ASSESSMENT BRIEF

Course/Programme	All BSc Degrees in Computing
Module name and code	COM4302: Computer Science Fundamentals
Tutor(s)	Aamir Abbas, Dr Mohammed Benmubarak, Dr Pradeep Hewage, Mohammad Saeedi
Assessment Number	2
Assessment Name	Report
Weighting	80%
Issue Date	7/10/2024
Submission date	The files must be submitted before 17/11/2024@2355 via Moodle. For late submission, see Assessment Regulations for Undergraduate Programmes: https://www.bolton.ac.uk/assets/Uploads/student-policy-zone-24-25/Assessment-Regulations-for-Undergraduate-Programmes-2024-25-V10.pdf

Learning Outcomes Assessed:

Sl. No.	Objective	Assessed?
1	Evaluate career paths in Computing and consider issues relating to professional practice	N
2	Design and construct solutions to a derived specification using fundamental Computer Science concepts and principles	Y

Use of Generative Artificial Intelligence (GAI) Applications in this Assessment

AI Status	Application	Notes
Category A	No GAI tool is permitted.	While grammar and/or spell checkers may be used to correct individual words and sentences, the use of GAI is not allowed. This is because the learning outcomes require you to produce original assessment work without any GAI assistance Any GAI generated content which is presented as your own original work and is not acknowledged will be assessed for academic misconduct.

Assessment Task:
Programming Task: Personal Finance Calculator

Task Description:
Create a Python program that helps users manage their personal finances. The program should allow users to input their income, track expenses, and provide basic financial analysis.

Requirements:
1. Variables:
    a. Use variables to store user's income, expenses, and savings.
    b. Create a list or dictionary to store multiple expense entries.
2. Sequence:
    a. Implement a logical flow of operations: input gathering, calculation, and output display.
3. Selection:
    a. Use if-elif-else statements to categorize expenses (e.g., essential, non-essential).
    b. Implement error handling for invalid inputs.
4. Iteration:
    a. Use a loop to allow users to enter multiple expenses.
    b. Implement a menu system that allows users to perform multiple operations.

Specific Features:
1. Income Input: Allow the user to enter their monthly income.
2. Expense Tracking:
    a. Let the user enter multiple expenses, including the amount and category.
    b. Use a loop to continue asking for expenses until the user indicates they're finished.
3. Budget Analysis:
    a. Calculate total expenses and remaining budget.
    b. Use conditional statements to determine if the user is over or under budget.
4. Savings Recommendation:
    a. Based on the remaining budget, suggest a savings amount.
    b. Use conditions to provide different recommendations based on the budget status.
5. Expense Report:
    a. Display a summary of expenses by category.
    b. Use a loop to iterate through and display all entered expenses.
6. Interactive Menu:
    a. Implement a loop-based menu system allowing users to choose different operations (add income, add expense, view summary, exit program).

Example Output:

```
Welcome to Personal Finance Calculator

1. Enter Income
2. Add Expense
3. View Budget Summary
4. Exit

Enter your choice: 1
Enter your monthly income: 2000

1. Enter Income
2. Add Expense
3. View Budget Summary
4. Exit

Enter your choice: 2
Enter expense amount: 500
Enter expense category (essential/non-essential): essential

1. Enter Income
2. Add Expense
3. View Budget Summary
4. Exit

Enter your choice: 3

Budget Summary:
Income: £2000
Total Expenses: £500
Remaining Budget: £1500

You're under budget. Consider saving £750 (50% of remaining budget).

Expense Breakdown:
Essential: £500
Non-essential: £0

1. Enter Income
2. Add Expense
3. View Budget Summary
4. Exit

Enter your choice: 4
Thank you for using Personal Finance Calculator!
```

Assessment Criteria:

Here's a breakdown of the assessment criteria for the personal finance calculator task, along with descriptions of the deliverables:

