National University of Computer and Emerging Sciences, Lahore Campus

Course Name:	Software Requirements Engineering	Course Code:	SE 2001
Degree Program:	BS (SE)	Semester:	Fall 2022
Exam Duration:	60 Minutes	Total Marks:	45
Paper Date:	11-Nov-2022	Weight	15%
Section:	ALL	Page(s):	8
Exam Type:	Midterm-II		

Student : Name: Solution Roll No. _____ Section: _____

Instruction/Notes:
1. Attempt all questions on the question paper. Do not submit any extra sheet, it will not be graded.
2. You are allowed to use a single-sided, hand-written, A-4 size help sheet.
3. State your assumptions clearly

Question 1 (Max. Marks = 10)

In each of the following MCQs, **circle** the most appropriate **single** option. Unclear answers will not be given any credit.

1) Which of the following aspects of a software system is modelled by a data flow diagram?
   a. Control flow
   b. Business flow
   c. Data flow
   d. Workflow
   e. Behavioral
2) Software requirements can be specified in the form of _____:
   a. User stories
   b. Natural language statement in standard format (e.g. The system shall act on something)
   c. Diagrams
   d. Use case description in natural language
   e. All of the above
3) Which of the following is a requirements elaboration technique?
   a. Repertory Grids
   b. Card Sorting
   c. CRC Cards
   d. JAD
   e. Laddering
4) If we have a single user system and a user scenario description (provided by the user) with us (as a requirements engineer) which of the following elaboration tool can be easily developed:
   a. A data flow diagram
   b. A sequence diagram
   c. A swim lane diagram
   d. A decision table
   e. None of the mentioned

Scanned with CamScanner

5) Primarily, requirements elaboration activity is about:
   a. Ensuring that delivery of the system is not delayed
   b. Understanding and analyzing what needs to be built
   c. Asking questions to discover requirements from multiple stakeholders
   d. Completing the activity of identifying all the stakeholders
   e. All of the above
   f. None of the mentioned

6) Which of the following helps model the user's view of the system?
   a. Use case diagram
   b. Data flow diagram
   c. Decision table
   d. None of the mentioned

7) If we have multiple users/actors participating in a business workflow, which of the following is the most suitable tool to model the actions performed by each actor?
   a. Decision table
   b. State diagram
   c. Top ten requirements
   d. Swim lane diagram
   e. None of the mentioned

8) In a state diagram, the candidates in the requirements description that can be modelled as a state are:
   a. Periods of time between consecutive events
   b. Named control points in an object's evolution
   c. Partition of an object's behavior
   d. All of the above
   e. None of the mentioned

9) Which of the following is categorized an object based model of requirements:
   a. Class diagram
   b. CRC Cards
   c. ER diagram
   d. All of the above
   e. a and c only
   f. None of the mentioned

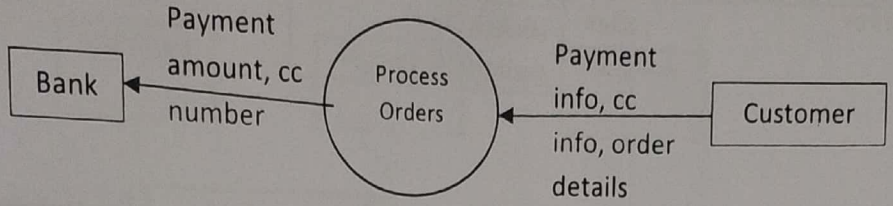
10) Prototyping can be helpful in:
   a. Requirements elicitation
   b. Requirements elaboration
   c. Requirements validation
   d. All of the above
   e. None of the mentioned

Scanned with CamScanner

Question 2 (Max. Marks = 10)

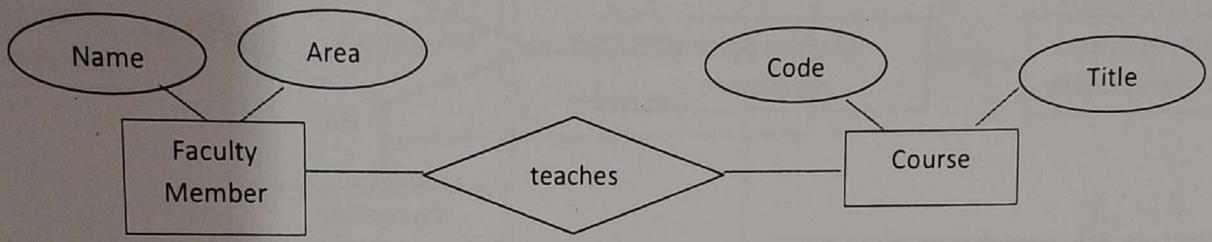
A few diagrams are shown below. Looking at the notations carefully, mention the name of the diagram

a.



