

ICT365 Major Assignment Two

This assignment aims to provide a .NET solution to a specific simulation problem. To solve this problem, you need the knowledge gained from the later Topics of this Unit (and including the earlier Topics). You may also need to undertake independent research to find out some .NET framework classes required in your solution.

This assignment is worth 30% of the total unit assessment.

Learning Outcomes	Assessed in this Assignment
Demonstrate fluency in a contemporary programming language and software development framework.	<input checked="" type="checkbox"/>
Implement and document an object-oriented programming solution using object-oriented analysis and design techniques.	<input checked="" type="checkbox"/>
Evaluate and demonstrate the theory and concepts of contemporary/ industry standards programming and design in the software development life cycle.	<input checked="" type="checkbox"/>
Demonstrate awareness of industry standards of software development.	<input checked="" type="checkbox"/>
Critically appraise the use of various software development frameworks.	

Description of the Problem (same as Assignment One)

Geospatial-based Recommender System using Social Networks and Multimedia

Murdoch University is conducting research in Assistive Technologies for Dementia Sufferers and Carers, specifically to combat the group of symptoms present in the early stages dementia, and that affect mental cognitive tasks such as memory and reasoning and reduce Quality of Life. (Refer to the Appendix at the end of this document for definitions.)

The system is dependent on a person using lifelogging technology to input valuable personal information into the system, e.g. by uploading geotagged photos or status updates. The system can then use Artificial Intelligence (AI) to learn habits, cues, to support someone in

their daily activities. The GPS-enabled reminder system acts as a kind of “cognitive scaffold” supporting recall of important events, people, and so on in a persons’ environment.

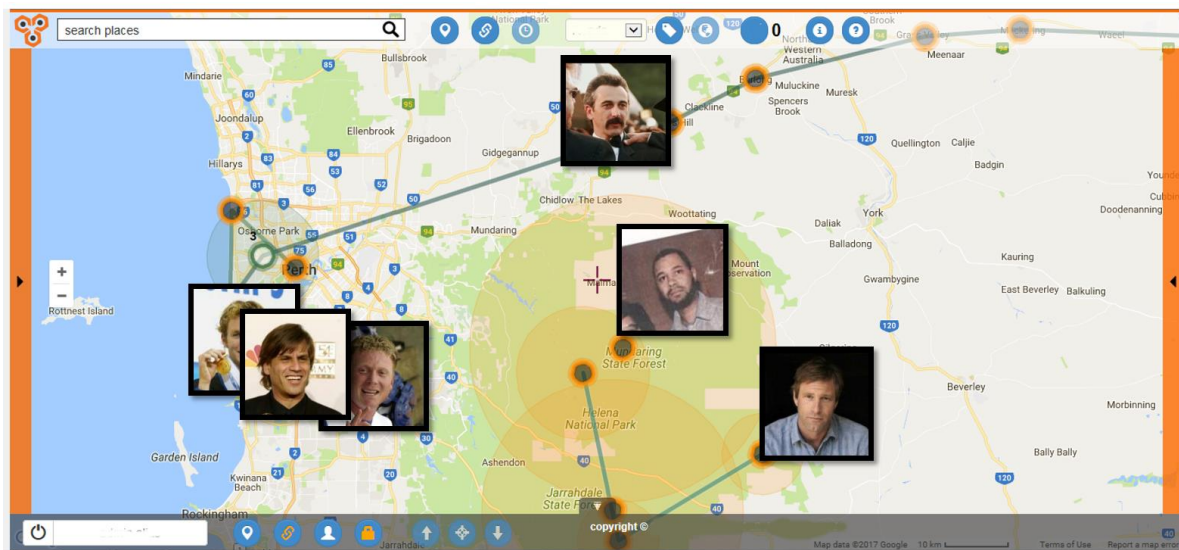


Figure 1. Example map with images of friends, family, associates displayed

The second stage of this assignment is related to a “cognitive safety net” whereby the system can push out messages to various people subscribed to help the individual. This will be carried out by social media, such as Facebook status updates or Tweets. Additionally the person uses these channels to “lifelog”, i.e. upload photos, and so on.

NOTE: While the domain of this assignment will no doubt be new to you, the key areas that are assessed in this assignment are the use of Libraries, Collections, Design Patterns, GUI coding, Refactoring, UML, Testing and Documentation and a critical understanding of the various platforms supported by .NET. The complete scenario for the assignment will be discussed in lectures and support provided in tutorials.

The Task

Previously in Major Assignment One you developed a WinForms-based C#.NET program.

In this assignment, Major Assignment Two, you can choose the platform upon which you develop your solution, from the following:

- WPF and XAML UI
- ASP.net
- Xamarin mobile cross-platform app

(Note: It does not matter which you choose, because later on you will have to justify and describe the others. What might impact on your choice is the version of Visual Studio you have access to. More recent versions support all three choices, but older versions may not.)

Your task is divided into two parts:

- **Implementation:** Choose one of the following to develop a new application: XAML or ASP.net or Xamarin mobile cross-platform application. Your system must have a set of prescribed features. All students are required to implement the basic features. The full marks for this part are 75% of the assignment.

This part will be assessed in terms of completeness in meeting the prescribed feature requirement, quality of your code, the appropriateness of your choice of visual controls, the ease-of-use and the look-and-feel of your graphical user interface, the robustness and reliability of your program, and the overall quality of your documentation which includes the adherence to Documentation and Submission Requirements.

- **Comparison and Reflection:** This part contains your reflection upon the choice of technology used. This part is worth 25% of the assignment.

You will compare and contrast the alternative technologies that could be used for the same purpose. For example, include in your answer: example code to illustrate the similarities and dissimilarities between the technologies; and, how much effort it would take to convert between one and another of these technologies.

