



School of Computing and Information Systems

PROGRAMME: BSC ICT, BSC APPLIED BUSINESS COMPUTING

ABC103- INTRODUCTION TO PROGRAMMING USING C#

Year 1

Semester 2

ASSIGNMENT

Hand Out Date: 5 March 2020

Hand In Date: 19 May 2020

Total Marks: 100

Instructions to candidates

1. Candidates must attempt **ALL** questions.
2. You are to make your submission on turn-it-in. You may consult with your tutor/lecturer on how this will be done.
3. Ensure that you have an account on turn-it-in by going to www.turnitin.com. Use the credentials provided for accessing this system. If you do not have them, get hold of the tutor/lecturer as soon as possible.
4. Any work with plagiarism level above **30 % will not be marked**. It your responsibility to make sure that your plagiarism level is within this level. Monitor it on regular bases. If your share your solution with others, chances of the plagiarism rising above this level are high.
5. Its your responsibility to ensure that you have **YOUR** module in turn-it-in before submission date and you do not drop the module. Consult with your tutor/lecturer if this is not the case.

NOTES TO THE STUDENTS

This assignment is supposed to be done in stages. The stage submissions can given to the tutor at given periods in your tutorial sessions or on appointment basis. The tutor can see the work for certain components in the assignment to verify you are on the right track and even require you to change your solution if necessary. All work should be done to your best level so that you earn good grades.

The final submission that will be made up of **All** the corrected work that has been discussed with the tutor. This will be assessed and graded accordingly. This will be submitted on turn-it-in for plagiarism and marking. Your components should be labeled accordingly for you to earn marks. **Part A** contribute **40%** to overall Assignment mark, **Part B** contribute **40%** to overall Assignment mark and **Part C** contribute **20%**.

SCENARIO: STUDENT EXCHANGE MOTSHELO (STEM)

STEM is a student entrepreneur initiative that lend student money with lower interest. Suppose that you have been approached by the **STEM** representatives as a Systems analyst and Designer. The representatives want you to develop a system for them to use to monitor their lending services. After a long interview with the representatives, they finally settled for the following features on the small system, that they want you to design and implement. The representatives agreed on C# programming language to be used and the system to be able to run on college computers that runs on Windows.

System Features

- Feature 1.** The system should allow a user to create an account for them to use it. They will provide username, password, email, firstname, surname, physical address. These details should be saved as `username#password#email#firstname#surname#physicalAddress#Phonenumber` in a text file called **Users.txt**. Password and username can be saved separately.
- Feature 2.** The system should allow a user to open an account for a customer by providing the following details of the Customer: firstname, surname, customer-Number (Student number) and date. These details should be stored in a text file called **customerDetails.txt** with # as delimiter.
- Feature 3.** The system should allow users to facilitate a loan amount not more than **BWP650.00** to a student with a loan account, the borrower should have loan balance of **BWP00.00** and should not be flagged customer. The system should increase the loan balance by 10% every 30 days. Here the system should be able to store customer-number, loan amount and date issued in a file called loans.txt.

Feature 4. The system should allow users to list overdue loans (Customer number, Full name, contact, loan date, Number of days due), enable flagging customers as red if they have not paid a loan for more than 62 days.

Feature 5. The system should allow users to update loan balance when customer pay back the loan.

Feature 6. Every system user should login first before using the system. The system should keep a log file of every login instances in a file called log.txt. The file should contain username, login date and time.

Use the above mentioned features to attempt questions that follow. You are supposed to draw the flow charts and write the pseudocode using Microsoft word. All the answers must be clearly labeled.

Part A: System Documentation Instructions (100 Marks)

Compile a system documentation based on the scenario above and focusing on the features described.

