip(this.personPicturebox,
"Person");
            this.personPicturebox.Click += new
System.EventHandler(this.personPicturebox_Click);
            //
            // videoPicturebox
            //
            this.videoPicturebox.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.videoPicturebox.Image =
global::Assignment1.Properties.Resources.video;
            this.videoPicturebox.ImageLocation = "";
            this.videoPicturebox.Location = new
System.Drawing.Point(144, 100);
            this.videoPicturebox.Name = "videoPicturebox";
            this.videoPicturebox.Size = new System.Drawing.Size(100,
100);
            this.videoPicturebox.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.videoPicturebox.TabIndex = 4;
            this.videoPicturebox.TabStop = false;
            this.eventTooltip.SetToolTip(this.videoPicturebox,
"Video");
            this.videoPicturebox.Click += new
System.EventHandler(this.videoPicturebox_Click);
            //
            // imagePicturebox
            //
            this.imagePicturebox.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.imagePicturebox.Image =
global::Assignment1.Properties.Resources.image;
            this.imagePicturebox.ImageLocation = "";
            this.imagePicturebox.Location = new
System.Drawing.Point(38, 100);
            this.imagePicturebox.Name = "imagePicturebox";
            this.imagePicturebox.Size = new System.Drawing.Size(100,
100);
            this.imagePicturebox.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.imagePicturebox.TabIndex = 3;
            this.imagePicturebox.TabStop = false;
            this.eventTooltip.SetToolTip(this.imagePicturebox,
"Image");
            this.imagePicturebox.Click += new
System.EventHandler(this.imagePicturebox_Click);
            //
            // FormEvent
            //
```

```csharp
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveCaption;
            this.ClientSize = new System.Drawing.Size(297, 200);
            this.Controls.Add(this.videoPicturebox);
            this.Controls.Add(this.imagePicturebox);
            this.Controls.Add(this.personPicturebox);
            this.Controls.Add(this.twitterPicturebox);
            this.Controls.Add(this.facebookPicturebox);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.FixedSingle;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "FormEvent";
            this.Text = "eventForm";

((System.ComponentModel.ISupportInitialize)(this.facebookPicturebox)).E
ndInit();

((System.ComponentModel.ISupportInitialize)(this.twitterPicturebox)).En
dInit();

((System.ComponentModel.ISupportInitialize)(this.personPicturebox)).End
Init();

((System.ComponentModel.ISupportInitialize)(this.videoPicturebox)).EndI
nit();

((System.ComponentModel.ISupportInitialize)(this.imagePicturebox)).EndI
nit();
            this.ResumeLayout(false);

        }

        #endregion

        private System.Windows.Forms.PictureBox facebookPicturebox;
        private System.Windows.Forms.PictureBox twitterPicturebox;
        private System.Windows.Forms.PictureBox personPicturebox;
        private System.Windows.Forms.PictureBox videoPicturebox;
        private System.Windows.Forms.PictureBox imagePicturebox;
        private System.Windows.Forms.ToolTip eventTooltip;
    }
}
```

- FormEvent.cs (Functions)

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Form that allows the user to select events to add into the
map (FormMain).

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
```

```csharp
using System.Windows.Forms;

namespace Assignment1
{
    public partial class FormEvent : Form
    {
        private Coord location;

        public FormEvent(Coord loc)
        {
            InitializeComponent();

            location = loc;
        }

        private void facebookPicturebox_Click(object sender, EventArgs
e)
        {
            FacebookForm ev = new FacebookForm(location);
            ev.ShowDialog();
        }

        private void twitterPicturebox_Click(object sender, EventArgs
e)
        {
            TweetForm ev = new TweetForm(location);
            ev.ShowDialog();
        }

        private void imagePicturebox_Click(object sender, EventArgs e)
        {
            ImageForm ev = new ImageForm(location);
            ev.ShowDialog();
        }

        private void videoPicturebox_Click(object sender, EventArgs e)
        {
            VideoForm ev = new VideoForm(location);
            ev.ShowDialog();
        }

        private void personPicturebox_Click(object sender, EventArgs e)
        {
            PersonForm ev = new PersonForm(location);
            ev.ShowDialog();
        }
    }
}
```

