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| **PROGRAMME** | BSc (Hon) Computing and BEng Software Engineering with Foundation Year |
| **DATE** | TBC |
| **MODULE CODE** | SWE4201 |
| **MODULE TITLE** | Introduction to Software Development |
| **ASSESSMENT TYPE** | Portfolio |
| **WEIGHTING** | 100% |

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| **Assessed Learning Outcomes:**  **LO1:** Develop algorithms to solve given problems  **LO2**: Construct logically and syntactically correct programs using appropriate programming constructs.  **LO3:** Demonstrate systematic testing of programmed solutions to identify and correct syntax, semantic and logical errors**.**  **LO4:** Present effective use of modelling standards to represent system structure, behaviour and interaction. |

**Assessment Type**: Portfolio

This is your assignment for this module. It is worth 60% of your overall grade for this module.

This is an INDIVIDUAL piece of work contributing towards the module assessment. Evidence of plagiarism or collusion will be taken seriously, and University regulations followed. You are advised to be familiar with the University definitions of plagiarism and collusion.

Please ensure to use Turnitin to check your work and that your similarity score is not more than **25%**.

**Portfolio Item 1 (25 marks) – DONE!**

Write a program in **Python** that asks the user for a series of numbers until they either want to output the average or quit the program. When they choose to output the average, the program will also show them the median number.

**Portfolio Item 2 (25 marks) – DONE!**

Write a program in **Python** that generates a random number between 1-100. The user is then asked to guess the number. If the guessed number is less than 10 numbers higher or lower, the program will display “Close”. Otherwise, it will display “Keep trying”. When the user guesses the number, the program will say “Correct” and displays the number of attempts. Lastly, the program will give the user the choice to either start again or quit.

**Portfolio Item 3 (50 marks) – TO DO!!!**

Design and produce a **Java** program that simulates an ATM machine. You are required to implement and demonstrate an understanding of the following Java constructs within your program:

* Classes
* Methods
* Constructors
* Decision making
* collections
* Iteration
* Error handling

The following assumptions are to be taken into consideration when developing the program:

* Username and password (or PIN) are used instead of a bank card.
* Your program will contain a few users for testing.
* Users will have different account types (saving, current, business).
* Your program will run as a console application.
* Your program should consist of a few classes.
* The Main class should remain free from unnecessary code.

**Program Specifications**

Your program will illustrate the following specifications:

1. The user will be asked for username
2. If username is valid, the user will be asked to enter password (or PIN)
3. The main menu is then displayed (check balance, withdraw, deposit, change password (or PIN), Quit). Each option will display a sub-menu (except quit).
4. After each function, the main menu is displayed again.
5. If quit, the program will go back to step 1

**Assessment Deliverables**:

1. A Word document explaining your solution for each task and containing evidence of the steps you followed to design your programme. Your document must include a
   * A description of the task and its objective
   * how you tend to solve the problem.
   * a discussion of the programming constructs you will be implementing.
   * what measures you will be following to detect errors.
   * Evidence of appropriate testing

Your document should also include evidence of the design and implementation process. This may include any of the following:

* Flow Chart
* Pseudo Code
* Class diagram
* Use cases diagram.

You need to upload a zip file of your solution to Moodle using the link on your module page.

Your document should be in a report format containing a table of content, headings and sub-headings as necessary. You are also required to acknowledge any source of information you have used in your document in the form of in-text citations, and a reference list at the end of your document.

**Academic Misconduct**

In order to avoid these types of academic misconduct, you should ensure that all your work is your own and that sources are attributed using the correct referencing techniques. You can also check originality through Turnitin.