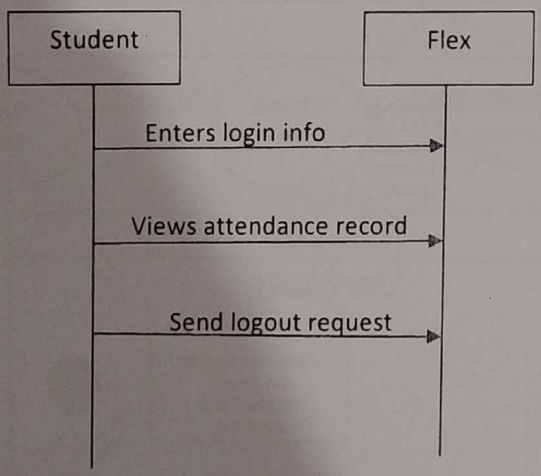
DFD

b.



ER

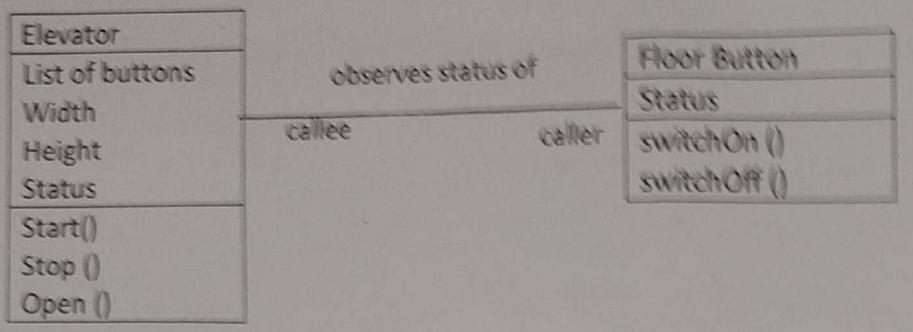
c.



Sequence

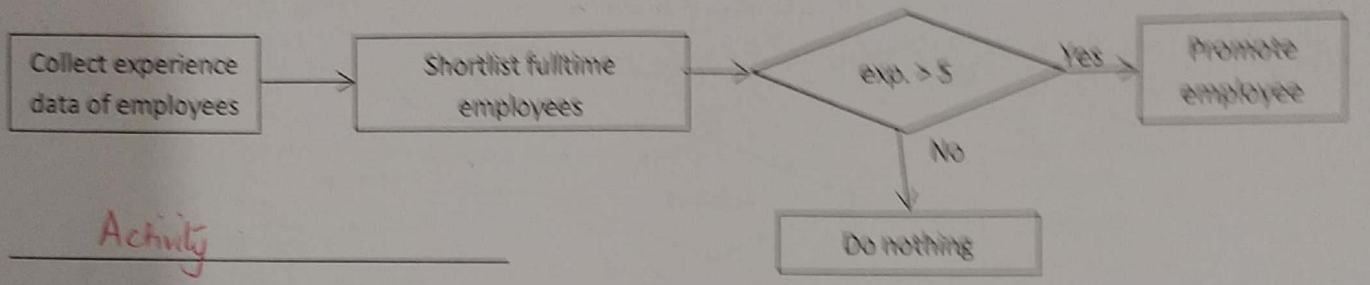
Scanned with CamScanner

d.



Class

e.

