**This assignment contributes 65% to your final module mark.**

The following learning outcomes will be assessed:

* Demonstrate an appreciation of the role of computing and technology in today’s society
* Discuss how social, ethical and legal issues are relevant to the subject of computer science
* Evaluate the types of problem which are determinable through the application of computing
* Solve traditional computing problems using discrete structures (logic, sets, functions, graphs and trees, etc.)

**Important Information**

You are required to submit your work within the bounds of the University Infringement of Assessment Regulations (see Programme Guide). Plagiarism, paraphrasing and downloading large amounts of information from external sources, will not be tolerated and will be dealt with severely. Although you should make full use of any source material, which would normally be an occasional sentence and/or paragraph (referenced) followed by your own critical analysis/evaluation. You will receive no marks for work that is not your own. Your work may be subject to checks for originality which can include use of an electronic plagiarism detection service.

Where you are asked to submit an individual piece of work, the work must be entirely your own. The safety of your assessments is your responsibility. You must not permit another student access to your work.

Where referencing is required, unless otherwise stated, the Harvard referencing system must be used (see your Programme Guide).

Please ensure that you retain a duplicate of your assignment. We are required to send samples of student work to the external examiners for moderation purposes. It will also safeguard in the unlikely event of your work going astray.

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| --- | --- |
| **Submission Date and Time** | As advised on Canvas |
| **Submission Location** | Via Canvas |

**Your Task**

Your task is to write a 3000 word report drawing on the work you have done on the activities in the module, the poster you created in your first assignment and the reading and research you have carried out. Your report will be going into detail about the system and/ or problem that has been solved using computer science. The report will reflect the discussions, research and evaluations that you have undertaken into your choice of the computing problem. The report will provide detail to the problem and demonstrate how the computing subject in that problem domain has evolved in order for that problem to be solved. You should discuss the problem-solving approaches, algorithmic thinking and the methodologies you might employ. You should discuss the societal, ethical and legal impacts as a result of the issue / resolution of the issue.

Student Information

The computing environment is a wide and complex one. For the second assignment you are required to develop further the subject / topic from your poster in assignment 1 and discuss in more detail (than assignment 1) the issues and how computer science has been used to resolve the issue.

Throughout the module you have been undertaking a series of small formative exercises to demonstrate their ability to apply discrete mathematics to computing problems. This second assessment will use these activities to provide a critical evaluation of how these techniques are applicable to solving traditional real-world computing problems.

The students will then write a commentary on the issues that they have encountered and discuss their exercises in the wider context of computer science.

Student information

The second assessment is a report which should provide a commentary and evaluation of your chosen system. You should draw on the exercises and activities that you have undertaken during the module (including the first assessment) discussing the rationale for the subjects that you have chosen, why they are important (please refer to the literature to support your argument), what the key computer science/ computing challenges and opportunities are and how computer science can be used to address these – particularly discussing how (and if) the problem can be solved and any underpinning mathematics or logic that you have considered. You should include any professional, legal or ethical concerns and issues in your report.

The report should include the following headings:

* **Introduction**

Your introduction should include a summary of the main points that you will discuss in your report. Your report should outline the topic you have chosen, the rationale and the main themes you have identified. Your introduction should be about 250 words in length.

* **How Computer Science can be Used to Solve the Problem**

The purpose of this section is to set your report in the context of the problem being addressed and the literature and examples associated with your chosen system. In this section you should set out the focus of the problem to be solved; the current state of thinking in relation to your topic and identify themes that are suitable for further investigation. You should consider the historical perspective of your topic to show the trajectory of your chosen topic from the foundations to modern day examples culminating in where we are today and potentially considering future developments. You should consider the opportunities and challenges in the problems to be solved (if the problem can be solved) and the associated algorithmic thinking associated with the problem. This section should be approximately 1500 words.

* **Measuring Success and Impact on Society**

In this section you should discuss the metrics that can be used to measure the success of the system. You should also provide commentary on the impact of the system (if any) on society. This section should be approximately 500 words.

* **Legal, Ethical and Professional Issues**

In this section you should discuss any legislative, ethical and/or professional issues that would could be taken into account for the system. This section should be no more than 500 words in length.

* **Conclusion and Future**

In this section you should summarise your findings and consider what opportunities there are for future research (could be personal to you) and which technologies might be used to develop the problem in the future. This section should be approximately 250 words.

* **References**

These should be to Harvard standards (not included in work count but should be between 6 and 10 references)

* **Portfolio**

Examples of your activities from the module. You should include the exercises, activities, discussions and reflections on the work that has been done each week in the module (also including the first assessment) as an appendix to your rport (not included in the word count).

**Submission Guidelines**

Your report should be spell checked and contain references. You must use the Harvard style of referencing, both for citations within the text and your reference list. You should expect to use 6 - 10 references.

It is important that you read thoroughly the information on the cover sheet regarding the university assessment regulations, including those regarding plagiarism and collusion.

Assignment hand-in requirements are specified on the front cover sheet. The approximate time you should spend on this assignment is 30-50 hours. Your assignment must be handed in before the time specified.

Your assessment will be assessed according to the University’s Postgraduate Generic Assessment Criteria, which are provided on the following pages.