Category	Criteria	Weight	Total
Program Functionality	Correct implementation of income input, expense tracking, budget analysis, savings recommendation, and expense report	20	40
	Error handling and input validation	10	
	Menu system and overall program flow	10	
Code Quality and Use of Python Concepts	Use of variables, lists/dictionaries, loops, and conditionals	10	20
	Code readability, comments, and structure	10	
Word Report	Clear explanation of program functionality and flow	10	30
	Flowcharts demonstrating the logical structure	10	
	Reflection on challenges and solutions	5	
	Link to functional program (repl.it)	5	
Testing and Results	Demonstration of testing (e.g., example inputs and outputs)	5	10
	Correctness and accuracy of program output	5	
TOTAL		100	100

Deliverables Description:

1. Python Program:
   - The main deliverable is a fully functional Python program hosted on repl.it (or a similar platform). The program must follow the task requirements, allowing users to input income, track expenses, analyze their budget, and make savings recommendations. The program should handle multiple expenses and include an interactive menu system. Error handling should be implemented to manage invalid inputs.
2. Word Report:
   - Flowcharts: The report should include a set of flowcharts clearly representing the program's structure and decision-making processes. These should depict how income and expenses are handled, budget calculations, and the menu system.
   - Program Flow Explanation: A section in the report should explain the flow of the program step-by-step, from gathering user input to providing financial analysis.
   - Challenges and Solutions: A reflection on the main challenges faced during the development process (e.g., implementing loops, handling errors) and how these were overcome.
   - Link to Code: Provide a link to the fully functional program on repl.it, ensuring that the code can be accessed and run easily.
3. Testing and Results:

- Include a demonstration of program testing, providing a few examples of user inputs and showing the correct outputs (budget analysis, expense reports, etc.). Testing should cover typical use cases as well as edge cases (e.g., invalid inputs).

Declaration: At the end of the assessment, you should also include a declaration of any software tools including Generative AI (GAI) applications that you used in developing and completing the assessment.

Minimum Secondary Research Source Requirements:

It is expected that the Reference List will contain between **five and ten sources**. As a MINIMUM the Reference List should include **one refereed academic journal** and **three academic books**

Submission Guidelines:

- Submission Date: 17/11/2024 at 23:55 via Moodle.
- File Format: Word or PDF File, named COM4302_StudentNumber (e.g., COM4302_2456123).
- Reference Requirements: It is expected that the Reference List will contain between **five and ten sources**. As a MINIMUM the Reference List should include **one refereed academic journal** and **three academic books**
- Ensure that your writing is clear, concise, and free from spelling and grammatical errors.

Grading:

A percentage mark will be provided based on General Assessment Guidelines for Written Assessments.

Grading is as follows:

A: 70 - 100%

B: 60 - 69%

C: 50 - 59%

D: 40 - 49%

Marks below 40% will be classed as fail.

Specific Assessment Criteria/Marking Scheme:

First class (70% and above):

Students will submit a fully functional program that meets all the task requirements with excellent implementation of features like income input, expense tracking, budget analysis, and savings recommendation. The code demonstrates advanced use of Python concepts, including variables, loops, and conditionals, with clear structure and thorough error handling. The word report provides a detailed and well-organized explanation of the program flow, with well-designed flowcharts that accurately reflect the program's logic. Challenges faced during development are discussed insightfully, and solutions are clearly articulated. The program is thoroughly tested with a wide range of test cases, including edge cases, and all outputs are correct. The link to the code is provided and works perfectly.

<u>Second class (50-69%):</u>

Students will submit a functional program that implements most features of the task, with minor issues in one or more areas (e.g., basic error handling or budget analysis). Python concepts are used effectively, though there may be some room for improvement in code organization or readability. The word report explains the program flow clearly, with flowcharts that generally reflect the structure but may lack some detail. Challenges faced are mentioned, but the discussion of solutions may be superficial. The program is tested with common use cases, but edge cases might not be fully considered. The link to the code is provided and works, though minor adjustments may be needed.

<u>Third class (40-49%):</u>

Students will submit a partially functional program that implements some features, but several requirements may be incomplete or poorly executed (e.g., no savings recommendation, limited error handling). Python concepts are used, but there are notable issues with the code, such as poor organization, lack of comments, or ineffective loops/conditionals. The word report is basic, with a limited explanation of the program flow, and flowcharts may be missing or unclear. There is little reflection on challenges or solutions. The program is minimally tested, and errors or incorrect outputs may be present. The link to the code is provided but may not work properly or require significant fixes.

