



NATIONAL SCHOOL OF BUSINESS MANAGEMENT

BSc (Hons) Software Engineering (PU) – 21.2

BSc (Hons) Computer Networks (PU) – 21.2

BSc (Hons) Computer Security (PU) – 21.2

Year 01 Semester 02 Examination

17 August 2022

SE103.3 – Systems Analysis and Design

Instructions to Candidates

- 1) Answer all questions.
- 2) **Time allocated for the examination is five (05) hours (Including downloading and uploading time) . (Note: No email submissions are accepted under any condition.)**
- 3) Weightage of Examination: 60% out of final grade
- 4) Download the paper, provide answers to the selected questions in a word document.
- 5) **Please upload the document with answers (Answer Script) to the submission link before the submission link expires**
- 6) Answer script should be uploaded in PDF Format
- 7) Under any circumstances E-mail submissions would not be taken into consideration for marking. Incomplete attempt would be counted as a MISSED ATTEMPT.
- 8) The Naming convention of the answer script – Module Code_Subject name_Index No
- 9) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.
- 10) Your answers will be subjected to Turnitin similarity check, hence, direct copying and pasting from internet sources, friend's answers etc. will be penalized.

Answer all the questions based on below case study.

SL-Tools Case study

SL-Tools is a tool hire company. The company has a number of branches and offers tools for hire to both the general public and the building trade. The tools available for hire range from screwdriver sets and do-it-yourself power tools, to plant machinery such as mechanical diggers. The tools can be hired for a day or for up to a period of 3 months, although each category of the tool has a maximum hire period. For example, electric hand drills are categorized as DIY power tools, with a maximum hire period of one week. Mechanical diggers and bulldozers are categorized as plant machinery and can be hired for up to 3 months. Some categories of tools can only be hired by members of the building trade because special training is required to use them.

When a customer wishes to hire a tool, they can either come to one of the branches in person and take the tool immediately (if it is available), or they can reserve a tool online in advance of the requested hire period. Usually, customers reserve large tools to make sure they are available when needed, but SL-Tools also carries a large number of the smaller tools, which are usually available without a reservation.

When a customer collects a tool, they must provide their name and address, company details if they are a trade customer, and the period of time the tool will be hired for. All these hire details are recorded by SL-Tools staff. For online reservations, customers should provide the same details to an online form. Online reservations can be made as registered customers or as a guest. Customers should provide their name, address, company details (only for trade customers), and email address to register with the system. Private customers must pay the full cost of the hire at the start of the hire period, as well as a refundable deposit. Trade customers only pay the deposit at the start of a hire period but will receive an invoice at the end of the month. When a customer returns the hired tool or tools, they receive back the whole deposit if the tool is in good condition. If it is not, a reduced deposit is paid back. From time to time, a manager of a branch adds new tools to the branch's inventory and removes old ones. SL-Tools maintain both a website and a mobile application to reach a high number of customers and to facilitate tool reservations.

Question 01:**(25 marks)**

Designers have decided to develop the system using the Agile methodology in two sprint cycles.

- 1) Divide the system into possible two (02) separate components or subsystems, which can be developed in **two sprints**. You can make assumptions to build the answer. Briefly describe each subsystem. (10 marks)
- 2) Create a Work Breakdown Structure that lists all the steps to complete the **first sprint**. Put a time estimate on each step. (15 marks)

Question 02:**(25 marks)**

- 1) As per the information given in the case study, Identify the users for SL-Tools system. For each type of user, describe user requirements that should be addressed by the system. (10 marks)
- 2) Identify one possible technique to be used to collect requirements from each of these user groups. Justify your selections. (05 marks)
- 3) Aligning with your answer to part 1, draw a use case diagram for SL-Tools. (10 marks)

Question 03:**(25 marks)**

1. Considering the details given in the case study draw a context-level DFD for SL-Tools. (07 marks)
2. List down high-level processes you identify in the SL-Tools. (06 marks)
3. Aligning with the findings of part 2, draw the level 1 DFD for SL-Tools. (12 marks)

Question 04:**(25 marks)**

- 1) According to the details given in the case study, list down the classes that you can identify in SL-Tools system. (05 marks)
- 2) Identify attributes and methods for each class that you identified in part 1. You can make assumptions about the methods of the classes. (07 marks)
- 3) Aligning with the answers you provided to part 1 and part 2 draw a class diagram to SL-Tools. (12 marks)

END OF THE PAPER