Please note that penalties apply if academic misconduct is proven. See the following link for further details: <https://www.bolton.ac.uk/student-policy-zone/student-policy-zone-2022-23/academic-misconduct-regulations-and-procedures-2022-23>

**Marking Scheme**

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|  | **Marking Criteria** | **Mark** |  |
|  | Evidence of an understanding of the tasks and the systematic process to solve a problem | 10 |  |
| Appropriate evidence of the design phase | 10 |  |
| Working programs including evidence of the implementation of appropriate constructs | 40 |  |
| Evidence of a thorough testing | 20 |  |
| Evidence of appropriate error handling | 20 |  |
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**GENERAL ASSESSMENT GUIDELINES – LEVEL HE6**

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|  | **Relevance**  **Learning outcomes must be met for an overall pass** | **Knowledge and Understanding** | **Analysis, Creativity and Problem-Solving** | **Self-awareness and Reflection** | **Research/**  **Referencing** | **Written English** | **Presentation and Structure** |
| Class I (Exceptional Quality)  **85% - 100%** | Work is directly relevant and expertly addresses the requirements of the brief.  **Learning outcomes are met.** | Demonstrates an exceptional breadth and depth of knowledge and understanding of theory and practice beyond the threshold expectation for the level.  Demonstrates mastery in conceptual understanding of a range of specialised areas. | Presents an exceptional synthesis and critical evaluation of findings from a broad range of relevant sources in order to draw clear, systematic, justified and insightful conclusions.  Provides a sophisticated critical insight and expertly interprets complex matters and ideas.  Demonstrates exceptional creative flair and a high level of originality.  Demonstrates exceptional problem- solving skills and initiative. | Provides insightful reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility. | An extensive range of contemporary and relevant reference sources selected and drawn upon.  Sources cited accurately in both the body of text and in the Reference List/ Bibliography. | Writing style is clear, succinct and appropriate to the requirements of the assessment. An exceptionally well written answer with competent spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A wide range of appropriate vocabulary is used. | The presentational style and layout are correct for the type of assignment.  Evidence of planning and logically structured.  Where relevant, there is effective inclusion of, and reference to, figures, tables and images. |
| Class I (Excellent Quality)  **70% - 84%** | Work is relevant and comprehensively addresses the requirements of the brief.  **Learning outcomes are met.** | Demonstrates an excellent breadth and depth of knowledge and understanding of theory and practice for this level.  Demonstrates an in-depth conceptual understanding of a range of specialised areas. | Presents an excellent synthesis and critical evaluation of findings from a broad range of relevant sources in order to draw clear, systematic, justified and perceptive conclusions.  Provides a critical insight and clearly interprets complex  matters and ideas.Demonstrates creative flair and a high level of originality.  Demonstrates excellent problem- solving skills and initiative. | Provides excellent reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility. | A wide range of contemporary and relevant reference sources selected and drawn upon.  Sources cited accurately in both the body of text and in the Reference List/ Bibliography. | Writing style is clear, succinct and appropriate to the requirements of the assessment. An excellently well written answer with competent, spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A wide range of appropriate vocabulary is used. | The presentational style and layout are correct for the type of assignment.  Evidence of planning and logically structured  Where relevant, there is effective inclusion of, and reference to, figures, tables and images. |
| Class II/i (Very Good Quality)  **60% - 69%** | Work is relevant and addresses most of the requirements of the brief well.  **Learning outcomes are met.** | Demonstrates a thorough breadth and depth of knowledge and understanding of theory and practice for this level.  Demonstrates a sophisticated conceptual understanding of a range of specialised areas. | Presents a perceptive synthesis and critical evaluation of findings from a range of relevant sources in order to draw clear, justified and thoughtful conclusions.  Interprets complex matters and ideas well.Demonstrates a good level of creativity and originality.  Demonstrates strong problem- solving skills. | Provides very good reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment. | A wide range of relevant reference sources selected and drawn upon.  Sources cited accurately in the main in both the body of text and in the Reference List/ Bibliography. | Writing style is clear, succinct and appropriate to the requirements of the assessment. A very well written answer with competent spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A range of appropriate vocabulary is used. | The presentational style and layout are correct for the type of assignment.  Evidence of planning and logically structured in the main.  Where relevant, there is effective inclusion of, and reference to, figures, tables and images. |
