CET 101 Fundamentals of Computing 2019-20 Assessment 2

## Professional practice week: 25th of November

In this assessment, we are assessing the skills you have developed so far in the following areas:

* Understanding of standards, formats and tools used in the design of information, multimedia and web-based systems
* Recognition of the need for adaptable approaches to problem solving
* Ability to specify and contextualise a problem and communicate effectively an appropriate solution to a range of audiences
* Use of software engineering techniques to design, code, test and evaluate a range of software solutions
* Appraisal of the fundamental operation of computer systems, network architectures, hardware components, operating systems and associated protocols and data structures

**All of this work is to be completed individually.**

**This assessment is taking place as a Full Professional Practice Week.**

**Your problem will be issued at 9am Monday and you will submit by 9am Friday. This means you have 4 working days to complete it. We assume that 4 working days means 7 hours per day (as if you are working a full time job, 9am-5pm with lunch break), and your tutor and moderator have agreed that the task should take no longer than 28 hours.**

## Justification

Cycling has seen a massive increase in popularity across the world in recent years, especially in the UK. Not only does it have health benefits but it also is currently having a positive effect on the economy, with more and more people spending their money on the latest bikes, accessories and clothing. Cycle holidays are more popular than ever and have overtaken golfing as the activity holiday of choice for the UK. With the rise of cycling sees the rise in cycling related fitness equipment and technology. Smart turbo trainers now let you compete virtually against people online from the comfort of your own home, smart exercise bikes rank and score you against other competitors and apps track your cycle routes and count your miles for online leaderboards.

## Background

Cities across the UK have decided to host a national cycling competition where individuals or cycling groups can compete against each other to be crowned an overall winner or winners.

The event will be called Cit-E Cycling.

The format of the event will be that ten mini pop up tournaments are to be held across the city in different locations and each event will last for 3 days. There will be 20 high tech exercise bikes that will be able to track how many miles you have cycled and your power output. This data will then be used to rank the different participants against each other. Participants must book an hour time slot in advance so that they can come to the event and compete. Each participant is only allowed to enter the competition once and they have the option of entering as part of a cycling group or as an individual. Prizes will be awarded for the different age categories, different genders and for the best performing cycle group.

Winning participants will then be invited to compete for their city in a national event that pitches the cyclists from each city against each other.

## Problem

The organisers realise that this event is going to require expertise in a lot of different areas such as software engineering, website development, networking, programming and systems design if the event is to be successful. It will be your responsibility to ensure that each problem has been tackled effectively and that a solution that meets the needs of the client has been provided.

Bear in mind the ethical issues that may present themselves and be sure to conduct yourself professionally. Be aware that you are required to work under the university’s IT acceptable use policy which you can access [here](https://my.sunderland.ac.uk/display/SH/IT+Acceptable+Use+Policy). Note in particular under internet unacceptable use:

* 3.4 Use, transmission, duplication, or voluntary receipt of material that infringes on the copyrights, trademarks, trade secrets, or patent rights of any person or organisation. All users must assume that all materials on the Internet are copyright and/or patented unless specific notices state otherwise.
* 3.6. Creation, posting, transmission, or voluntary receipt of any unlawful, offensive, libellous, threatening, harassing material, including but not limited to comments based on race, national origin, sex, sexual orientation, age, disability, religion, or political beliefs.

## Your Tasks

Introduction

The event organisers of Cit-E cycling have a problem. They had employed a software developer to write a program to allow participants to register for an event but due to a dispute over working arrangements and coffee benefits they have quit the project. It’s not all bad news though as some of the work has already been completed.

The previous developer has left extensive comments in the code explaining what needs to be completed and you can download the [project solution zip file](https://drive.google.com/open?id=1OLVWBOBo7WxMp4suF411F_GJrj-cUy_n) here.

## Task 1: Software Engineering 40%

In order for other users of your software system to know and understand your software deliverables it is important that software documentation is up to date, easy to understand and informative.

With this in mind, to demonstrate planning and to facilitate troubleshooting should something go wrong with your system, we require the following documentation to be completed for the C# application you are developing for Task 2 of this weeks PPW.

1. Develop a list possible use case scenarios for the application (5 marks)
2. Create two basic use case scenarios for the application (10 Marks)

#### Create a complete flowchart for the application (25 Marks)

*\*Remember to consider your potential audience when creating your documentation.*

#### **Submission information**

Merge your work into a single word or pdf document entitled “Your name-PPW2-Task1” and submit it to the “Assignments section” in Canvas by 9am on Friday the 29th of November.

**Marking criteria:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Use Case Identification** | All use cases identified | Most use cases identified. | Some use cases identified. | At least two use cases identified | At least one use cases identified | Not done |
| **Marks:** | 5 | 4 | 3 | 2 | 1 | 0 |
| **Use Case Development** | Both use cases developed to an excellent level of detail and professionally presented in a logical manner. | Both use cases developed to a very good level of detail and well presented. | Good attempt at two use cases, may lack some detail but is consistent. | Some confusion shown in use case development but shows some understanding. | Incomplete attempt and does not show understanding of use cases. | Not done |
| **Marks:** | 10 | 8 | 6 | 4 | 2 | 0 |
| **Flow Chart** | Excellent level of detail, with correct notation. | Very good level of detail, with good use of notation. | Good attempt, may lack some detail but is consistent. | Some confusion shown in execution but shows some logic. | Incomplete attempt using incorrect notation | Not done |
| **Marks:** | 25 | 20 | 15 | 10 | 5 | 0 |

### 

### Task 2: Programming 40%

Picking up from where the previous developer has left off, you are required to complete the project to the best of your ability and the key deliverables are outlined below:

* Allow the software to display all of the event locations
* Allow participants to register
* Allow a user to view all of the registered participants

Make sure to load the solution and check the comments in the code for instructions as to what to do.

