University of Sri Jayewardenepura

Faculty of Humanities and Social Sciences

Bachelor of Science First Year Second Semester Examination- December, 2021

Information Technology

ICTC 1201. 03 – System Analysis and Design

Answer all questions.

Time: Two (02) hours
Commence each question on a new page. Write the question number on the front cover of the examination booklet.

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1)[75 Marks]

Stylish Life Furniture Manufacturer

Stylish Life is a stylish furniture manufacturing company based in Italy. The company buys all the parts for its furniture from various suppliers around the world. The parts are then assembled in the factory in Italy to produce a number of different types of furniture e.g. armchairs, tables.

Stylish Life sell to furniture shops, not individuals. These shops are therefore Stylish Life's customers and will have registered with Stylish Life and been given a username and password. The furniture shops will typically place orders with Stylish Life over the internet after logging in to the system using this username and password. Once a customer has placed an order, delivery is estimated to take three weeks. Each customer order can consist of more than one type of furniture, and the required quantity of each type is also recorded on the order. At the end of each week a production plan is produced so the manufacturing department knows how many of each furniture type it needs to produce in the following week. The production plan is based on the number of each type held in stock in the warehouse and the quantity of each type ordered by customers. The production plan is also used to place purchase orders for parts from the suppliers so that all the necessary parts are available for the week's production.

Each individual piece of furniture assembled has a unique code stamped on it. When a customer order is ready for dispatch, the code of each actual piece of furniture allocated to that customer order is recorded so that each piece of furniture can be traced to a particular customer. Deliveries to customers can be arranged for complete or partial orders.

1.1. [25 Marks]

(a) [8 Marks] List the processes and the external entities that you would include on a top-level Data Flow Diagram (DFD) of the Stylish Life company. Draw the DFD.
(b) [9 Marks] Produce a Use Case diagram for a computer system to support Stylish Life's business processes.
(c) [8 Marks] Compare a DFD and a use case diagram. Use your answers to parts (a) and (b) to illustrate your points. You should not compare the notation.

1.2. [25 Marks]

(a) [10 Marks] The computerized system for Stylish Life allows customers to place their orders over the internet. Stylish Life sell to furniture shops, not individuals, therefore they invoice and collect payment after delivery of the furniture. Produce a system use case description for the normal scenario of the use case 'Place an order'.
(b) [5 Marks] Explain what an alternative scenario is in a use case description, and why it may occur.
(c) [10 Marks] Write the alternative scenarios for the use case description in part a).

1.3. [25 Marks]

(a) [12 Marks] Identify the FOUR most important principles of Agile development, justifying your choices.
(b) [13 Marks] Using an agile method of your choice (for example: DSDM, eXtreme programming, Scrum) describe the iterative/incremental project life cycle. You should illustrate your answer with a diagram of your chosen method's life cycle.

2)[20 Marks]

(a) [2 Marks] State **two** objects of a *data dictionary.*
   [2 Marks] Paul used a data dictionary in analyzing a system. Outline **two** benefits he realized from using this.

(b) [6 Marks] James, a system analyst, carried out a feasibility study for a system. Explain **three** areas of such studies.

(c) [4 Marks] Differentiate between *structured* and *menu driven* system analysis approaches.

(d) [6 Marks] Liztech, an ICT Company, uses project management software in a project. Explain three uses of such software.

3)[5 Marks]

(i) Which of the following Information systems are aimed at improving the routine business activities on which all organizations depend?
   (a) Management Information Systems
   (b) Decision Support Systems
   (c) Transaction Processing Systems
   (d) Executive Information

(ii) The project life cycle consists of
   (a) Understanding the scope of the project
   (b) Objectives of the project
   (c) Formulation and planning various activities
   (d) Word processor

(iii) Which is the most important feature of the spiral model?
   (a) Quality Management
   (b) Efficiency Management
   (c) Risk Management
   (d) Performance Management

(iv) _____ includes the existing system, the proposed system, system flow charts, modular design of the system, print layout charts and data file designs.
  (a) Feasibility Report
  (b) Functional Specification Report
  (c) Design Specification Report
  (d) Terms of Reference

(v) For the best Software model suitable for the project, in which of the phase the developers decide a roadmap for project plan?
  (a) Software
  (b) System Analysis
  (c) Coding
  (d) Testing

(vi) Using the _____ approach, a new system is tested in one part of the organization before being implemented in others.
  (a) Direct
  (b) Parallel
  (c) Phased
  (d) Pilot

(vii) _____ extends the software beyond its original functional requirements.
  (a) Adaptive maintenance
  (b) Perfective maintenance
  (c) Corrective maintenance
  (d) Preventive maintenance

(viii) Which normal form looks at removing partial dependencies?
  (a) First Normal Form
  (b) Second Normal Form
  (c) Third Normal Form
  (d) Fourth Normal Form

(ix) in constructing ER diagrams, double ovals are used to denote _____
  (a) Multi-value table
  (b) Multi-value entity
  (c) Multi-value attributes
  (d) Multi-value key

(x) Testing beyond normal operational capacity is _____
  (a) Performance Testing
  (b) Stress Testing
  (c) Recovery Testing
  (d) None of the above

-------- **End of the paper** --------