School of Computing and Information Systems

PROGRAMME: BSC BUSINESS INTELLIGENCE AND DATA ANALYTICS, BSC INFORMATION COMMUNICATION TECHNOLOGY

CSE103 – SYSTEM DEVELOPMENT **Year 1 Semester 2**

Assignment

Handout Date: 14 March 2025 **Hand-in Date: 26 May 2025**

Total Marks: 100

Instructions to candidates

1. Candidates must attempt **ALL** questions.
2. You are to make your **FINAL** submission on turn-it-in. You may consult with your tutor/lecturer on how this will be done.
3. Your Assignment submission must have a cover page with full student details. The cover page is provided in Appendix 1. Ensure you sign the acknowledgement statement as proof, admission, or affirmation that your work is being submitted.
4. Ensure you have an account on turn-it-in by going to **www.turnitin.com**. Use the provided credentials to access this system. If you do not have them, get hold of the tutor/lecturer as soon as possible.
5. Any work with plagiarism above **30 % will not be marked**. It is your responsibility to ensure your plagiarism level is within this level. Monitor it regularly. If you share your solution with others, the chances of plagiarism rising are high.
6. Ensure that you have the **System Development** module in turn-it-in before the submission date and do not drop the module on turn-it-in. Consult your tutor/lecturer if this is not the case.

This question paper consists of six (6) printed pages including this page.

Targeted Outcomes

Upon successful completion of this coursework component (assignment), the student should have knowledge and understanding of:

1. Develop a critical understanding of the software development process.
2. Critical evaluation of project management techniques and apply them.
3. Solve Problems using problem-solving techniques.
4. Model software using an Object modelling technique.
5. Demonstrate algorithm knowledge by implementing a simple reservation system.
6. Apply SDLC in solution design for business problems.

Case Study Scenario

MyBnB Chain Reservation System **Total Marks [100]**

MyBnB is a leading chain of B&Bs, providing bed and breakfast services and other services. MyBnB has branches in Selepa, Gerald, Tatisiding, and Area W. MyBnB has decided to introduce a computerized system to manage customer reservations, check-ins and check-outs. Currently, they have a spreadsheet software package that can carry out these tasks. Each branch runs this package locally. This is problematic, for example, if one branch is full and the helpdesk assistant receives a reservation request, the helpdesk assistant must call other branches to locate a suitable room. Similar problems arise if a customer wants to transfer between branches.

The new system must resolve this problem by providing a single, common reservation system across MyBnB branches. The system should provide a System Administrator with the ability to add new branches to the system as they are acquired or built. Additionally, branch managers should be able to add and

remove rooms and room types to and from the system in response to activities such as repairs and building work.

The system will allow helpdesk assistants to handle only reservation requests made by customers in person and through the telephone. A helpdesk assistant should be able to check how many rooms are available in their branch and then reserve each room required on behalf of a customer. If their branch is full, the helpdesk assistant should be able to check how many rooms are available in other branches and then reserve each room required if the customer agrees.

A reservation will require the customer to provide details of a debit or credit card account. The account will be debited on the day when the customer checks out. A customer can request to cancel a reservation any time before 24 hours to the check-in date. If a customer requests to cancel a reservation late (less than 24 hours before the check-in date) or does not check-in on the agreed check-in date, then the customer will automatically be charged an amount equivalent to one night's lodging.

Assignment Tasks

You are a Systems Analyst hired by MyBnB chain. Implement the SDLC to help MyBnB manage its reservation challenges as stated below.

What to do	Marks
1. Planning Explain what will go into MyBnB chain a) Technical feasibility b) Economic feasibility c) Schedule feasibility d) Operational feasibility	**[12 marks]** [3 Marks] [3 Marks] [3 Marks] [3 Marks]

2. Analysis a) Prepare a request for proposal (RFP) for the work to be done for MyBnB chain b) Extract at least 6 functional requirements and at least 4 non-functional requirements from the scenario	**[20 Marks]** [10 Marks] [10 Marks]
3. Design a) Draw Use cases for MyBnB chain system b) Draw a Class diagram on the scenario. c) Draw an activity diagram for the process of making a reservation. d) Model a sequence diagram for the process of making a reservation. e) Draw a Context diagram for MyBnB chain's reservation system.	**[28 Marks]** [6 Marks] [6 Marks] [6 Marks] [6 Marks] [4 Marks]
4. Implementation a) Draw a flowchart for the process of cancelling a reservation. b) Write pseudocode for the flowchart in 4 a) above	**[20 Marks]** [10 Marks] [10 Marks]
5. Review The project manager for MyBnB chain has determined that the key project activities in the reservation project are Requirements, Analysis, Documentation, Logical Design, Form Design, Report Design, Implementation, and Installation. She has summarized the project information in the table named New Software Table below: a) Assist the project manager in her planning task by completing the New Software Table in Table 1 below, i.e., calculate the EF, LF and determine if the Task is on a critical path or not. **Clearly show all the steps followed to calculate EL and LF.** b) Draw a network diagram from a completed table above	**[20 Marks]** [10 Marks] [10 Marks]

Table 1 - New Software Table

ID	TASK	DEPENDENCE	EXPECTED TIME	EARLIEST FINISH TIME (EF)	LATEST FINISH TIME (LF)	CRITICAL ACTIVITY (Yes/No)
1	**Requirements**	-	10	-	-	Yes
2	**Analysis**	1	8	-	-	-
3	**Documentation**	1	15	-	-	-
4	**Logical Design**	2	6	-	24	-
5	**Report Design**	4	4	-	-	-
6	**Form Design**	4	5	-	-	-
7	**Implementation**	5,6	15	44	-	-
8	**Installation**	3,7	3	-	-	Yes

TOOLS USED TO ANSWER THE ASSIGNMENT

- MS Word
- MS Project
- Visio
- Visual Paradigm
- Link to download and install community version of some required software

https://www.visual-paradigm.com/download/community.jsp

https://online.visual-paradigm.com/

End of Assignment

Appendix 1: Assignment submission cover sheet

ASSIGNMENT SUBMISSION COVER SHEET

Student Id:	
Student names:	
Student email:	
Cohort:	
Assignment title:	
Date of submission:	
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Programme of Study:	
Year of Study:	

Intellectual property statement

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have read and understood the Botswana Accountancy College plagiarism guidelines policy.

☐ Agree **Signature**…….

Date…….