University of Westminster
Department of Computer Science

4COSC00W: Programming Principles I
Assignment Specification (2017/8)

Module leader	Wendy Purdy
Unit	Practical Exercises - Referral/Deferral
Weighting:	50%
Qualifying mark	30%
Description	Practical Work
Learning Outcomes Covered in this Assignment:	The coursework rationale is: • LO1 Identify program requirements and select appropriate algorithms to implement them; • LO2 Represent algorithms in a structured manner (e.g., by use of flow diagrams or pseudo-code); • LO3 Implement algorithms using an algorithmic, strongly typed programming language, and design and run appropriate tests on the resulting code; • LO4 Write program code that conforms to norms of good style and meets generally accepted referencing criteria;
Handed Out:	14th June 2018
Due Date	9th July 2018 at 10:00 am
Expected deliverables	Mini-assignments 1 and 2 - Flow chart, Java program code, test plan with results.
Method of Submission:	Submitted online via Blackboard
Type of Feedback and Due Date: BCS Criteria covered in this Assignment:	Written feedback and marks 15 working days (3 weeks) after the submission deadline. All marks will remain provisional until formally agreed by an Assessment Board. 2.1.1 Knowledge and understanding of facts, concepts, principles & theories 2.1.2 Use of such knowledge in modelling and design 2.1.3 Problem solving strategies 2.2.1 Specify, design or construct computer-based systems 2.2.4 Deploy tools effectively 2.3.2 Development of general transferable skills 4.1.1 Knowledge and understanding of scientific and engineering principles 4.1.2 Knowledge and understanding of mathematical and statistical principles

Assessment regulations
Refer to section 4 of the "How you study" guide for undergraduate students for a clarification of how you are assessed, penalties and late submissions, what constitutes plagiarism etc.

Penalty for Late Submission
If you submit your coursework late but within 24 hours or one working day of the specified deadline, 10 marks will be deducted from the final mark, as a penalty for late submission, except for work which obtains a mark in the range 40 – 49%, in which case the mark will be capped at the pass mark (40%). If you submit your coursework more than 24 hours or more than one working day after the specified deadline you will be given a mark of zero for the work in question unless a claim of Mitigating Circumstances has been submitted and accepted as valid.

It is recognised that on occasion, illness or a personal crisis can mean that you fail to submit a piece of work on time. In such cases you must inform the Campus Office in writing on a mitigating circumstances form, giving the reason for your late or non-submission. You must provide relevant documentary evidence with the form. This information will be reported to the relevant

Assessment Board that will decide whether the mark of zero shall stand. For more detailed information regarding University Assessment Regulations, please refer to the following website: **http://www.westminster.ac.uk/study/current-students/resources/academic-regulations**

Coursework Description

Part 1 - Mini-Assignment: Grocery Discount

A) Program (19 marks)

A supermarket awards coupons depending on how much a customer spends on groceries. For example, if you spend £50, you will get a coupon worth eight percent of that amount. The following table shows the percent used to calculate the coupon awarded for different amounts spent. Write a program that calculates and prints the value of the coupon a person can receive based on groceries purchased.

Add validation to check that the amount entered is greater than £0.

Use *printf()* to improve the formatting of the output.

Your program should:

- conform to the conventions of good programming style. Descriptive variable names; camel case for variable names where appropriate; indentation used to emphasize the logical structure of the code; use of comments to document your code;
- meet accepted referencing criteria for any code reused from other sources.

Here is a sample run:

```
Please enter the cost of your groceries: 14
You win a discount coupon of £1.12 (8% of your purchase).
```

Money spent	**Coupon percentage**
Less than £10	No coupon
From £10 to £60	8%
More than £60 to £150	10%
More than £150 to £210	12%
More than £210	14%

B) Extra Requirements (4 marks)

- The program should loop and continue to display the amount spent and discount for individual customers. When the cashier enters a value of '-99', the program will print the total of the money spent and the total of the discount given during the program run.

C) Flow Diagram (10 marks)

- Submit your flow diagram that represents your algorithm in a structured manner.

D) Test Plan (10 marks)

- You should also produce a test plan that covers your program decision points and submit your test plan results with your flow diagram and Java program code.

Part 2 - Mini-Assignment: Sequence Of Values (loop)

E) Basic Program (28 marks)

Write a program that reads a set of floating-point values entered by a user (0.0 to 50.0 inclusive). The user should enter a non-numeric character to indicate the end of the series of numbers although a maximum of 10 values can be entered. The program should then display:

- the average of the values
- the smallest of the values
- the largest of the values
- the range, that is the difference between the smallest and largest.

Your program should conform to the conventions of good programming style as described for Part 1 (above) and meet accepted referencing criteria for any code reused from other sources. Use *printf()* to improve the formatting of the output.

F) Extra Requirements (7 marks)

- Add validation to ensure that each value entered is 0.0 to 50.0 inclusive.
- Add validation that only a maximum of 10 values can be entered. G) Flow Diagram (11 marks)
- Create and submit your flow diagram that represents your algorithm in a structured manner.

G) Flow Diagram (11 marks)

- Submit your flow diagram that represents your algorithm in a structured manner.

H) Test Plan (11 marks)

- Produce a test plan that covers your program decision points.

Marking scheme (Part 1 & 2)

The Coursework will be marked based on the following marking criteria.

Criteria	Max. Marks per subcomponent	Max. Marks per component
Part 1 (Mini-Assignment) - Grocery Discount		43
A) Program: • Calculates discount coupon (8) • Programming style, Referencing (5) • Validation (3) • Formatted results (3)	19	
B) Exit loop (-99), total spent, total discount	4	
C) Flow chart of algorithm solution	10	
D) Test plan with results	10	
Part 2 (Mini-Assignment) - Sequence Of Values		57
E) Basic Program: • Effective use of loop (10) • Statistics displayed (10) • Formatted results (3) • Programming style, Referencing (5)	28	
F) Extra requirements: • Values entered 0.0 to 50.0 inclusive (4) • Limited to 10 entered values (3)	7	
G) Flow chart of algorithm solution: • Basic program (8) Includes extra requirements (3)	11	
H) Test plan with results: • Basic program (8) Tests extra requirements (3)	11	