- <u>FormMain.cs (Design)</u>

```csharp
namespace Assignment1
{
    partial class FormMain
    {
        /// Required designer variable.
        private System.ComponentModel.IContainer components = null;

        /// Clean up any resources being used.
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
```

```csharp
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        private void InitializeComponent()
        {
            System.ComponentModel.ComponentResourceManager resources =
new System.ComponentModel.ComponentResourceManager(typeof(FormMain));
            this.CoordLabel = new System.Windows.Forms.Label();
            this.mainMap = new GMap.NET.WindowsForms.GMapControl();
            this.splitContainer1 = new
System.Windows.Forms.SplitContainer();
            this.tracklogPicturebox = new
System.Windows.Forms.PictureBox();
            this.addPersonButton = new System.Windows.Forms.Button();

((System.ComponentModel.ISupportInitialize)(this.splitContainer1)).Begi
nInit();
            this.splitContainer1.Panel1.SuspendLayout();
            this.splitContainer1.Panel2.SuspendLayout();
            this.splitContainer1.SuspendLayout();

((System.ComponentModel.ISupportInitialize)(this.tracklogPicturebox)).B
eginInit();
            this.SuspendLayout();
            //
            // CoordLabel
            //
            this.CoordLabel.BackColor =
System.Drawing.SystemColors.ActiveCaption;
            this.CoordLabel.Font = new System.Drawing.Font("Verdana",
9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.CoordLabel.ForeColor = System.Drawing.Color.Black;
            this.CoordLabel.Location = new System.Drawing.Point(12, 9);
            this.CoordLabel.Name = "CoordLabel";
            this.CoordLabel.Size = new System.Drawing.Size(115, 22);
            this.CoordLabel.TabIndex = 1;
            this.CoordLabel.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            //
            // mainMap
            //
            this.mainMap.BackColor =
System.Drawing.SystemColors.ActiveCaption;
            this.mainMap.Bearing = 0F;
            this.mainMap.CanDragMap = true;
            this.mainMap.Dock = System.Windows.Forms.DockStyle.Fill;
            this.mainMap.EmptyTileColor = System.Drawing.Color.Navy;
            this.mainMap.GrayScaleMode = false;
            this.mainMap.HelperLineOption =
GMap.NET.WindowsForms.HelperLineOptions.DontShow;
            this.mainMap.LevelsKeepInMemory = 5;
            this.mainMap.Location = new System.Drawing.Point(0, 0);
            this.mainMap.MarkersEnabled = true;
```

```csharp
            this.mainMap.MaxZoom = 19;
            this.mainMap.MinZoom = 3;
            this.mainMap.MouseWheelZoomEnabled = true;
            this.mainMap.MouseWheelZoomType =
GMap.NET.MouseWheelZoomType.MousePositionWithoutCenter;
            this.mainMap.Name = "mainMap";
            this.mainMap.NegativeMode = false;
            this.mainMap.PolygonsEnabled = true;
            this.mainMap.RetryLoadTile = 0;
            this.mainMap.RoutesEnabled = true;
            this.mainMap.ScaleMode =
GMap.NET.WindowsForms.ScaleModes.Integer;
            this.mainMap.SelectedAreaFillColor =
System.Drawing.Color.FromArgb(((int)(((byte)(33)))),
((int)(((byte)(65)))), ((int)(((byte)(105)))), ((int)(((byte)(225)))));
            this.mainMap.ShowTileGridLines = false;
            this.mainMap.Size = new System.Drawing.Size(1264, 642);
            this.mainMap.TabIndex = 0;
            this.mainMap.Zoom = 7D;
            //
            // splitContainer1
            //
            this.splitContainer1.BackColor =
System.Drawing.Color.FromArgb(((int)(((byte)(64)))),
((int)(((byte)(64)))), ((int)(((byte)(64)))));
            this.splitContainer1.Dock =
System.Windows.Forms.DockStyle.Fill;
            this.splitContainer1.FixedPanel =
System.Windows.Forms.FixedPanel.Panel2;
            this.splitContainer1.Location = new System.Drawing.Point(0,
0);
            this.splitContainer1.Name = "splitContainer1";
            this.splitContainer1.Orientation =
System.Windows.Forms.Orientation.Horizontal;
            //
            // splitContainer1.Panel1
            //
            this.splitContainer1.Panel1.Controls.Add(this.CoordLabel);
            this.splitContainer1.Panel1.Controls.Add(this.mainMap);
            //
            // splitContainer1.Panel2
            //
            this.splitContainer1.Panel2.BackColor =
System.Drawing.SystemColors.ActiveCaption;

this.splitContainer1.Panel2.Controls.Add(this.tracklogPicturebox);

this.splitContainer1.Panel2.Controls.Add(this.addPersonButton);
            this.splitContainer1.Panel2.Cursor =
System.Windows.Forms.Cursors.Arrow;
            this.splitContainer1.Panel2.Font = new
System.Drawing.Font("Calibri", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.splitContainer1.Size = new System.Drawing.Size(1264,
681);
            this.splitContainer1.SplitterDistance = 642;
            this.splitContainer1.TabIndex = 2;
            //
            // tracklogPicturebox
            //
            this.tracklogPicturebox.Cursor =
System.Windows.Forms.Cursors.Hand;
```

```csharp
            this.tracklogPicturebox.Image =
global::Assignment1.Properties.Resources.tracklog;
            this.tracklogPicturebox.ImageLocation = "";
            this.tracklogPicturebox.Location = new
System.Drawing.Point(1028, 1);
            this.tracklogPicturebox.Name = "tracklogPicturebox";
            this.tracklogPicturebox.Size = new System.Drawing.Size(32,
34);
            this.tracklogPicturebox.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.tracklogPicturebox.TabIndex = 6;
            this.tracklogPicturebox.TabStop = false;
            this.tracklogPicturebox.Tag = "Add a route";
            this.tracklogPicturebox.Click += new
System.EventHandler(this.tracklogPicturebox_Click_1);
            //
            // addPersonButton
            //
            this.addPersonButton.Anchor =
((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles
.Bottom | System.Windows.Forms.AnchorStyles.Right)));
            this.addPersonButton.BackgroundImage =
((System.Drawing.Image)(resources.GetObject("addPersonButton.Background
Image")));
            this.addPersonButton.BackgroundImageLayout =
System.Windows.Forms.ImageLayout.Zoom;
            this.addPersonButton.Cursor =
System.Windows.Forms.Cursors.Hand;
            this.addPersonButton.FlatStyle =
System.Windows.Forms.FlatStyle.Flat;
            this.addPersonButton.ForeColor =
System.Drawing.Color.Black;
            this.addPersonButton.ImageAlign =
System.Drawing.ContentAlignment.MiddleLeft;
            this.addPersonButton.Location = new
System.Drawing.Point(1066, 4);
            this.addPersonButton.Name = "addPersonButton";
            this.addPersonButton.Size = new System.Drawing.Size(195,
28);
            this.addPersonButton.TabIndex = 1;
            this.addPersonButton.Text = "Add Person";
            this.addPersonButton.TextAlign =
System.Drawing.ContentAlignment.MiddleRight;
            this.addPersonButton.UseVisualStyleBackColor = true;
            this.addPersonButton.Click += new
System.EventHandler(this.addPersonButton_Click);
            //
            // FormMain
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F,
13F);
            this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.SystemColors.ActiveBorder;
            this.ClientSize = new System.Drawing.Size(1264, 681);
            this.Controls.Add(this.splitContainer1);
            this.Name = "FormMain";
            this.RightToLeft = System.Windows.Forms.RightToLeft.No;
            this.Text = "ICT365 Assignment 1";
            this.FormClosing += new
System.Windows.Forms.FormClosingEventHandler(this.mainForm_FormClosing)
;
            this.splitContainer1.Panel1.ResumeLayout(false);
```

```csharp
            this.splitContainer1.Panel2.ResumeLayout(false);