|  | **Relevance**  **Learning outcomes must be met for an overall pass** | **Knowledge and Understanding** | **Analysis, Creativity and Problem-Solving** | **Self-awareness and Reflection** | **Research/**  **Referencing** | **Written English** | **Presentation and Structure** |
| Class II/ii (Good Quality)  **50% - 59%** | Work addresses key requirements of the brief. Some irrelevant content.  **Learning outcomes are met.** | Demonstrates a sound breadth and depth of knowledge and understanding of theory and practice for this level.  Demonstrates a sound conceptual understanding of specialised areas. | Presents a logical evaluation of findings from a range of relevant sources in order to draw clear and justified conclusions.  Interprets some complex matters and ideas.Demonstrates some creativity.  Demonstrates effective problem-solving skills and initiative. | Provides good reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment. | A range of relevant reference sources selected and drawn upon.  Most sources accurately cited both the body of text and in the Reference List/Bibliography. | Writing style is mostly appropriate to the requirements of the assessment. Grammar, spelling and punctuation are generally competent and minor lapses do not pose difficulty for the reader. Paragraphs are structured and include some linking and signposting. Sentences are complete.  A range of appropriate vocabulary is used. | The presentational style and layout are correct for the type of assignment.  Logically structured in the most part.  Inclusion of figures, tables and images but not all relevant or referred to. |
| Class III (Satisfactory Quality)  **40% - 49%** | Work addresses the requirements of the brief, although superficially in places. Some irrelevant content.  **Learning outcomes are met.** | Demonstrates a sufficient breadth and depth of knowledge and understanding of theory and practice for this level.  Demonstrates a conceptual understanding of some specialised areas. | Presents an evaluation of findings from a range of sources in order to draw some valid conclusions.  Interprets some complex matters and ideas but with descriptive passages evident which lack clear purpose.  Demonstrates creativity in places.  Demonstrates sufficient problem- solving skills and initiative. | Provides some reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment. | Some relevant reference sources selected and drawn upon.  Some weaknesses in referencing technique. | Writing style is occasionally not appropriate for the assessment.  Grammar, spelling and punctuation are generally competent, but may pose minor difficulties for the reader. Some paragraphs may lack structure, and there is limited linking and signposting. Some appropriate vocabulary is used | The presentational style and layout are largely correct for the type of assignment.  Adequately structured.  Inclusion of some figures, tables and images but not all clear, relevant and/or referred to. |
| Borderline  Fail **35% - 39%** | Work addresses some of the requirements of the brief. Irrelevant and superficial content.  **One or more learning outcomes have not been met.** | Demonstrates a lack of knowledge and understanding of theory and practice for this level. Demonstrates Insufficient conceptual understanding of specialised areas. | Presents a limited evaluation of findings from set sources.  Descriptive or narrative passages evident which lack clear purpose.  Demonstrates little creativity.  Demonstrates insufficient problem- solving skills and initiative. | Provides limited reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, when required. | Sources selected are limited and lack validity/relevance.  Poor referencing technique employed. | Writing style is unclear and does not match the requirements of the assessment. Deficiencies in spelling, grammar and punctuation makes reading difficult and arguments unclear in places. Paragraphs are poorly structured. | For the type of assignment the presentational style, layout and/or structure are lacking.  Inclusion of figures, tables and images but not clear, relevant and/or referred to. |
| Fail  **<34%** | Work does not address the requirements of the brief. Irrelevant and superficial content.  **One or more learning outcomes have not been met.** | Demonstrates inadequate knowledge and understanding of theory and practice for this level.    Demonstrates Insufficient conceptual understanding of relevant areas. | Analysis is weak and poorly constructed with inadequate sources drawn upon.  Demonstrates little or no creativity.  Demonstrates a lack of problem- solving skills and initiative. | Provides inadequate reflection and self-awareness in relation to the outcomes of own work and personal responsibility, when required. | An absence of relevant sources selected and drawn upon.  Poor referencing technique employed. | Writing style is unclear and does not match the requirements of the assessment in question.  Deficiencies in spelling, grammar and punctuation makes reading difficult and arguments unclear. Unstructured paragraphs. | For the type of assignment the presentational style, layout and/or structure are lacking.  Inclusion of figures, tables and images but not clear, relevant and/or referred to. |