- 1) Write a brief introduction about the proposed solution to the scenario above. **[05 Marks]**
- 2) Described your solution to the problem in terms of top-down approach and sub systems or modules that make up the whole system. **[05 Marks]**
- 3) Write down the pseudocode that shows how you will implement **Feature 1**. Draw the flow chart for this feature. Elaborate on your solution. **[10 Marks]**

Pseudocode:[5]

1 mark for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

Flow chart[5]

1 mark for start-stop

1 mark for use prompts and input ouput

2 mark for correct logic

1 mark for clean flow chart

- 4) Write down the pseudocode that shows how you will implement **Feature 2**. Draw the flow chart for this feature. **[10 Marks]**

Pseudocode:[5]

1 marks for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

Flow chart[5]

1 mark for start-stop

1 mark for use prompts and input output

2 mark for correct logic

1 mark for clean flow chart

- 5) Write down the pseudocode that shows how you will implement **Feature 3**. Draw the flow chart for this feature. Elaborate on your solution. **[25 Marks]**

// writing to file

Pseudocode:[5]

1 marks for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

// updating every 30 days

Pseudocode:[5] // writing to file

1 marks for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

Flow chart[5]

1 mark for start-stop

1 mark for use prompts and input output

2 mark for correct logic

1 mark for clean flow chart

- 6) Write down the pseudocode that shows how you will implement **Feature 4**. Draw the flow chart for this feature. Elaborate on your solution. **[25 Marks]**

// Reading from file with a search

Pseudocode:[5]

1 marks for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

// updating of flags

Pseudocode:[5] // writing to file

1 marks for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

Flow chart[5]

1 mark for start-stop

1 mark for use prompts and input ouput

2 mark for correct logic

1 mark for clean flow chart

- 7) Write down the pseudocode that shows how you will implement **Feature 5**. Draw the flow chart for this feature. Elaborate on your solution. **[15 Marks]**

// search

Pseudocode:[5]

1 marks for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

//Updating

Pseudocode:[5]

1 marks for meaningful variable declaration

1 mark for use of methods

2 Marks for logic

1 mark for clean code

Flow chart[5]

1 mark for start-stop

1 mark for use prompts and input ouput

2 mark for correct logic

1 mark for clean flow chart

- 8) Draw the flow chart for the whole system. Provide detailed elaboration on your solution. **[05 Marks]**

Flow chart[5]

1 mark for start-stop

1 mark for use prompts and input ouput

2 mark for correct logic

1 mark for clean flow chart

Part B System Implementation [100 Marks]

GUI

- a) Login Form. **[5 marks]**
 - i. Use of appropriate control(1)
 - ii. Password hide and reveal feature (2)
 - iii. Informative (2)

- b) Registration **[10 marks]**
 - i. Use of appropriate control(3)
 - ii. Causes validation events (3)
 - iii. Look n Feel (2)
 - iv. Informative (2)

- c) Overdue loans **[5 marks]**
 - i. Use of appropriate controls (2)
 - ii. Data binding (2)
 - iii. Look n Feel (1)

[Total 20 Marks]

Code Logic

- a) Feature 1 **[15 marks]**
 - i. Use of a separate class from Form (5)
 - ii. Use method correctly (5)
 - iii. Consume class with object (2)
 - iv. Exception handling & comments (3)

- b) Feature 2 **[10 marks]**
 - i. Use of a separate class from Form (5)
 - ii. Use method correctly (3)
 - iii. Consume class with object (1)
 - iv. Exception handling & comments (1)

- c) Feature 3 **[15 marks]**
 - i. Use of a separate class from Form (6)
 - ii. Use method correctly (5)
 - iii. Consume class with object (2)
 - iv. Exception handling & comments (2)

d) Feature 4 **[10 marks]**

- i. Use of a separate class from Form (5)
- ii. Use method search and display on Data grid (5)
- iii. Use method to update file from Data Grid (5)
- iv. Consume class with object (2)
- v. Exception handling & comments (2)

e) Feature 5 **[5 marks]**

- i. Code reuse (2)
- ii. Use method search and display on Data grid (1)
- iii. Consume class with object (1)
- iv. Exception handling & comments (1)

a) Feature 6 **[15 marks]**

- i. Code reuse (2)
- ii. Use method for validation (5)
- iii. Use of method for log writing (5)
- iv. Exception handling & comments (3)

[Total 70 Marks]

Presentation [10 marks]

- a) General knowledge of work ownership (2)
- b) Technical knowledge on the presented work (3)
- c) Practical skills on fixing errors and debugging (3)
- d) Presentation skills (2)

[Total 10 Marks]

Part C: Research Xamarin Platform [100 Marks]

Discuss **Xamarin platform** in terms of the following sub topic. Research around the topics and discuss as much possible using your own words.

- a. Introduction
- b. Mobile SDLC
- c. Language and support
- d. Performance and security
- e. Rival Technology
- f. Summary
- g. References