Assignment 7

This is the final assignment, and it is also the final examination moment of this course. In this assignment, you are given the opportunity to develop a project of your own idea. If you have had in mind to develop a program for your own use or for your family, a friend or your colleagues at your office, you have the opportunity now. Moreover, you may try other technologies such as MVC, XNA, WPF, WCF, EF, LINQ, etc., **but not databases.** Using a database can imply problem for us to test and grade your application. However, the mentioned topics, including the use of databases, will be covered in our advanced courses.

1.   Objectives

The main goal of this work is to give you an opportunity to put t the knowledge you have gained and the skills you have developed throughout the training modules into practice, and produce a fully functional software that solves a real world's problem.

2.   Description

2.1   The assignment is to be done individually. It consists of two parts, a **Project Proposal** (project idea) and the **Project Implementation** (VS project). Before you start with Part II, prepare a short project proposal and submit it as Part I of the assignment. The details of the proposal document are given later in this document. Your teacher will look at your proposal and let you know if you can proceed with the implementation phase, i.e. the programming part.

2.2   The assignment does not have to be very large. Estimate the amount of work about the size of assignment 5 or 6 (in terms of time). **You can roughly estimate about 30 hours per person.**

3.   Requirements

You are expected to implement a good objected-oriented design with good encapsulation and data hiding. Here is a check-list:

3.1   **OOP**: It is expected that the OOP thinking is reflected in all parts of your solution. Each object must be self-supporting and should do only its own business. Every task in a class must be separated and performed by a method. Separate concerns, break-down problems into smaller parts – use more classes and more methods.

3.2   **GUI**: The program must contain a graphical user interface (GUI) that is user-friendly and easy to handle. You may use Windows Forms or WPF. The GUI class should only handle

the interactions between the user and the program. All other logics must be programmed in separate classes, as described above.

3.3   **Error handling**: The program must run satisfactorily and should not crash for errors of any type such as division by zero or wrong input given by the user. Make sure that you do not have any hard-coded path to any files you may be using in your application.

3.4   **Documentation**: Every class and every method in a class are to be documented using comments in xml format (comments using ///). Add documentation in your code so your instructor (or other programmers in general) can easily follow your thoughts and anticipations in your programming code. By choosing names of classes, variables, methods and other identifiers that are informative and long enough, you can reduce the amount of documentation.   Those parts of code that are self-descriptive require no extra documentation.

3.5   Projects that fail to compile or do not run satisfactorily will be returned immediately for corrections as soon as the problem occurs. Test your application well before submitting – to avoid this situation and also save us time.

4.   Part I - Project Proposal

In this part of the project you choose a topic, make an analysis of the problem and sketch a design of the solution (classes and their relations). This job is to be done **before** starting the programming work, absolutely not after! The proposal is submitted as a MS Word or a PDF document, consisting of about 1-2 pages. A checklist for the contents of the proposal is outlined below. Please note that the purpose of this report is not to write a user-manual, neither it is to explain the functionalities. Follow the outline below:

4.1   **A title page** with the name of the project, your name and date.

4.2   **A brief description of the objectives**, why you choose this problem and who will be gifted with the honor of using your software.

4.3   A **class-diagram** as in our assignments (or a similar sketch) must be presented.   A design for the solution of the problem showing the objects and their relations. Take your time and try to make a good design of your solution.   This will minimize and optimize your programming job.   You should particularly think about:

      4.3.1   Finding objects.

      4.3.2   Finding attributes and methods for every object

      4.3.3   Determining the relations between them.

4.4   A **time schedule** showing your work plan for the project period, i.e. from start to the deadline. You can use an Excel sheet to make your planning. The following is only an example; make your own chart, may be more detailed.

5.   Part II - Project Implementation
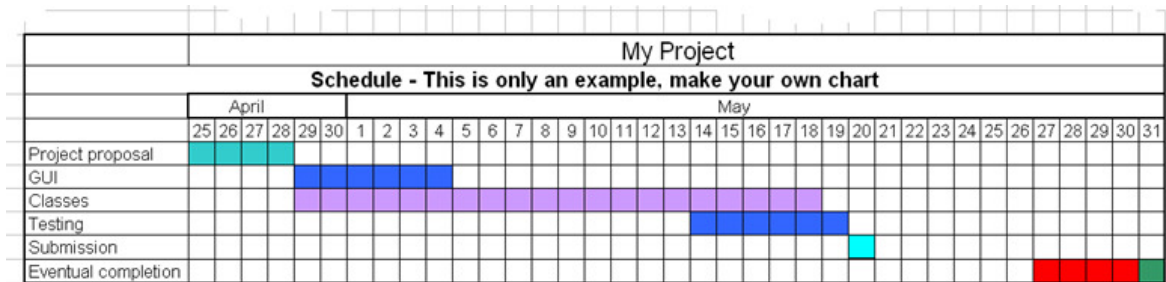
This is the programming part of the project and based on your planning and design in the previous part. You should not start this part before you have submitted the project proposal and obtained the approval of your instructor.

If you have a good solution design from the previous part, your programming work will also go smoothly and effectively. However, **the implementation doesn't have to follow the solution designed in the project proposal strictly**. Changes can be done when necessary without the approval of the instructor.

6.   Project Ideas – some examples

In case you don't figure out a project idea by yourselves, here are some suggestions:
- **Multimedia store** selling/leasing music albums and films.

- **Equipment rental** renting different equipment to private persons or companies.

- **Library** giving loans of books, films, articles and newspapers.

- **Hotel or motel booking** to hotel and other such businesses.

- **Booking program** for dentists, barbers, auto shops or other specialists for handling of customer appointments.

- **Your favourite game,** simple games not requiring advanced graphics.

- **Food Schedule** for Mom (and sometimes Dad) who always wonder what to cook for super this evening.

7.   Submission and grading

Submission is done individually via Canvas. Both, the Project Proposal and the Implementation (Code Project) are submitted in the same way as the previous assignments. The final grade for the assignment as a whole will bet set in Part II no matter which grade is assigned to this part.

Good Luck.

Farid Naisan,
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