<u>Fail (39% and below):</u>

Students who do not meet the requirements of a third-class grade will not successfully complete the assessment activity. Students will submit a program that is either non-functional or fails to meet most of the task requirements. There is little or no use of appropriate Python concepts, and the code is disorganized or incomplete. The word report is either missing or lacks any meaningful explanation of the program flow. Flowcharts, if provided, are incorrect or irrelevant to the task. There is no reflection on challenges or solutions, and the program is not tested. The link to the code may be missing or non-functional, making it impossible to evaluate the program.

(Also see Section 16: General Assessment Criteria for Written Assessments)

16. General Assessment Criteria for Written Assessments

GENERAL ASSESSMENT GUIDELINES – LEVEL HE4

	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 breadth of knowledge and understanding of theory and practice beyond the threshold expectation for the level. Demonstrates excellent understanding of key concepts in different contexts.	Presents an excellent and cohesive appraisal of findings through the critical analysis of information. Draws clear, justified and thoughtful conclusions. Demonstrates creative flair, originality and initiative. Demonstrates a critical understanding of problem-solving approaches and applies strong problem-solving skills.	Provides insightful reflection and 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 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 placement 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 of knowledge and understanding of theory and practice for this level. Demonstrates in-depth understanding of key concepts.	Presents an excellent and cohesive discussion of findings through the interpretation and evaluation of information sources. Draws clear, justified and thoughtful conclusions. Demonstrates clearly creativity and initiative. Applies excellent problem-solving skills.	Provides excellent reflection and self-awareness in relation to the outcomes of own work and personal responsibility.	A 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 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 placement 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 of knowledge and understanding of theory and practice for this level. Demonstrates very good understanding of key concepts.	Presents a perceptive and cohesive discussion of findings through the interpretation and evaluation of information sources. Draws clear and justified conclusions. Demonstrates creativity and initiative. Applies strong problem-solving skills.	Provides justified reflection and self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	A range of appropriate reference sources selected and drawn upon. Sources cited accurately in the main in the text and in the Reference List/ Bibliography.	Writing style is clear 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 placement of 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 of knowledge and understanding of theory and practice for this level. Demonstrates sound understanding of key concepts.	Presents a logical discussion of findings through the interpretation and evaluation of information sources. Draws clear and justified conclusions. Demonstrates some creativity and initiative. Applies sound problem-solving skills.	Provides valid reflection and self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	Relevant reference sources selected and drawn upon. Some sources accurately cited in 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 largely correct for the type of assignment. Logically structured in the most part. Where relevant, effective placement of some figures, tables and images.
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 of knowledge and understanding of theory and practice for this level. Demonstrates a sufficient understanding of key concepts.	Presents a valid discussion of findings through the interpretation and evaluation of information sources. Draws justified conclusions. Demonstrates creativity and initiative in places. Applies sufficient problem-solving skills.	Provides some reflection and 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 always relevant and/or clear.
Borderline Fail 35% - 39%	Work addresses only some of the requirements of the brief. Irrelevant and superficial content. **One or more learning outcomes have not been met.**	Demonstrates limited knowledge and understanding of theory and practice for this level. Demonstrates a lack of understanding of key concepts.	Presents a limited discussion of findings through the interpretation of information sources. Draws some irrelevant conclusions. Creativity and initiative are lacking. Problem-solving skills are lacking.	Provides limited reflection and self-awareness in relation to the outcomes of own work and personal responsibility, when required.	Sources selected are limited and lack relevance. 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 in places. Paragraphs are poorly structured.	For the type of assignment the presentational style, layout and/or structure are lacking. Figures, tables and images included when required but these lack clarity and relevance.
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 understanding of key concepts.	Presents a limited discussion of findings with little consideration of the quality of information drawn upon. Draws irrelevant conclusions. Creativity, initiative and problem-solving skills are absent.	Provides inadequate reflection and self-awareness in relation to the outcomes of own work and personal responsibility, when required.	There is an absence of relevant sources. 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. Figures, tables and images are absent when required or lack relevance/clarity.