INF 272

Homework 04 – HTML, CSS, JavaScript, Responsive web design and OOP (C#) WITHIN and MVC project (C#) - Out of 140 Marks

DUE: 2022-08-21 before 23:59

IMPORTANT NOTES:

- This is an individual assignment.
- Homework assignments are based on assessment objectives.
- If an objective has been achieved a mark will be allocated.

INSTRUCTIONS:

- In this assignment, you will be given high-level requirements and can implement them in a context you see fit.
- Follow the instructions on the Study Guide page listed as Assignment Uploading.
- Refer to the following two documents:
  - How to upload a video to YouTube Guide.pdf
  - How to use GitHub in Visual Studios 2019 Guide.pdf
- Name the Repository uXXXXXXXX_HW04 where uXXXXXXXX is your student number.
- Make sure to share the repository with inf272marker as a collaborator (use the following email: inf272marker@gmail.com). If you do not share the repository with inf272marker as collaborator, then we will not be able to mark your submission.

NOTE ON DEMO SOFTWARE:

- Please change the compression ratio and Frames Per Second (FPS) of the desktop recoding software that you use to reduce the file size of your demo. These details have been noted at the top of the homework submission page.
- Please use desktop recoding software as suggested on the homework submission page.
- DO NOT use your phone to record your demo as it is extremely difficult to follow what is going on in your demo and it creates unnecessarily large files making the video demo upload problematic. We suggested desktop recording software as it simply streamlines the process and creates smaller files that are easier to upload.

SUBMISSION DEADLINE: 2022-08-21 before 23:59:

- There shall be no extensions to the deadline.
- If homework submissions are uploaded too late, then upload errors WILL happen.
- Do not wait to the last minute to complete the assignment.
- Start working on the assignment as soon as it is posted.
- Verify the completeness of your upload.
- There are multiple upload opportunities enabled if your upload is incomplete.
- Incomplete uploads will be considered unsubmitted work.
- E-mail submissions WILL NOT be accepted.
- Late submissions WILL NOT be accepted.
- **NO EXCEPTIONS WILL BE MADE FOR ANYONE.**

IMPORTANT:

- We download your program source code to make sure that you do not upload empty programs.
- In the past we have encountered people demoing other people’s programmes. That is considered academic dishonesty and there are severe consequences if you are found to have committed academic dishonestly. Please refer to the student code of conduct regarding the consequences of academic dishonestly.

1. TOOLS, SKILLS, KNOWLEDGE REQUIRED:

- To complete his homework assignment, you will need to make use of MVC, HTML, JavaScript, CSS, and Bootstrap using the knowledge learned up to Session 13 - Object-oriented programming (OOP) 3.
- You must create a MVC project using Visual Studio to complete the project.
- You will need to make use of Bootstrap for the content and Layout of the pages.

2. USE CASE:

This is an open assignment that will teach you to use object orientation and the MVC design pattern in a real-world scenario. You should then solve the problem in the best way you see fit. The technical requirements as well as the creativity and useability of the application will be considered.

- You need to think creatively and come up with a solution to solve a socio-economic problem in line with one of the United Nations' Sustainable Development Goals.
- You must do this by creating a web application with ASP.Net MVC.
- You must also identify a non-profit organisation (NPO) that you will create the application for to help them reach the SDG/s that you have chosen.
- The design of your application needs to make sense from a user's perspective. In other words, the application must be useable, and you need to be able to explain how your application will help the NPO that you have identified.
- You will be required to provide a class structure diagram along with use case narratives for the application that you will create (see the requirements below).
- Please note that the Sustainable Development Goals are extremely comprehensive, so you are allowed to choose sub-topics in the goals that addresses a fraction of the goal. You do not have to address the entire goal, only a fraction or a defined dimension thereof.

3. STANDARD REQUIREMENTS:

The majority of the decisions on the creation of your application will be up to you, but there are some mandatory requirements. The main purpose of this assignment will be to make use of OOP principles.

- The size of your application **needs** to fulfil the following minimum level of complexity:
  - There **must** be 1 abstract base class.
  - There **must** be a minimum 3 inherited classes.
  - There **must** be at least 1 abstract and 1 virtual method in the base class.
  - You **must** write at least 4 use case narratives. **Important**: You must write a use case narrative for **each** business event that you create in your application.
  - You **must** create a class structure diagram.
  - You need to enforce strict encapsulation (OOP).
  - You need to apply polymorphism (OOP) where appropriate. This needs to be done **at least twice**.
  - You need to only use technologies taught in INF 272; marks will **not** be awarded for other technologies.

- You can make use of any number of views, controllers, and classes that you may require with regards to completing the functionality requirements.

- Home view
  - A home view is required.
  - You must display all your use case narratives on this view.
  - You must display your class structure diagram on this view.

Note: You can add extra functionality that will be rewarded. Remember that the creativity and useability of your application in this assignment is very important.

You can make use of the following use case narrative template (note you are not required to write the full use case narrative – stay within the limits of the following template):

System Name:		
Author: Your Name	**Date:**	Version: 1.0.0
Use case name:		**USE CASE TYPE**
Use case id:		Business Requirements: ☐
Priority:		System Analysis: ☒
Source:	Case Study	System Design: ☐
Primary business actor		
Primary system actor		
Other participating actors:	•	
Other interested stakeholders:	•	
Description:		
Pre-condition:		
Trigger:		

Please note that the aforementioned narrative template is a slimmed down template. You do not need to create a full step-by-step narrative. We only need basic descriptions and details as indicated in the aforementioned template.