((System.ComponentModel.ISupportInitialize)(this.splitContainer1)).EndI
nit();
            this.splitContainer1.ResumeLayout(false);

((System.ComponentModel.ISupportInitialize)(this.tracklogPicturebox)).E
ndInit();
            this.ResumeLayout(false);

        }

        #endregion
        private System.Windows.Forms.Label CoordLabel;
        private GMap.NET.WindowsForms.GMapControl mainMap;
        private System.Windows.Forms.SplitContainer splitContainer1;
        private System.Windows.Forms.Button addPersonButton;
        private System.Windows.Forms.PictureBox tracklogPicturebox;
    }
}


-   FormMain.cs (Functions)

// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Main form where users can browse the events that are
occuring on the map. User can choose to add person and tracklog at the
bottom right of the form.
// User can add other events by left-clicking on the map and select
'Add Event'.

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;
using GMap.NET;
using GMap.NET.MapProviders;
using GMap.NET.WindowsForms;
using GMap.NET.WindowsForms.Markers;
using GMap.NET.WindowsForms.ToolTips;

namespace Assignment1
{
    public struct Coord
    {
        public Coord(double x, double y)
        {
            X = x;
            Y = y;
        }

        public double X { get; }
        public double Y { get; }
    }

    public partial class FormMain : Form
    {
```

```csharp
        public Coord clickLocation;
        public EventDB eventDatabase;
        public PersonDB personDatabase;
        public MapController mapControl;
        private Coord location;

        public FormMain()
        {
            InitializeComponent();

            addPersonButton.TabStop = false;
            addPersonButton.FlatAppearance.BorderSize = 0;

            clickLocation = new Coord(0, 0);

            // Load person xml data
            personDatabase = PersonDB.Instance;
            personDatabase.LoadXml(@"data/person.xml");

            // Load events xml data
            eventDatabase = EventDB.Instance;
            eventDatabase.LoadXml(@"data/lifelog-events.xml");

            mainMap.MapProvider = GMapProviders.GoogleMap;
            // Map position at Kaplan Singapore
            mainMap.Position = new PointLatLng(1.3022, 103.8496);
            mainMap.ShowCenter = false;
            mainMap.Zoom = 12;

            // Mainmap event handlers
            mainMap.OnMarkerClick += new
MarkerClick(mainMap_OnMarkerClick);
            mainMap.MouseClick += new MouseEventHandler(mainMap_Click);
            mainMap.MouseMove += new
MouseEventHandler(mainMap_MouseMove);

            mapControl = new MapController(mainMap);
            CreateMapOverlayItems();
        }

        public FormMain(Coord loc)
        {
            InitializeComponent();
            location = loc;
        }

        private void CreateMapOverlayItems()
        {
            foreach (Event eventItem in EventDB.eventDictionary.Values)
            {
                if (eventItem.AddMarker)
                {
                    MapController.AddMarker(eventItem.Location.X,
eventItem.Location.Y, eventItem.Icon);
                }

                if (eventItem.AddRoute)
                {
                    var trackLogItem = eventItem as EventTracklog;
                    var routeList =
MapController.GPXtoPointList(trackLogItem.Filepath);
                    MapController.AddRoute(routeList);
```

```csharp
                    MapController.AddMarker(eventItem.Location.X,
eventItem.Location.Y, eventItem.Icon);
                }
            }
        }

        private void mainMap_OnMarkerClick(GMapMarker item,
MouseEventArgs e)
        {
            double x = item.Position.Lng;
            double y = item.Position.Lat;
            var eventItem = eventDatabase.GetEventFromPoint(x, y);

            if (eventItem != null)
            {
                FactoryForm.OpenForm(eventItem.Type, eventItem);
            }
        }

        private void formPopup_Click(object sender,
ToolStripItemClickedEventArgs e)
        {
            FormEvent events = new FormEvent(clickLocation);
            events.ShowDialog();
        }

        private void mainMap_Click(object sender, MouseEventArgs e)
        {
            if (e.Button == MouseButtons.Left)
            {
                var formPopup = new ContextMenuStrip();
                formPopup.Items.Add("Add Event");
                formPopup.Show(this, new Point(e.X, e.Y));
                formPopup.ItemClicked += new
ToolStripItemClickedEventHandler(this.formPopup_Click);
                clickLocation = new
Coord(mainMap.FromLocalToLatLng(e.X, e.Y).Lng,
mainMap.FromLocalToLatLng(e.X, e.Y).Lat);
            }
        }

        private void mainMap_MouseMove(object sender, MouseEventArgs e)
        {
            CoordLabel.Text =
$"{Math.Round(mainMap.FromLocalToLatLng(e.X, e.Y).Lat, 2)},
{Math.Round(mainMap.FromLocalToLatLng(e.X, e.Y).Lng, 2)}";
        }

        private void addPersonButton_Click(object sender, EventArgs e)
        {
            addPersonForm personForm = new addPersonForm();
            personForm.ShowDialog();
        }
        private void mainForm_FormClosing(object sender,
FormClosingEventArgs e)
        {
            personDatabase.SaveXml(@"data/person.xml");
            eventDatabase.SaveXml(@"data/lifelog-events.xml");
        }
        private void tracklogPicturebox_Click_1(object sender,
EventArgs e)
        {
            TracklogForm ev = new TracklogForm(location);
```

```
                    ev.ShowDialog();
            }
        }
}


-    MapController.cs

// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Load and save events markers and icons with its specific
location coordinates that user selects.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using GMap.NET.MapProviders;
/*
 * Class is used to control map functionality mainly marker and route
overlays.
 */
using GMap.NET.WindowsForms;
using GMap.NET.WindowsForms.Markers;
using GMap.NET;
using GMap.NET.WindowsForms.ToolTips;
using System.Drawing;
using System.Xml.Linq;

namespace Assignment1
{
    public class MapController
    {
        public static GMapControl map;
        private static GMapOverlay markers;
        private static GMapOverlay routes;

        public MapController(GMapControl mainMap)
        {
            map = mainMap;

            routes = new GMapOverlay("routes");        // Create route
overlay
            markers = new GMapOverlay("markers");      // Create
marker overlay

            map.Overlays.Add(routes);                   // Add routes
to map overlays
            map.Overlays.Add(markers);                  // Add markers
to map overlays
        }

        // Add marker to map location
        public static void AddMarker(double x, double y, Bitmap icon)
        {
            GMarkerGoogle marker = new GMarkerGoogle(new PointLatLng(y,
x), icon);
            markers.Markers.Add(marker);
        }

        // Add route to map through point list
        public static void AddRoute(List<PointLatLng> pointList)
```

```csharp
        {
            GMapRoute route = new GMapRoute(pointList, "My Route");
            routes.Routes.Add(route);
        }

        // Retrieve point list from gpx file
        public static List<PointLatLng> GPXtoPointList(string
gpxFilePath)
        {
            XDocument xmlDocument =
XDocument.Load(AppDomain.CurrentDomain.BaseDirectory + gpxFilePath);
            XNamespace ns = xmlDocument.Root.GetDefaultNamespace();

            List<PointLatLng> pointList =
XDocument.Load(AppDomain.CurrentDomain.BaseDirectory +
gpxFilePath).Descendants(ns + "trkpt")
                .Select(x => new PointLatLng
                {
                    Lat = Convert.ToDouble(x.Attribute("lat").Value),
                    Lng = Convert.ToDouble(x.Attribute("lon").Value)
                }).ToList();

            return pointList;
        }
    }
}
```