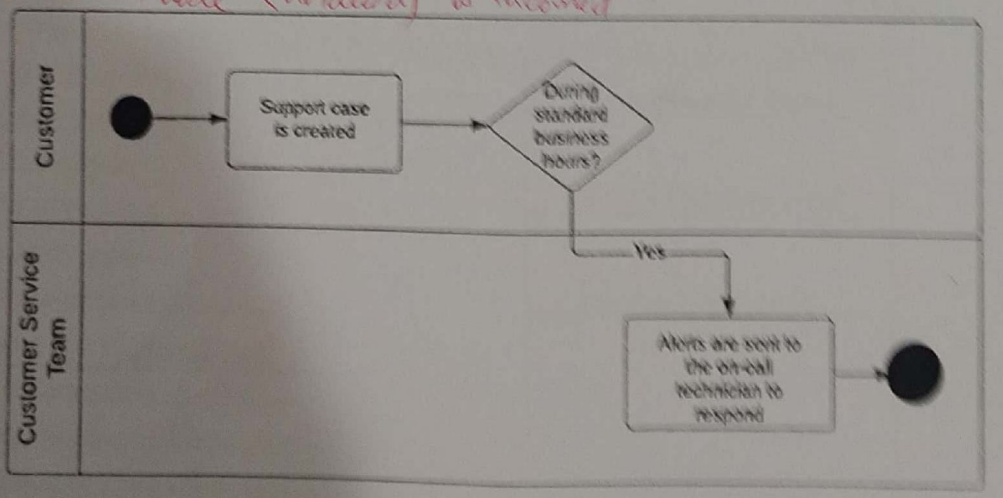


Activity

Question 3 (Max. Marks =2x5= 10)

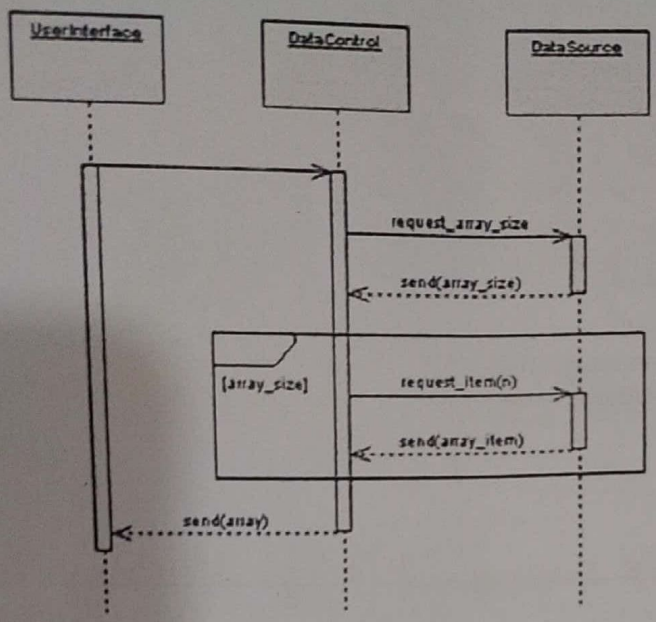
Identify mistakes in the given diagrams. Modify the diagram to correct the mistake(s) in part 3 and 4 as mentioned.

1. - A path (for No) is missing from the decision node (diamond)
- End node (notation) is incorrect



