National University of Computer and Emerging Sciences, Lahore Campus

Course Name:	Software Requirements Engineering	Course Code:	SE 2001
Degree Program:	BS (SE)	Semester:	Fall 2023
Exam Duration:	60 Minutes	Total Marks:	40
Paper Date:	08-Nov-2023	Weight	15%
Section:	ALL	Page(s):	4
Exam Type:	Midterm-II		

Student : Name [redacted]

Instructions / Notes:
1. Attempt all ques[redacted]e question paper. Do not submit any [redacted] not be graded.
2. You are allowed to use a single-sided, hand-written, A-4 size help sheet. Colored or black & white photocopies are not allowed.
3. State your assumptions clearly

Question 1 (Max. Marks = 15) CLO 5

You have been asked to design a customer relationship management (CRM) system. This CRM system needs to provide a single view of customers profile using information stored in different data stores. Data recording process stores address information of all customers (walk-in and online) in one data store. The same process saves other information (e.g. name, phone number, etc.) about online and walk-in customers in two additional data store – one for walk-in customers and one for online customers. When this information is required for display the module responsible for displaying requires a consolidated view which is provided by a merging process. The merging process combines all of this customer information from these three different data stores. After the data has been combined, it is split into three parts. Part one consists of records with missing zip-codes, part two consists of records with incomplete zip-codes, and part three consists of records with complete and correct zip-codes. Data in parts one and two needs to be corrected. Missing zip-codes are looked-up from a zip-code repository for assignment. Similarly, incomplete zip-codes are also looked up from the same zip-code repository for completion. Finally, the split data (after necessary correction, when needed) is merged and then displayed. → To whom.

To do: Provide **a level 1 DFD**. Clearly mention the processes that are primitive and that are potentially non primitive. Give reasons for each.

(CRM System)

1- Data recording is non-primitive because, it has more then 1 input & more then 1 output

2- Merging is non-primitive because it has many inputs but only 1 output

3- Splitting splits data into many parts but has only 1 output

4- Display is primitive because, it has one input.

5- Rest are non-primitive.

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Question 3 (Max. Marks = 15) CLO 5