- <u>Person.cs</u>

```csharp
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Stores person data

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Assignment1
{
    public class Person
    {
        public int PersonID { get; set; }
        public string Name { get; set; }
        public string ImageUrl { get; set; }
        public string Relation { get; set; }

        public Person()
        {
            Name = "";
            Relation = "";
            ImageUrl = "";
        }

        public Person(string name, string rel, string imgUrl)
        {
            Name = name;
            Relation = rel;
            ImageUrl = imgUrl;
        }
    }
```

```
}

-   PersonDB.cs

// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: The 'personDB.cs' class is used to store, retrieve and add
person objects.
// The class is also used to save and load these persons to XML files

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;

namespace Assignment1
{
    // DESIGN PATTERN: Singleton
    public class PersonDB
    {
        public static List<Person> people;
        private static int count;
        private static PersonDB instance = null;

        public static PersonDB Instance
        {
            get
            {
                if (instance == null)
                {
                    instance = new PersonDB();
                }
                return instance;
            }
        }

        private PersonDB()
        {
            people = new List<Person>();
            count = 0;
        }

        public static void AddPerson(Person person)
        {
            person.PersonID = count;
            people.Add(person);
            count++;
        }

        public static List<Person> GetPeople()
        {
            return people;
        }

        public void LoadXml(string xmlFile)
        {
            people =
XDocument.Load(AppDomain.CurrentDomain.BaseDirectory +
xmlFile).Root.Descendants("person")
                .Select(x => new Person
```

```
                    {
                        Name = x.Element("name").Value,
                        Relation = x.Element("relation").Value,
                        ImageUrl = x.Element("imageUrl").Value,
                        PersonID = Convert.ToInt32(x.Attribute("id").Value)
                    }).ToList();

            count = people.Count;
        }

        public void SaveXml(string xmlFile)
        {
            XDocument xmlDocument = new XDocument(
                new XDeclaration("1.0", "utf-8", "yes"),
                new XElement("people",
                    from person in people
                    select new XElement("person", new XAttribute("id",
person.PersonID),
                        new XElement("name", person.Name),
                        new XElement("relation", person.Relation),
                        new XElement("imageUrl", person.ImageUrl))
                )
            );

            xmlDocument.Save(AppDomain.CurrentDomain.BaseDirectory +
xmlFile);
        }

        public static Person GetPersonById(int personid)
        {
            foreach(Person person in people)
            {
                if (person.PersonID == personid)
                {
                    return person;
                }
            }

            return null;
        }
    }
}
```