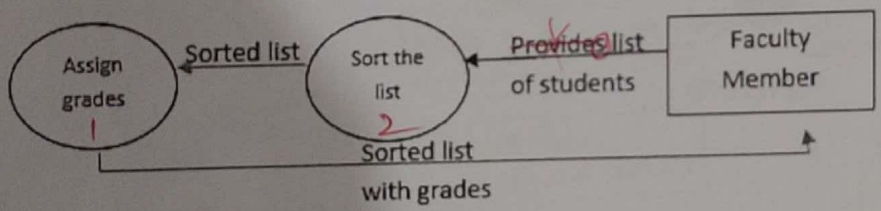
Scanned with CamScanner

2. A label on arrow from UI to DataControl is missing



3. A verb appears on an arrow. Heritage identifiers are missing

Correct the mistake(s) also

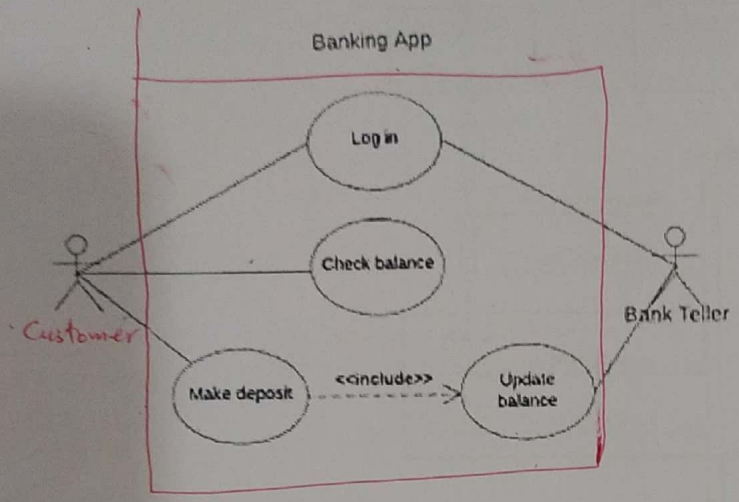


Level 1 DFD

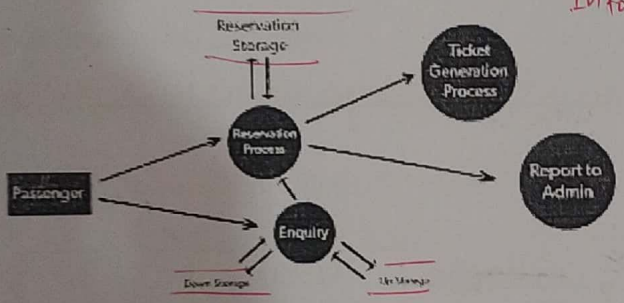
Scanned with CamScanner

4. A bounding box is missing. Actor's name is missing

Correct the mistake(s) also.



5. Labels on arrows are missing. Heritage identifiers are missing. Info sink is missing. Notation for storage is incorrect



