OPEN UNIVERSITY *of* MAURITIUS

INSTRUCTIONS TO STUDENTS

Read properly the mode of submission.

Please note that any assignment submitted after the deadline, marks will be deducted as per assignment submission procedure document.

To abide by below:

Declaration of use of content generated by Artificial Intelligence (AI) (including but not limited to Generative-AI) in the assignment

The student confirms that there has been no use of content generated by Artificial Intelligence (AI) (including but not limited to text, figures, images, and code) in the assignment.

Plagiarism/collusion will be heavily penalised and may result in non-award of marks.

POINTS TO REMEMBER WHEN SUBMITTING YOUR ASSIGNMENT:

MODE OF SUBMISSION:

- **Submit on Blackboard –** (by or before due date)

The current penalty is 2% per day (weekends and public holidays included) for any assignment received after the due date which the tutor will deduct from the final mark.

The Open University of Mauritius will not hold itself responsible or liable for the non-award of marks if you fail to submit the assignment as per the required mode of submission.

Module Name: Software Engineering

Lecturer's Name: Dr. Rubeena Doomun

Date of Submission: 4th Nov 2024

Submission Mode: **BLACKBOARD (MANDATORY)**

Total Marks: 30

Assignments question:

Question 1:

You are the project manager of a software development company, and have been asked to undertake development of a computer monitoring system for a new park, which is going to host dangerous animals. The initial statement of requirements is given below. Study it, and then answer the questions that follow.

The computer monitoring system shall monitor the movements of all animals in the park, as well as the movements of the game warden in order to be able to prevent attacks. Each animal will be fitted with a small radio transmitter, which will emit a signal at frequent intervals. The signals will be picked up by three receivers, which will relay to the central computer the direction from which each signal from each animal was received. The central computer shall analyse these signals in order to calculate the position of each animal. The position of the animals shall be computed within 0.1 seconds.

The pens enclosing each species will be surrounded by electric fences to prevent them from straying into one another's areas, or onto the road used by the tourist. The computer system shall detect any damage to any of these fences and raise an alarm when necessary. An alarm shall be raised if any animal strays out of its enclosure.

The interface of the system shall be menu based so that it will be easy to use by the staff in the control centre. It shall automatically "beep" the veterinary, if any animal is injured. Since the park will host very dangerous animals, the monitoring system will have to be thoroughly tested before delivery. The system shall be ready for the planned opening of the park in December, and shall not cost more than Rs 6 million.

a) Identify three functional and three non-functional requirements for the above computer monitoring system. **[6 marks]**

b) Given the above scenario, recommend a software development life-cycle that you would adopt for the above system. State and explain the steps involved in the proposed life-cycle and justify your answer by explaining why you have chosen this software process model. **[5 marks]**

c) Identify four difficulties you might encounter during requirements elicitation and analysis for the above project. **[4 marks]**

d) The Software Requirements Specification (SRS) is the official document that states in precise and explicit language functions and capabilities that the system must provide, as well as states any required constraints by which the system must abide. As the project manager you have been requested to list and explain the desired characteristics of the SRS document. **[5 marks]**

Question 2:

A village bookshop wants you to design for them a new ordering and stock control system. They provide the following information about their business so that you can carry out use case modelling.

Customers can either select from books currently in stock (i.e. from the shelves or a book that has been ordered) or can order books. A sales assistant takes the book from the customer (if it is a book that is in stock) and the payment (cash or card) and records the transaction, i.e., information about the payment and the decrease in stock levels. If the customer is ordering a book, then the sales assistant sends off an order to our wholesale distribution company using the ISBN number and quantity. The sales assistant also helps customers find books in the online catalogue if they don't know the ISBN number for the order. A small charge is added to the price for advance orders.

The shop manager is responsible for stock ordering and financial reporting. At the end of each week, the manager prints off a report about stock levels, including changes to stock levels, and is responsible for placing orders for new books where stock levels have fallen below a certain level. The manager is also responsible for ordering new books that have just been issued. The order goes to our wholesale distribution company.

When a book order arrives from the wholesale distribution company, the shop manager is responsible for receiving the order and updating stock levels. If the order is for a customer,

the sales assistant is responsible for contacting them to advise them that the book is available.

a) Create a use case diagram for the system required by the book shop, as described above. Also, describe the meaning of the relationships in your use case diagram. **[10 marks]**