- Program.cs

```
// Author: Andreas Lau, 34095187
// Date: 22/02/2022
// Purpose: Main program for application.

using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Assignment1
{
    static class Program
    {
        [STAThread]
        static void Main()
        {
            Application.EnableVisualStyles();
```

```csharp
                    Application.SetCompatibleTextRenderingDefault(false);
                    Application.Run(new FormMain());
                }
            }
        }
```

- <u>TestAddEvents.cs</u>

```csharp
using Assignment1;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using System;
using System.Xml.Linq;

namespace UnitTestA1
{
    [TestClass]
    public class TestAddEvents
    {
        // Testing Adding Event - Twitter example
        [TestMethod]
        public void TestingAddEvents()
        {
            XElement tempElement = new XElement("Event", new
XElement("eventid", 10),
                                                new XElement("text",
"hello"),
                                                new XElement("type",
"tweet"),
                                                new
XElement("Location", new XElement("lat", 0),

new XElement("long", 0)),
                                                new XElement("Start-
time", DateTime.Now.ToString()),
                                                new XElement("End-
time", DateTime.Now.ToString()));

            EventTweet tEvent = new EventTweet(tempElement);

            if (!tEvent.Text.Equals("test"))
                // Test passed
                Assert.IsNotNull(tempElement);
            else
                // Test failed
                Assert.Fail();
        }
    }
}
```