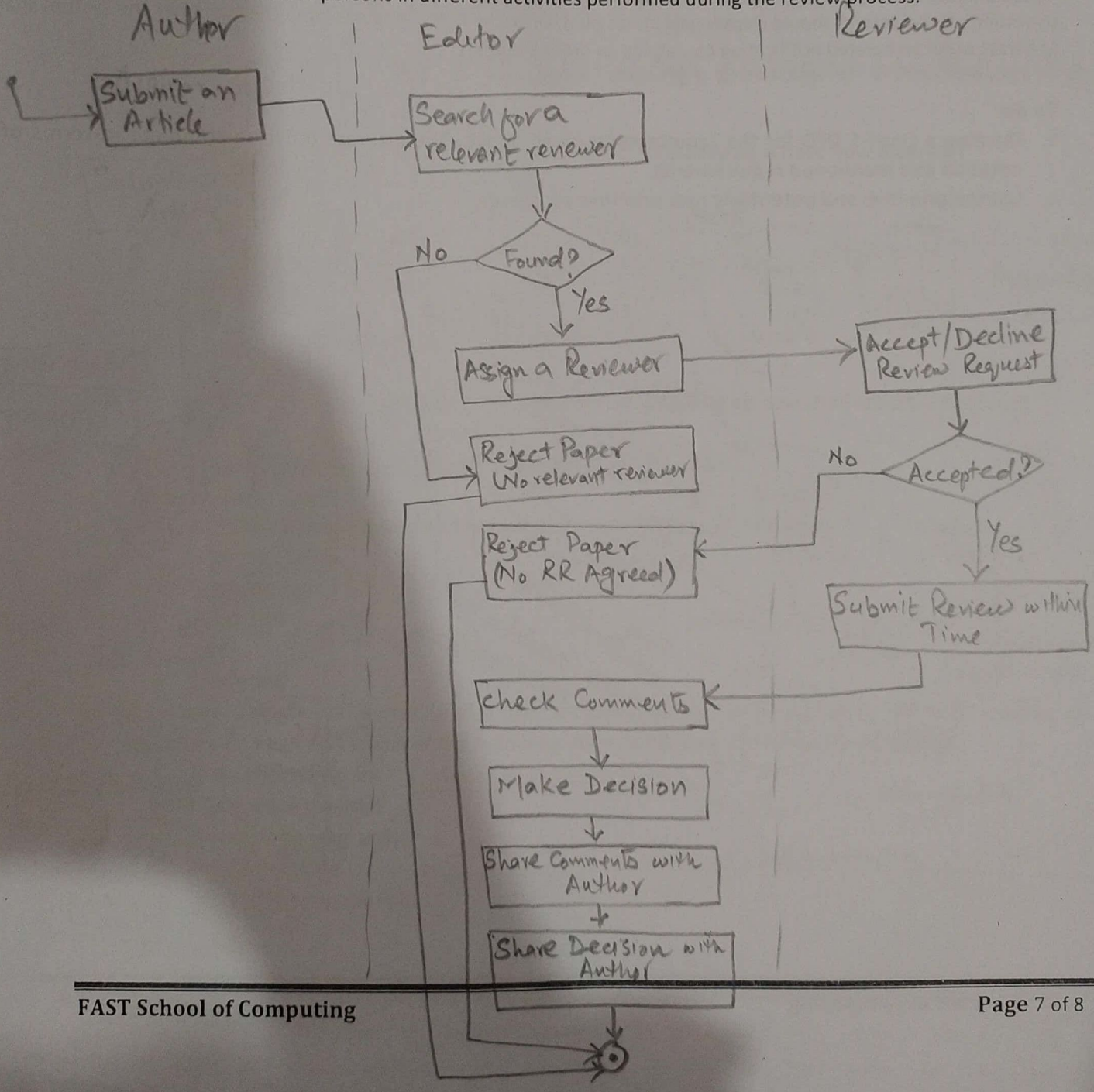
1-LEVEL DFD

Scanned with CamScanner

estion 4 (Max. Marks = 10)

We are an academic journal which publishes research of researchers from different parts of the world. We have editors running the process of reviewing research articles submitted by different authors. An Author submits an article to the journal for possible publication. Once an article is submitted, the Editor assigns a Reviewer to the article if a relevant Reviewer is available. Otherwise the Editor rejects the paper saying that 'No relevant reviewers found'. The assigned Reviewer can accept or decline the review request. If the request is accepted the Reviewer submits the review within 3 weeks of the acceptance of the request. If the request is declined the Editor is informed and the Editor rejects the paper saying that 'No relevant reviewers agreed'. When the Reviewer submits the review reports to the Editor within 3 weeks of accepting the review request, the editor checks the comments and marks the paper as either rejected or accepted for publication based on the Reviewer's comments. Then the Editor sends the Reviewer's comments and the acceptance/rejection decision to the Author.

To do: You have to model the complete review process. Express these requirements using swim lane diagram. Consider the participation of different persons in different activities performed during the review process.