The marks breakdown is as follows:

Introduction – 15%

How Computer Science can be used to Solve the Problem – 40%

Measuring Success and Impact on Society – 15%

Legal, Ethical and Professional Issues – 15%

Conclusion and Future – 15%

You are required to submit your assignment as a PDF file through the turn-it-in submission system in the module space on Canvas.

**CETM70 Computer Science Principles and Practice – Assignment 2 Marking Sheet**

**Name Student Registration Number**

**Total Mark %**

|  |  |
| --- | --- |
|  | **Categories** |
|  | **Grade** | **Relevance** | **Knowledge** | **Analysis** | **Argument and Structure** | **Critical Evaluation** | **Presentation** | **Relevance to Literature** |
| PassPass | 86 – 100% | The work examined is exemplary and provides clear evidence of a complete grasp of the knowledge, understanding and skills appropriate to the Level of the qualification. There is also unequivocal evidence showing that all the learning outcomes and responsibilities appropriate to that Level are fully satisfied. At this level it is expected that the work will be exemplary in all the categories cited above. It will demonstrate a particularly compelling evaluation, originality, and elegance of argument, interpretation or discourse.  |
| 76 – 85% | The work examined is excellent and demonstrates comprehensive knowledge, understanding and skills appropriate to the Level of the qualification. There is also excellent evidence showing that all the learning outcomes and responsibilities appropriate to that level are fully satisfied. At this level it is expected that the work will be excellentin the majority of the categories cited above or by demonstrating particularly compelling evaluation and elegance of argument, interpretation or discourse and some evidence of originality |
| 70 – 75% | The work examined is of a high standard and there is evidence of comprehensive knowledge, understanding and skills appropriate to the Level of the qualification. There is clearly articulated evidence demonstrating that all the learning outcomes and responsibilities appropriate to that level are satisfied At this level it is expected that the standard of the work will be high in the majority of the categories cited above or by demonstrating particularly compelling evaluation and elegance of argument, interpretation or discourse |
| 60 – 69% | Directly relevant to the requirements of the assessment  | A substantial knowledge of relevant material, showing a clear grasp of themes, questions and issues therein  | Comprehensive analysis - clear and orderly presentation  | Well supported, focussed argument which is clear and logically structured.  | Contains distinctive or independent thinking; and begins to formulate an independent position in relation to theory and/or practice.  | Well written, with standard spelling and grammar, in a readable style with acceptable format  | Critical appraisal of up-to-date and/or appropriate literature. Recognition of different perspectives. Very good use of a wide range of sophisticated source material. |
| 50 – 59% | Some attempt to address the requirements of the assessment: may drift away from this in less focused passages  | Adequate knowledge of a fair range of relevant material, with intermittent evidence of an appreciation of its significance  | Significant analytical treatment which has a clear purpose  | Generally coherent and logically structured, using an appropriate mode of argument and/or theoretical mode(s)  | May contain some distinctive or independent thinking; may begin to formulate an independent position in relation to theory and/or practice.  | Competently written, with only minor lapses from standard grammar, with acceptable format  | Uses a good variety of literature which includes recent texts and/or appropriate literature, including a substantive amount beyond library texts. Competent use of source material. |
| 40 – 49% | Some correlation with the requirements of the assessment but there are instances of irrelevance  | Basic understanding of the subject but addressing a limited range of material  | Some analytical treatment, but may be prone to description, or to narrative, which lacks clear analytical purpose  | Some attempt to construct a coherent argument, but may suffer loss of focus and consistency, with issues at stake stated only vaguely, or theoretical mode(s) couched in simplistic terms | Sound work which expresses a coherent position only in broad terms and in uncritical conformity to one or more standard views of the topic  | A simple basic style but with significant deficiencies in expression or format that may pose obstacles for the reader  | Evidence of use of appropriate literature which goes beyond that referred to by the tutor. Frequently only uses a single source to support a point.  |
| Fail | 35 – 39% | Relevance to the requirements of the assessment may be very intermittent, and may be reduced to its vaguest and least challenging terms | A limited understanding of a narrow range of material  | Largely descriptive or narrative, with little evidence of analysis  | A basic argument is evident, but mainly supported by assertion and there may be a lack of clarity and coherence  | Some evidence of a view starting to be formed but mainly derivative.  | Numerous deficiencies in expression and presentation; the writer may achieve clarity (if at all) only by using a simplistic or repetitious style | Barely adequate use of literature. Over reliance on material provided by the tutor.  |
| 30 – 34% | The work examined provides insufficient evidence of the knowledge, understanding and skills appropriate to the Level of the qualification. The evidence provided shows that some of the learning outcomes and responsibilities appropriate to that Level are satisfied. The work will be weak in some of the indicators. |
| 15 – 29% | The work examined is unacceptable and provides little evidence of the knowledge, understanding and skills appropriate to the Level of the qualification. The evidence shows that few of the learning outcomes and responsibilities appropriate to that Level are satisfied. The work will be weak in several of the indicators. |
| 0 – 14/% | The work examined is unacceptable and provides almost no evidence of the knowledge, understanding and skills appropriate to the Level of the qualification. The evidence fails to show that any of the learning outcomes and responsibilities appropriate to that Level are satisfied. The work will be weak in the majority or all of the indicators. |

**Comments**