Tutorial Tasks

Review Questions

The following questions are meant as a set of review questions to help you revise and prepare for the exam. Some of them may appear on the exam, as may some of the questions you have encountered in the tutorials. You should be able to answer all of these questions so it is recommended that you study all the topic areas and review all tutorial questions. Use your textbook - it will fill in many of the gaps.

It is recommended that the exercises be carried out as interactive class discussions

Define the following terms using examples where appropriate:

1. Acceptance testing, unit testing, integration testing
2. Black box testing, white (glass) box testing
3. Top down testing, bottom up testing, sandwich testing
4. Candidate key, primary key, foreign key
5. Cardinality of a relationship, degree of a relationship
6. Economic feasibility, technical feasibility, operational feasibility, schedule feasibility, political feasibility
7. Functional dependency, partial dependency, transitive dependency
8. Parallel installation, phased installation
9. Post-implementation review
10. Prototyping, JAD, RAD, SDLC
11. Tangible benefits, intangible benefits
12. Adaptive maintenance, corrective maintenance, perfective maintenance, preventive maintenance,
13. 1NF, 2NF, 3NF

Discuss each of the following:

1. The purpose of the normalisation process and why it is desirable to have normalised data
2. The difference between physical and logical view of a system
3. The purpose and role of modelling during the systems analysis process
4. The role of an entity relationship model during systems analysis
5. The four different ways of interacting with a computer system (interaction styles)
6. The tasks and activities of the systems implementation phase of the SDLC
7. The stages of testing
8. The three sources of data attributes
9. Unary, binary and ternary relationships
10. Describe the steps required to convert an unnormalised relation into a set of third normal form relations.

11. The three types of anomalies which can arise in a table

12. What is the role of a conceptual data model during systems development?

13. What issues must analyst consider in preparing alternative system design options?

14. What are the deliverables from generating alternative design options and selecting the best one?

15. Explain why it is important to provide feedback to users during their interaction with computer systems. Illustrate your discussion with examples.

16. The 'five commandments' of interface design

17. What is JAD? How is it better than traditional information-gathering techniques?

18. Compare SDLC and RAD life cycle.

19. Explain the advantages and disadvantages of RAD

20. The stages of the systems maintenance life cycle


Answer the following questions:

1. The data in the following table (example only) contains an example of data that is not fully normalised.

<table>
<thead>
<tr>
<th>Part No</th>
<th>Description</th>
<th>Part Price</th>
<th>Supplier code</th>
<th>Supplier name</th>
<th>Qty on order</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Nut</td>
<td>.20</td>
<td>S1</td>
<td>Acme Corporation</td>
<td>10</td>
</tr>
<tr>
<td>P2</td>
<td>Bolt</td>
<td>$2.00</td>
<td>S2</td>
<td>Monash Hardware</td>
<td>30</td>
</tr>
<tr>
<td>P3</td>
<td>Screw</td>
<td>$1.00</td>
<td>S2</td>
<td>Monash Hardware</td>
<td>20</td>
</tr>
<tr>
<td>P2</td>
<td>Bolt</td>
<td>$2.20</td>
<td>S3</td>
<td>Frankston Trading</td>
<td>30</td>
</tr>
<tr>
<td>P4</td>
<td>Washer</td>
<td>.10</td>
<td>S3</td>
<td>Frankston Trading</td>
<td>15</td>
</tr>
<tr>
<td>P2</td>
<td>Bolt</td>
<td>$1.80</td>
<td>S1</td>
<td>Acme Corporation</td>
<td>30</td>
</tr>
</tbody>
</table>

Express the structure of the table above as a set of third normal form relations. Show all the intermediate forms of the relations between unnormalised and third normal form and underline the primary keys.
2. Carefully read the following description of the Hospital Admission System at the Victoria Hospital (example only).

Draw an entity relationship diagram to describe the Hospital Admission System. List any assumptions you make about the “business rules” that apply.

*Hospital Admission System*

Hospital Admission System maintains details of patients admitted to hospital and advises patients on elective waiting lists when a bed is available for them.

Elective patients are placed on the waiting list by their doctor who must be a doctor registered to treat at the hospital. These waiting lists are reviewed daily by the medical team to select the most appropriate patients for admission. Reasons for selection may include the urgency of treatment, the method of payment, whether the patient’s preferred doctor is on duty the next day, whether the appropriate facilities and materials (e.g., donated organs) are available, etc.

Emergency patients are admitted as a result of them being brought to the Casualty Department where the staff giving treatment have judged them in need of admission.

All patients on admission must complete a form giving their personal details, including the name and address of their next of keen. Other details required are the method of payment and details of any medical conditions of relevance, such as allergies to anaesthetics. An appropriate bed is assigned and a file produced. If the patient has visited this hospital previously, their previous file will be retrieved.

While in the hospital, the patient’s records must be maintained with all medical events. A patient may be moved from one room to another for reasons of space and/or treatment and these changes must be notified to the front desk so that visitors may be advised of each patient’s location.

On discharge, accounts must be settled and the patient’s record must be returned to the medical Records section, even if the reason for discharge was death.

3. The relation below (*this is an example only*) and its accompanying business rules were established during analysis of an information system. Express this relation as a set of third normal form relations. Show all the intermediate forms of the relations between unnormalised and third normal form, indicate the dependencies and underline the primary keys.

*Booking (Booking-ID, Booking-Date, Customer-ID, CustomerName, CustomerAddress, (Event-ID, Event-Name, (Venue-ID, Venue-Name, Date, Time)))*

a) List the business rules that are immediately apparent from this relation
b) List the assumptions you had to make when normalising the relationship and determining dependencies.