

IT243 – System Analysis and Design

Assignment 2 (40 Points)

Note:

- **Submission Deadline: 5th November, 2016 (11:59 pm)**
- The following questions are from Chapters: 4, 5 and 6.
- Copied assignment will be graded zero mark.
- Assignment submitted after due date will not be accepted, it will be considered to be late and will have zero mark.
- Assignments must be submitted through BB only. Emailed assignments will NOT be considered.

Part-I – Theoretical Short & Long Questions

5 Questions – [Each question carry 4 marks]

Q1)- What is the relationship between level 0 and level 1 DFD diagrams? Explain. [4 marks]

Answer: Level 0 DFD's show all the processes (and external entities), while Level 1 DFD's show sub-processes and may not show external entities (for small systems). For example, Process 4 from the Level 0 DFD might be broken into sub-processes 4.1; 4.2; 4.3; 4.4 (etc.)

Q2)- What does Use Case mean? and what does use case describe? [4 marks]

Answer: Use case is a formal way of presenting the way that business system interact with it's environment. it's set of activities that produce some output result. Also, it's represent the major process that the system performs and that benefit the actor who interact with the system. it's describe the the main functions of the system and the different kind of users that interact with it.

Q3)- What does triggers mean in use case, and what are the trigger types? and who's usually be a trigger? [4 marks]

Answer: Trigger mean the event that cause the use case to executed.

Trigger has two main type:

- * External trigger: some from outside the system
- * Temporal trigger: time-based occurrences.

Usually the primary actor is the trigger for the use case

Q4)- Describe the best way to validate the content of use cases. [4 marks]

Answer: Role-playing can be useful in confirming the validity of the use case. If the users execute the steps of the use cases using the written steps of the use cases as a “script” for actions to take, they will be able to find errors or confirm the correctness of the use cases.

Q5)- What is the purpose of an intersection entity? Describe the steps used to create an intersection entity? [4 marks]

Answer: An intersection entity is created when we need to capture more information about the relationship between two entities. This often occurs when two entities have a many-to-many relationship. One instance of entity A may be related to many instances of entity B, and one instance of entity B can be related to many instances of entity A. The intersection entity is inserted between entities A and B, and is used to capture information about a specific instance of entity A related to a specific instance of entity B. The steps used to create intersection entity are:

1. Remove the M:N relationship line and insert a new entity between the two existing ones.
2. Add two 1:N relationships to the model.
3. Name the intersection entity.

2 Questions – [Each question carry 10 marks]

Q4)- Read the following scenario and answer the questions below.

“A university library system needs to be built in order to handle the bookkeeping aspects of a library and provide user-browsing facilities. The system allows borrower to search for a book on a particular topic or by a particular author. The borrower should then be able to check if the book is on loan and if so to reserve the book. If a student wants to borrow or return a book, the library staff should enter the student ID to be searched. If student search is successful, the staff will enter the book ID, and if the book is available it can be borrowed. When a student wants to return a book, the staff checks the report data for any pending fine and if no fine is pending the book can be returned.”

1) By using the following use case template, write a use case for “Borrow and return book” requirement. [10 Marks]

Ans. Use Case Description

Use Case Name: Borrow and return book	ID: _1_	Importance Level: High
Primary Actor: Borrower(student)		
Short Description: This describes how to check out, borrow and return books.		
Trigger: Borrower wishes to check out, borrow or return book.		
Type: External / Temporal		

Major Inputs:		Major Outputs:	
Description	Source	Description	Destination
<u>Book to check out</u>	<u>Borrower</u>	<u>Borrowed book info change</u>	<u>Borrowed</u>
<u>Borrower ID</u>	<u>Borrower</u>	<u>book file</u>	
<u>Validation information</u>	<u>Valid Borrower file</u>	<u>Returned book info change</u>	<u>Book holdings</u>
<u>Overdue book info</u>	<u>Overdue file</u>	<u>Overdue status</u>	<u>Overdue file</u>
<u>Fine due info</u>	<u>Fines file</u>	_____	_____
<u>Returned book</u>	<u>Borrower</u>	_____	_____
<u>Borrowed book info</u>	<u>Borrowed book file</u>	_____	_____
		_____	_____

Major Steps Performed	Information for Steps
<p>1. Borrower presents book(s) to check out. ID is checked for validity against valid borrower file. Overdue books and fines are checked. If OK book is lent to borrower.</p>	<p>Book to check out</p> <p>Borrower ID</p> <p>Validation information</p> <p>Overdue books info</p> <p>Fines due info</p> <p>Borrowed book info</p>
<p>2. Borrower returns book. Book is removed from borrowed file and returned to holdings. If overdue, book is removed from overdue file.</p>	<p>Returned book</p> <p>Borrowed book info</p> <p>Borrowed book info change</p> <p>Returned book info change</p> <p>Overdue file status</p>

2) Draw the level-0 data flow diagram for the Borrowing books system. [10 Marks]