4. RESEARCH / READING REQUIREMENTS

The following is required reading and / or research.

- JavaScript/jQuery
- HTML
- MVC
- CSS/Bootstrap
- OOP
- Any other topics already covered in INF 272

VIDEO INSTRUCTIONS:

- Make sure that everything is running when you start recording the video. The video should not be longer than 15 minutes showing the items in the Checklist. Stay focussed.
- **Simply scrolling through the program will be considered not presenting a demo which would equal to you immediately losing 50% of your mark. You need to explain your reasoning.** It is part of what is known as "reflective learning" and helps you solve problems when you encounter then during coding. It is extremely useful. Do not neglect your own leaning process by skipping out on this important step
- When showing something in the Checklist, show us your code and explain why you did it in that way. If you prefer to demo everything first then explain code, you can do it that way, but we need an explanation of why you coded it that way and not just functionality. The explanation does not need to be too in-depth.
- If something did not work in your code, in the video explain to us what you wanted to do and what you wanted to achieve with your approach. **We will not mark your code that you show us unless you explain this**.

IMPORTANT NOTES:

- Both the Video Demo and Homework Source Code should be submitted in the correct upload area. **If the Video demo or the Homework Source Code is missing, you will get a zero.**
- If files are upload to the wrong upload area, we will not go and look for the upload. Uploads should be submitted correctly as indicated online. Incorrect uploads will lead to a zero being allocated.
- If you are caught for plagiarism, we will give you 0 and you will be reported for plagiarism immediately. There are no more warnings this year. We will audit historical assignments throughout the semester. You are here to learn, the more you know, the better for you.
- If you have difficulty with your YouTube Submission, then make use of your name and surname and make sure to verify your account.

PRIZE FOR THE BEST HOMEWORK 4:

The following is only relevant and applicable to Homework 4. The best four homework 4 submissions will win prizes. The way in which the prizes will be decided is as follows:

1. All assignments will be marked independently by two people.
2. All markers will choose their two best assignments.
3. The assignments will then be presented to the Head of the Department of Informatics.
4. The Head of the department will then choose the four best in ranking order.
5. The four best assignments will then be awarded prizes based on the rank identified.

PRIZES ARE AS FOLLOWS:

First prize:	R 1500.
Second prize:	R 800.
Third prize:	R 450.
Fourth prize:	R 250.

TERMS AND CONDITIONS

1. Assignments submitted on the day of submission will immediately be disqualified.
2. Assignments should be submitted at least one day before the due date.
3. No collaboration between students.
4. This should be unique and individual work.
5. Cheating leads to immediate disqualification.
6. Hardcoding of data leads to immediate disqualification.
7. Decision of the winning assignments are final.
8. There will be no attempt to influence the outcome. Assignments are all that counts.
9. Assignments that win the prizes will become the Proposed Solutions for the assignment.

Checklist Use the checklist as a script that would allow you to sequence your demonstration.	**MAX**
1. Requirement 1 – Functionality • Start by showing the functionality of the program. • Run the program and then go though one complete action. **Demonstration time allocation = 2 minutes**	**10**
2. Requirement 2 – General background and motivation • At the beginning of your video demo, clearly state your development goal as well as why you chose this goal and introduce the NPO you have identified. • You will have to provide a short description as well as a motivation (why would the NPO want this application and how does it address the SDG/s for that NPO?). • Marks awarded for use case narrative (this must be presented on your home view) = 10 Marks (2.5 per use case narrative) • Marks awarded for class structure diagram (this must be presented on your home view) = 10 Marks (10 = Complete, 5 = Incomplete, 0 = no class structure diagram) **Demonstration time allocation = 3 minutes**	**20**
3. Requirement 3 – Applied all the technologies as instructed (ASP MVC controllers, HTML, CSS, Razor, OOP, Inheritance, etc.), there are controllers and models for all the data required. • In your video demo clearly show that you have made use of the following technology requirements. Clearly show the implementation of: ○ **JavaScript / jQuery** - Clearly show at least two functional implementations of JavaScript or jQuery. Demonstrate this by showing a transaction / activity / task that incorporates JavaScript or jQuery (5 marks = 2 * 2.5 marks). ○ **HTML and ASP** - This can be demonstrated by briefly showing us the source of the page on which you are working (25 marks = 5 marks HTML, 20 marks CRUD). ○ **Bootstrap** - This should be displayed on at least one page or one implementation. Show us where bootstrap is implemented and what the functionality looks like (10 marks = 10 implementations of bootstrap). ○ **OOP** – There should be a minimum of three inheritance classes. 1 Abstract and 1 Virtual method (40 marks = 10 marks base class, 15 marks for 3 inheritance classes, 5 marks for abstract and virtual (2 * 2.5 marks), 5 marks for encapsulation used in all classes, 5 marks for polymorphism used twice (2 * 2.5 marks). **Demonstration time allocation = 8 minutes**	**80**
4. Requirement 5 – Creativity, originality, and effort (Subjective). • This point will be considered during the demonstration of all the previous points. • There is no need to discuss or point this out during the demo as we will be able to assess and consider this during the video demo.	**30**
TOTAL MARK ALLOCATION	**140**