#### Marking Criteria

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Calculations and use of variables, including constants** | Sophisticated use | Average use but with some deficiencies | Significant room for improvement | Attempted, but with errors | Not attempted |
| Marks: | 5 | 3 to 4 | 2 | 1 | 0 |
| **Flow of Control (Use of suitable decisions and loops)** | Sophisticated use | Average use but with some deficiencies | Significant room for improvement | Attempted, but with errors | Not attempted |
| Marks: | 7 to 10 | 5 to 6 | 3 to 4 | 1 to 2 | 0 |
| **File Handling & Data Persistence** | Sophisticated use | Attempted both read and write | Either read or write implemented | Errors evident | Not attempted |
| Marks: | 7 to 10 | 5 to 6 | 3 to 4 | 1 to 2 | 0 |
| **Functionality** | Sophisticated implementation of all required functionality | Average use but with some deficiencies | Significant room  for improvement | Attempted, but with errors | Not attempted |
| Marks: | 7 to 10 | 5 to 6 | 3 to 4 | 1 to 2 | 0 |
| **Layout, indentation and commenting** | Sophisticated use | Average use but with some deficiencies | Significant room for improvement | Attempted, but with errors | Not attempted |
| Marks: | 5 | 3 to 4 | 2 | 1 | 0 |

#### Submission Information

Create a full code transcript (Program.cs as a .pdf) and a 3 minute video screencast demonstrating how each piece of code functionality operates, and submit it to the “Assignments section” in Canvas by 9am on Friday the 29th of November.

### 

### Task 3: Reflection 20%

With the completion of professional practice week 1, you are required to complete a feedforward based activity that will help you reflect. This task will be a reflection on how you think you have done in the first professional practice week as well as lessons you have applied to this assessment. It is expected that this report will be between 750 and 1000 words.

Please use the template below to help structure your report.

Feedforward guidance

The answers should not be brief – they should be detailed and specific, with examples.

* What did you do for the last Professional Practice week?
* What transferable skills did PPW1 help you to focus on and improve? Have you been able to apply them to this assessment? Be as specific as you can be.
* How much time and effort did you put into solving this week’s problem? Do you feel it was enough?
* What resources did you use in addition to what you had been taught by tutors? (The key words are ‘in addition’. Don’t tell us that you used the lecture slides as that is not in addition. Don’t tell us you used Google or the Internet. Be specific about resources)
* Have you been able to make use of your feedback from PPW1 to make improvements to your work for this assessment?
* How are you going to act on the feedback moving forward? This is a broad question – not limited to the next PPW.

#### Marking Criteria

|  |  |  |  |
| --- | --- | --- | --- |
| Structure, spelling and grammar | High marks  A well written reflective report with correct use of spelling, punctuation and grammar. | Mid marks  A report that makes a good attempt at being well structured but includes some spelling, punctuation and grammar errors. | Low / No marks  A poorly written report with many spelling, punctuation and grammar issues. |
| Marks | 5 - 4 | 2 - 3 | 0 - 1 |
| Reflection | High marks  A well written reflective report where you have recognised what you have previously done well and where you are going to make improvements. | Mid marks  A good attempt has been made to reflect on previous work and recognise the improvements that need to be made with future work going forward. | Low / No marks  A report that includes little or no reflection and contains no recognition of improvements that need to be made. |
| Marks | 11 - 15 | 6 - 10 | 0 - 5 |

### 

### Submission Information

Please complete this activity as a new page entitled “Professional practice week 2” on your ePortfolio, in the “First year assessments” category.

Submit the **public link** to the assignments section on canvas.

Ensure that your reflection is written on the page, and **not a linked document**. Make sure the correct link is submitted. It is recommended that you test this link after you have logged out of canvas to ensure that it is viewable.

### 

### Submission information

All tasks are to be submitted to Canvas by 9am on Friday the 29th of November.

This excludes anyone who has additional time due to having a support memo in place.

Please see the individual tasks for specific submission requirements such as naming conventions, file formats etc.

### Assessment Grid

|  |  |  |  |
| --- | --- | --- | --- |
| Task 1 - Software engineering | | | |
|  |  |  |  |
| Task 2 - Programming | | | |
|  |  |  |  |
| Task 4 - Reflection | | | |
| Reflection | 10-15 Marks  A well written reflection that answers all of the questions in good detail. | 6-10 Marks  A good attempt at reflecting that covers all of the questions but with room for improvement. | 0-5 Marks  A poor attempt at reflecting that falls far short of what is required. |
| Spelling and Grammar | 4-5 Marks  Excellent and well written with correct spelling and grammar in a readable format. | 2-3 Marks  Well written but with minor spelling and grammar mistakes | 0-1 Marks  Poorly written with many spelling and grammar mistakes that make the reflection difficult to read. |