Scanned with CamScanner

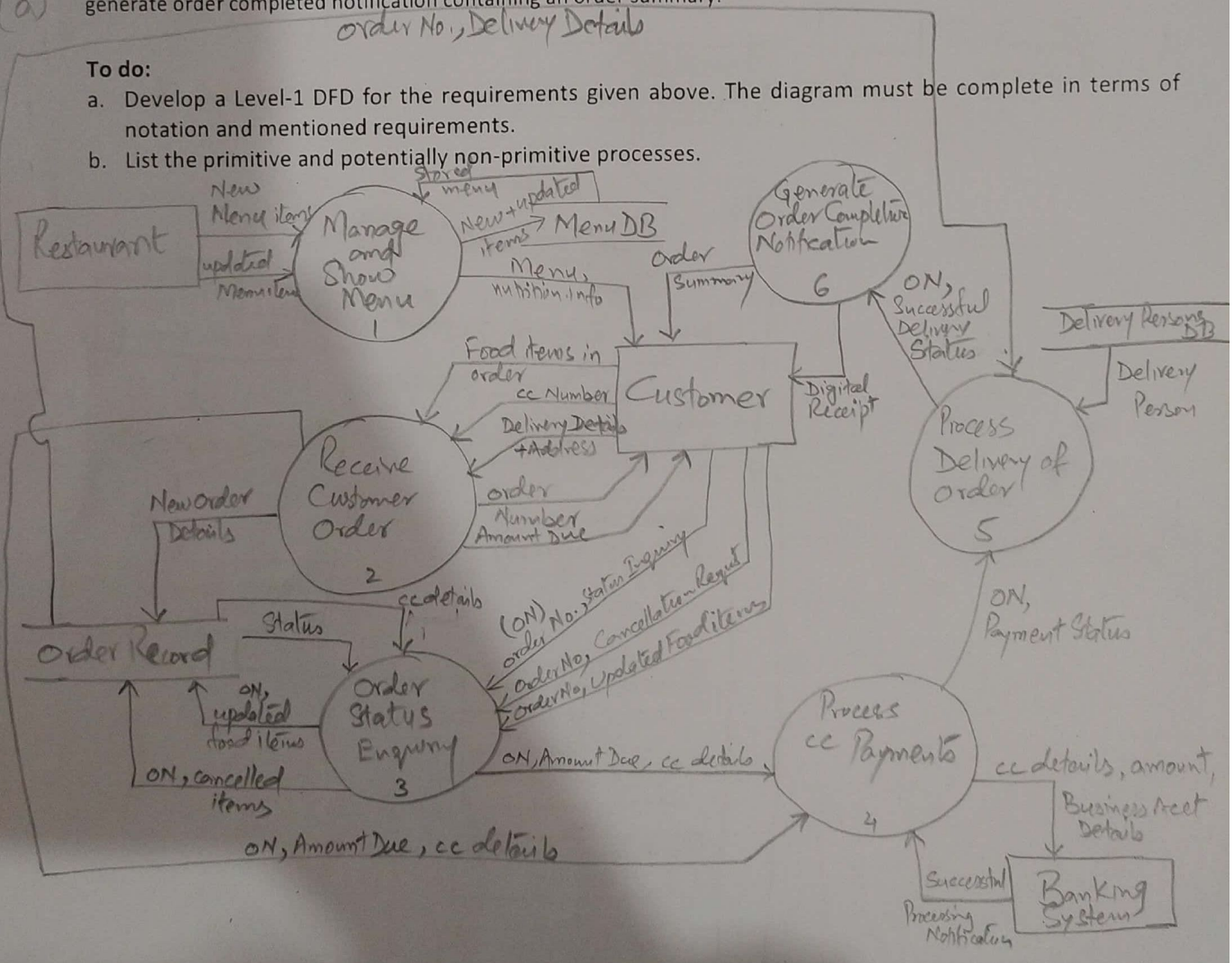
Question 5 (Max. Marks = 7 + 3 = 10)

Your company is developing an internet based meal ordering system. The system will permit a customer to order meals online. An order is a set of one or more food items selected from the menu. An order when processed can be picked up at the restaurant or delivered to the customer location at a specified time and date. Knowing what food items customers want in advance would reduce waste in the restaurant and would improve the efficiency of restaurant/cafeteria staff. To allow customers order online the system shall display a menu to the customer, receive order from the customer, record order details including delivery address, delivery date, delivery time, and payment amount which is due. After recording of the order the system shall process the delivery of the placed order by selecting a delivery person from the delivery persons database. The system shall also receive payments through credit card; the credit card details shall be provided by the customer to the system. The provided details are sent to the payment processing module of the system that shall contact the banking system for the processing of the payment. Once the order is placed, customers will be able to view order status, modify, or cancel the order. The system shall allow the restaurant to manage its menu (including its creation, modification, and deletion etc.). Each customer will be shown ingredient lists and nutritional information for the menu items listed on a menu. If the order is paid through credit card the order's digital receipt should display paid status on it. Once the order is delivered to the customer the system shall generate order completed notification containing an order summary.

(a)

To do:

a. Develop a Level-1 DFD for the requirements given above. The diagram must be complete in terms of notation and mentioned requirements.
b. List the primitive and potentially non-primitive processes.



(b)

As per the Single I/O heuristic, no process appears to be primitive. However, the process that manages cc payments (Number 4) has only one task to perform so this may be considered primitive if we do not have to separate interfacing process from this.

Data Dictionary: New Order Details: Order Number, Selected Food items, Delivery Address, Delivery Date/time, Amount Due

Menu: Food items, list of their ingredients, nutritional info.

Scanned with CamScanner