القســـــــم :
المســتوى :
الفصل الدراسي: الثاني
العام الجامعي:
اسم المقرر : **التحليل والتصميم الكينوني –A&DOO**
الزمـــــــن :

الجمهورية اليمنية
جامعة إقليم سبأ
كلية تكنولوجيا المعلومات
وعلوم الحاسوب

(Final Exam) --- **التاريخ: 6/4/**

اسم الطالب :		الرقم الجامعي:					
رقم السؤال	Q1	Q2	Q3	Q4	Q5	Q6	المجموع كتابة
الدرجة المستحقة	10	10	25	15	25	15	100
درجة السؤال							

Question No.1: Select the correct answer from the provided options (a, b, and c):   **Marks (10)**

1) The process of systems analysis is:
   a) Just gathering requirements   b) Describing the solution   c) Describing the problem

2) The are several strengths of using Prototyping in development such as:
   a) Provides a good documentation   b) Provides a risk control   c) Good for existing systems

3) Reasons for Investigating the Current System are to:
   a) Defend the Functionality required   b) Rapidly changing business   c) Changing technical environment

4) There are several modern methods for requirements-gathering such as:
   a) Background Reading   b) Joint Application Design   c) Interviewing and Observation

5) The purpose of structural models during development is
   a) Show static aspects of the system   b) Describe internal dynamic aspects   c) Describe business processes

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Question No.2: State whether the following statements are True or False. Correct the false statement:

Marks (10)

1) Systems Analysis and Design is the process of implementing and operating an information system   [   ]

2) Logical design is tied to hardware or software platforms there's physical design is specific programming languages, databases, and architectures.   [   ]

3) DFD diagram Created using the Object-Oriented Analysis Technique.   [   ]

4) A model provides a complete view of a system at a particular stage and from a particular perspective.   [   ]

5) Rational Unified Process (RUP) is an object-oriented and structured development methodology that has five phases.   [   ]

Question No.3: Functional models used to show business processes and interaction of an info system with its environment. From this statement answer the following questions.   **Marks (25)**

1) What is the purpose of an **Activity Diagram** and when not to use it?   Marks (3)

2) There are two types of **relationships between use cases** (stereotyped dependencies). Explain the two types.   Marks (4)

3) **Use the Case study below to answer the following questions:**

Web Customer uses some web site to make purchases online. The Web Customer on the web site can View Items, Make Purchase, Client Register, and Checkout. View Items could be used by the customer as a top-level if the customer only wants to find and see some products. The Web Customer could also use it to Make Purchases. Client Register allows customers to register on the website, for example, to get some coupons or be invited to private sales. View Items: a customer may search for items, browse the catalog, view items recommended for him/her, and add items to a shopping cart or wish list. The website provides some optional functions allowing customers to find items. Customer Authentication is included in View Recommended Items and Add to Wish List because both require the customer to be authenticated. At the same time, items could be added to the shopping cart without user authentication. Checkout includes web client authentication.

Checkout can be done through a user login page. Checkout includes Payment which could be done either by using a credit card and external credit payment service or with PayPal.

a) Draw the **Use Case Diagram** for the system.   Marks (8)
b) Illustrate the **Flow events of the use case diagram** you drew in section (b).   Marks (3)
c) Draw an **Activity Diagram with s**wimlanes for the online shopping system.   Marks (7)

Question No.4: From your understanding of designing and UML diagrams, answer the following questions.
Marks (15)

1) Explain the **purpose of behavioral models** in unified modeling language (UML).   Marks (2)

2) Behavioral models have two types of diagrams, the First type is used to represent the underlying details of a business process captured by a use case diagram. Explain which diagrams fall under the first type. Marks (3)

3) Explain what a Class Diagram is and what are its Elements.   Marks (3)

4) There are four types of **attributes in the class diagram**, explain the four types.   Marks (3)

5) Explain five principles of user **interface design**.   Marks (4)

Question No.5: A case study (Hotel Reservation System)   **Marks (25)**

The Hotel Reservation System is an online platform for hoteliers to manage their hotels and rooms online. With hotel reservation systems hoteliers can completely depend on the online system. They do not have to maintain the registers for their guests. All the data can be managed in real-time. It will help hoteliers to save time. Hoteliers can boost their hotels online. They can add unlimited rooms and hotels in their system and spread them all over the world. This is how there is an increment in the overall occupancy of hotels and yet again profit of the hotel increases. The steps to be taken by the guest to reserve a room in the online hotel reservation system are as follows:

- The guest is looking for a room :The guest searches for rooms and browses hotel results.
- Get more information by clicking on the hotel's website link and accessing the reservation page to find all the information that helps the guest choose the right room for him.
- Check availability and start booking by clicking on the Book Now button, and following the steps of the booking process:
  (1) Selects the room from the dropdown list (2) Select today's date from the calendar (3) Determine the length of stay (4) Enter his personal information, then click "Continue".
- They fill out the booking form: In the next steps, the guest sees the details of the total price, as well as an optional add-on for a photo package. The guest adds the photo package to the cart, following the similar booking process steps in the pop-up. Next, the guest scrolls to the reservation form to fill out their personal information, including how they heard about the company (Google), and agree to the reservation and cancellation policy before clicking continue.
- Payment is made online with a credit card to the payment page, where they double-check everything on the booking invoice. The guest enters their credit card details and pays the full amount in advance.
- Fill out the required details and documents for each guest by clicking Add yourself as a guest here under the guest list. His information fills in the guest form automatically since he has already filled out the reservation form, but he still has to sign the liability waiver, which he can do online by clicking on "Fill out the document". Send the reservation confirmation to the guest's email.

Use the case study to draw the following diagrams:
1) Draw the **class diagram** and identify the following: Marks (8)
    A. Stereotypes (Interface, Entity, and Control class)
    B. Relationship between classes, Relationship degree, and Relationship Multiplicity
2) Draw the **Sequence Diagram**   Marks (8)
3) Draw the **Collaboration Diagram**   Marks (5)
4) Draw the **State Chart Diagram**   Marks (4)

Question No.6: System verification and risk analysis are very important parts of the system development life cycle. From this statement answer the following questions   **Marks (15)**

1) There are several criteria for **evaluating system design**. Explain five criteria for good design.
2) What are the aims of using **loose coupling and high cohesion** during system design processes?
3) From the **design guidelines**, the designer should take care to (a) Keep Messages and Operations Simple, (b) Design Volatility, and (c) Design by Delegation. Explain (a), (b), and (c).

Good Luck