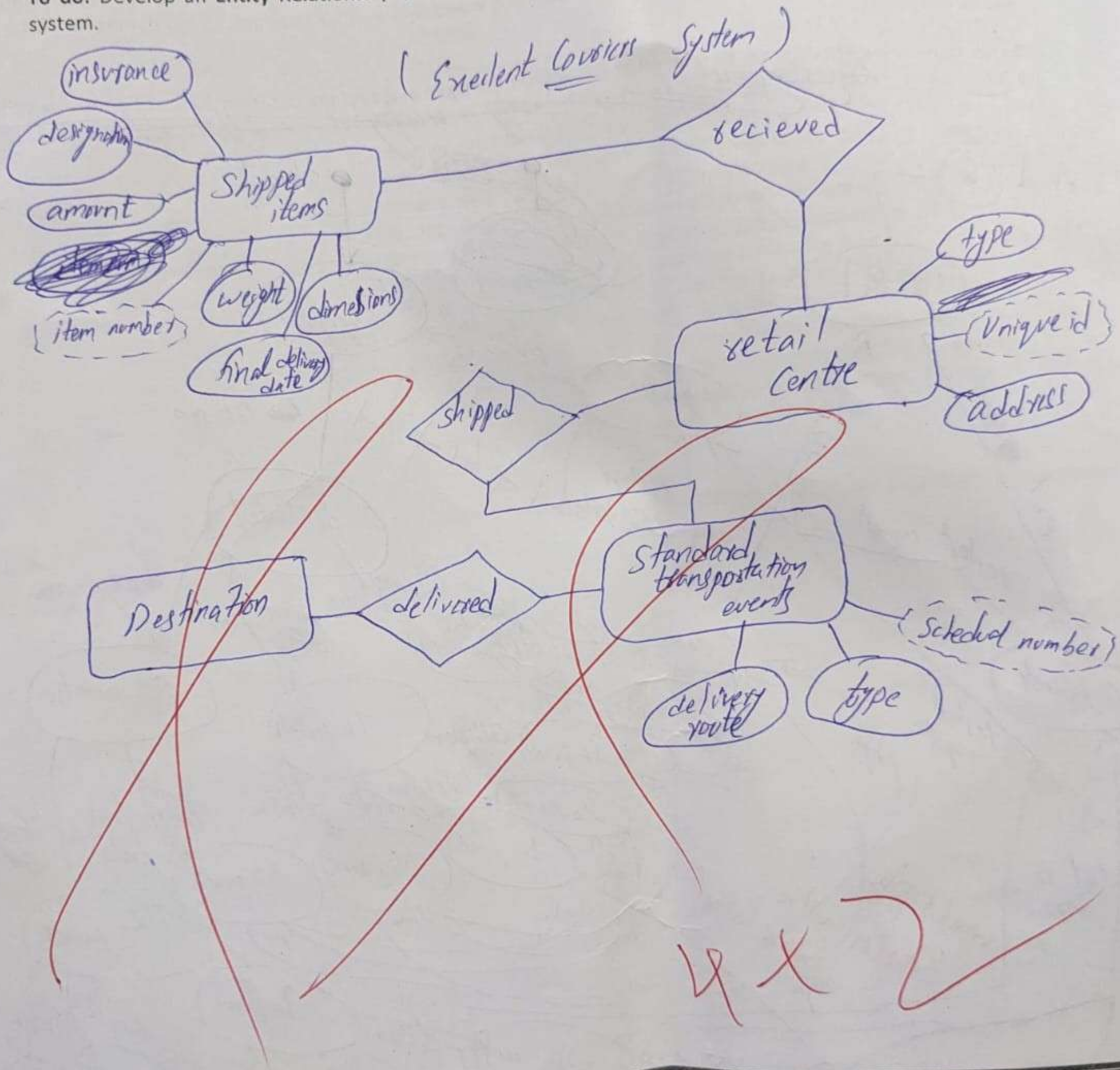
We need to develop a game scenario where there can be multiple vehicles, buildings, trees, fences, lakes, and roads on a map. Driver's task in the game is to take a vehicle from Point A to Point B. A driver that reaches the place in minimum time and with minimum vehicle damage wins. Each vehicle is allocated 100 strength points (i.e. 0 damage) which reduce after each collision with another vehicle or wall of a building. The collisions can reduce the strength points from 100 to 0 (if points go below 0, set them to zero). A vehicle with 0 strength points (100 damage) cannot continue with the game and the stage has to be restarted again. Collisions can be of three types namely Low, Medium, and High. Low damage collision reduces 20 strength points, Medium damage collision reduces 30 strength points, and High damage collision reduces 50 strength points. This means that a vehicle that has faced two high damage collisions will not be allowed to continue. Similarly a vehicle with 3 medium and 1 high damage collision will also be disallowed.

To do: Develop a **state diagram** to remember the vehicle damage i.e. model the different states of a moving vehicle after collisions.

Question 2 (Max. Marks = 10) **CLO 5**

Excellent Couriers (EC) is a company that prides itself on having up-to-date information on the processing and current location of each shipped item. To do this, they rely on a company-wide information system. Shipped items are the heart of the EC product tracking information system. Shipped items can be characterized by item number (unique), weight, dimensions, insurance amount, destination, and final delivery date. Shipped items are received into the company's system at a single retail center. Retail centers are characterized by their type, uniqueID, and address. Shipped items make their way to their destination via one or more standard transportation events (i.e., flights, truck deliveries). These transportation events are characterized by a unique scheduleNumber, a type (e.g, flight, truck), and a deliveryRoute.

To do: Develop an **Entity Relationship (ER) diagram** that captures this information about the Excellent Couriers system.



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