- <u>TestEvents.cs</u>
```csharp
// Author: Andreas Lau 34095187
// Date: 27/02/2022
// Purpose: Test Event Types

using Assignment1;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using System;

namespace UnitTestA1
{
```

```csharp
[TestClass]
public class TestEvents
{
    [TestMethod]
    public void FacebookEventType()
    {
        // Arrange
        var eventTypes = new eventTypes();

        // Act
        eventTypes = eventTypes.facebook;
        var result = eventTypes;

        // Assert
        Assert.IsNotNull(result);
    }

    [TestMethod]
    public void TwitterEventType()
    {
        // Arrange
        var eventTypes = new eventTypes();

        // Act
        eventTypes = eventTypes.tweet;
        var result = eventTypes;

        // Assert
        Assert.IsNotNull(result);
    }

    [TestMethod]
    public void ImageEventType()
    {
        // Arrange
        var eventTypes = new eventTypes();

        // Act
        eventTypes = eventTypes.image;
        var result = eventTypes;

        // Assert
        Assert.IsNotNull(result);
    }

    [TestMethod]
    public void VideoEventType()
    {
        // Arrange
        var eventTypes = new eventTypes();

        // Act
        eventTypes = eventTypes.video;
        var result = eventTypes;

        // Assert
        Assert.IsNotNull(result);
    }

    [TestMethod]
    public void TracklogEventType()
    {
        // Arrange
```

```csharp
            var eventTypes = new eventTypes();

            // Act
            eventTypes = eventTypes.tracklog;
            var result = eventTypes;

            // Assert
            Assert.IsNotNull(result);
        }

        [TestMethod]
        public void PersonEventType()
        {
            // Arrange
            var eventTypes = new eventTypes();

            // Act
            eventTypes = eventTypes.person;
            var result = eventTypes;

            // Assert
            Assert.IsNotNull(result);
        }
    }
}
```