Implementation – 75%

The implementation is worth 75%. Your system must be developed in .NET using C#. It must contain the following functionality:

- *Task 01*

A form for potential collaborators to enter their level of support. The system must record the choices of these different collaborators.

- *Task 02*

Ability to display images and text in the UI.

- *Task 03*

Interaction with social media streams. The choice is up to you, but we require at least 1x streams, examples being Facebook, Twitter, Instagram etc. Please use your favourite social media platform, but if you are in any doubt whether it is appropriate please email me.

- *Task 04*

Unit tests for the most important parts of your code.

Implementation of appropriate **design patterns and principles** into your solution. For example, consider which patterns would: allow the system to be flexible enough to easily add new Events; make sense in a GUI event-driven programme.

Comparison and Reflection – 25%

This part is worth 25%.

You will compare and contrast the alternative technologies that could be used for the same purpose. For example, include in your answer: example code to illustrate the similarities and dissimilarities between the technologies; and, how much effort it would take to convert between one and another of these technologies.

You will also provide description of any **refactoring** that you have made during your development.

Documentation and Submission Requirements

Your submission must be in the form of a single ZIP archive file consisting of 1) one Microsoft Word file named "Assignment2.doc" containing a critical analysis and documentation of your solution, and 2) the Visual C# files for your solution to the problem. Your assignment will not be marked unless both are included in the ZIP archive file.

You must submit the ZIP file using ICT365 Unit LMS on or before the deadline.

A Microsoft Word document named "Assignment2.doc" containing the documentation of your solution to the problem. It must contain the following documents and these documents must be layout in the following order:

- i. The "ICT365 Major Assignment Check List" is available from the Assignment section. All students must complete this form.
- ii. If you have been granted extension, include the email from your Unit Coordinator.
- iii. The detailed description of the problem you aim to solve. This includes a detailed specification of the advanced features you have implemented. Please only list features that are a fully working.
- iv. Self-diagnosis, evaluation and declaration. You must provide a full and detailed declaration of the following: the features that are fully implemented and fully working, the features that are not fully working, and the features that are not implemented. Where possible, you should also identify the possible causes of the problems for those features that are not fully working. **You will not receive a pass mark unless the above declaration is made.**
- v. A brief description of your solution to the problem. The length of your description should be around one page, but no more than two pages.

- vi. Evidence that your solution meets each requirement of the assignment, including each of the requirements you have specified for the self-selected advanced features.

Please note that although your tutor may test your program to verify the evidence presented in your documentation, it is not the responsibility of your tutor to test your program for the purpose of finding marks for you. It is up to individual student to mount a convincing case that the submitted solution meets all requirements. You will lose a significant number of marks (up to 70% of the assignment) if the evidence you presented is not convincing or not complete, even if your program actually works.

- vii. The source code listing - including all Visual C# files of your application.

The ZIP file name must conform to the following format:

ICT365_MajorAssignment2_FirstName_Surname.zip

For example, someone with the name of John Smith should name his assignment ZIP file as

ICT365_MajorAssignment2_John_Smith.zip

The ZIP file must be submitted using ICT365 Unit LMS. Please be aware that the Unit LMS will not accept your assignment if it is late by more than 5 days. Please type in your email address when submitting your assignment, so that LMS will send you a confirmation that your assignment is submitted successfully.

The above documentation and submission requirements will be strictly enforced. Your assignment will not be marked, or your marks will be significantly reduced, if you fail to adhere to the above requirements.

Policy on the Reuse of the Third Party Source Code

Please read this section very carefully.

All students are encouraged to solve the problems independently with their own source code. I understand, however, that occasionally there may be justifiable reasons to re-use source codes from a third party. Please note that if you have used one or more pieces of third party source codes in your program (this includes the situations where you have made minor modifications to the third party source code), your assignment will be acceptable only if you have satisfied all of the following conditions:

- The third party source code is fully identified, including the page numbers and line numbers in your hard-copy assignment documentation, and
- The origin of the third party code is fully disclosed and acknowledged in your assignment submission, and

- The third party source code is fully commented in your program listing. All variables, functions and major control structures must be commented to show clearly that you understand the logic of the code, and
- The third party source code is less than 20% of your program (in terms of the number of lines), excluding the code specifically allowed to be used.

Failure to satisfy any one of the above conditions will result in 0 marks being awarded to your entire assignment.

The above policy will be rigorously enforced by the Unit Coordinator.

Deadline and Penalty for Late Submission

The deadline for submitting this assignment is given in the respective Assignment Submission section of the Unit LMS.

Unless you have exceptional circumstances, be advised that late submissions will incur a penalty of 10% of the total marks per day (including weekends and public holidays). Please see the further explanation on how the number of days is calculated in the following paragraph. Work submitted more than **5 days** late will not be accepted.

In calculating the number of days late, a fractional day is rounded up to one whole day. For example, if you submit your assignment one day and three hours (1.125 days) after the deadline, your submission is considered to be late for two whole days under this rule, hence your marks will be deducted by 20%.

Applications for extension of your assignment deadline can only be made via email to the Unit Coordinator or his delegate, normally prior to the specified due date of the assignment. If an extension is granted (also by email), you must attach a copy of the email to your submission (see Documentation and Submission Requirements). Applications for extension by phone or in person do not count even if granted. The above policy will be rigorously enforced.

Errata

This document is subject to change based on errors found. Any errors found and corrected will be posted in the Unit Announcements page of the Unit LMS. If you print out a copy of this page, please follow the news in the Unit Announcements page.

Appendix: Dementia and Mild Cognitive Impairment

Dementia is a clinical diagnosis made when acquired cognitive deficits in more than one area of cognition interfere with activities of daily living and represent a decline from a previously higher level of functioning.

