	School of Information Technology and Computer Science Fall 2021/22	CSCI313 Software Engineering MidTerm Exam Time allowed: 2 hours
Nile University 20 Nov 2021		
Student name:	ID:	Mark

Try All Questions and Assume Any Missing Data

Exam Consists of 4 Questions in TWO Pages

Question (1): [6 MARKS]

Try Only 4 questions

a) **What are the development stages in reuse-based development?**
   Component analysis
   Requirements modification
   System design with reuse
   Development and integration

b) **What are the possible problems of test-first development?**
   Programmers may take short-cuts when developing tests so that the system tests are incomplete.
   Some tests can be difficult to write incrementally.
   It is difficult to estimate the completeness of a test set.

c) **What are the four fundamental activities in software processes?**
   Software specification, software development, software validation and software evolution

d) **List 3 types of non-functional requirement.**
   Product requirements, which specify or constrain the software's behavior.
   Organizational requirements, are general requirements derived from policies and procedures in the customer's organization.
   External requirements, which cover all requirements derived from factors external to the system and its development process.

e) **What should be included in a scenario?**
   1. A description of what's expected when the scenario starts
   2. A description of the normal flow of events
   3. A description of what can go wrong and how to handle it
   4. Information about concurrent activities
   5. A description of the system state when the scenario finishes

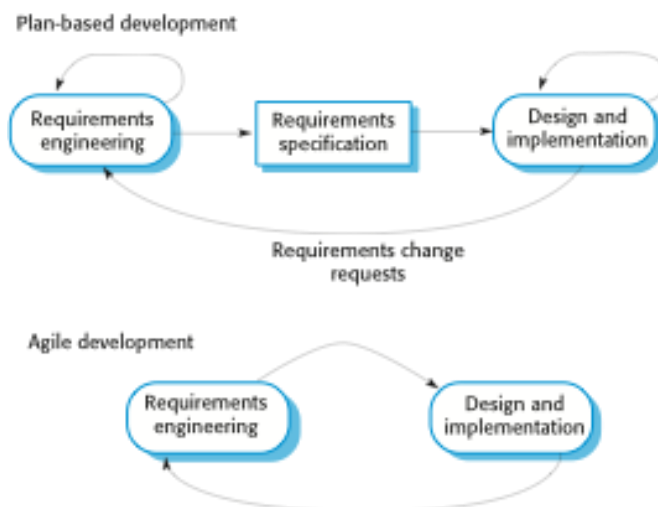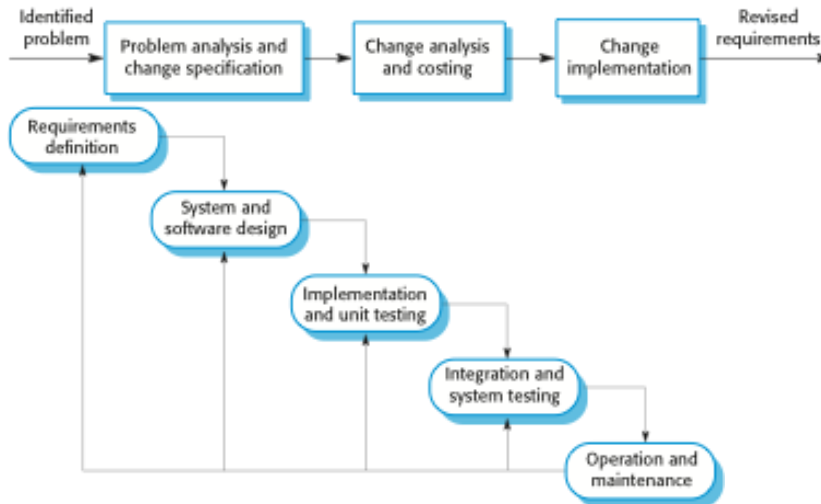f) **What checks should be applied during requirements validation?**
   1. Validity checks
   2. Consistency checks
   3. Completeness checks
   4. Realism checks
   5. The verifiability of the requirements should be assessed.

Question (2): [4 Marks]

Draw a block diagram that illustrates (Try only 2 questions):
   i. **The requirement change management.**
   ii. **The waterfall process model**
   iii. **The difference between plan-driven and agile development**

Question (3): [4 MARKS]

B. *Suppose you are charged with developing a new system for the university bookstore with which students can order books online and have them delivered to their residences and off-campus housing. What requirements-gathering techniques will you use? Describe in detail how you would apply the techniques.*

This situation seems ideal for an interview. It will be important to have managers from the bookstore and students together on the team so that each can listen to the others' point of view. Student expectations will need to be moderated with constraints faced by the bookstore managers. An interview will help build compromise and consensus and will help create a viable set of business requirements.

C. *Describe in very general terms the as-is business process for registering for classes at your university. Evaluate the process using requirement analysis and suggest any requirements improvement to enhance the process.*

Current Process:

- Student logs on to registration system
- Student submits request for course number and section number
- If seat is available, student is registered for that course.
- If seat is not available, message displays that that section of the course is full.
- Student displays current schedule
- Student confirms current schedule
- Student prints current schedule
- Student logs off the registration system

Improvements will differ by student. Problem analysis will be easier for the student (consumer) to enumerate than the root cause of such problems will be. This would make for an interesting class discussion where bringing the online class registration manager could be quite insightful for all.

Question (4):   [6 MARKS]

Create a set of use cases for the following system:
Of-the-Month Club (OTMC) is an innovative young firm that sells memberships to people who have an interest in certain products. People pay membership fees for one year and each month receive a product by mail. For example, OTMC has a coffee-of-the month club that sends members one pound of special coffee each month. OTMC currently has six memberships (coffee, wine, beer, cigars, flowers, and computer games), each of which costs a different amount. Customers usually belong to just one, but some belong to two or more. When people join OTMC, the telephone operator records the name, mailing address, phone number, e-mail address, credit card information, start date, and membership service(s) (e.g., coffee). Some customers request a double or triple membership (e.g., two pounds of coffee, three cases of beer). The computer game membership operates a bit differently from the others. In this case, the member must also select the type of game (action, arcade, fantasy/science fiction, educational, etc.) and age level. OTMC is planning to greatly expand the number of memberships it offers (e.g., video games, movies, toys, cheese, fruit, vegetables), so the system needs to accommodate this future expansion. OTMC is also planning to offer three-month and six-month memberships.
The use cases should contain the following information: (Title, Actors, Pre-condition, Post-condition, Main flow and Exceptions).

Use Case Name: Maintain club memberships	ID: _1_	Importance Level: High
Primary Actor: Customer		

Short Description: This describes how to create, change, and delete members.

Trigger: Customer wants to enroll in one or more club memberships.

Type: **External** / Temporal

Major Inputs:		Major Outputs:	
Description	Source	Description	Destination
Member information	Member	Member details	Members file
Member updates	Member	Updated member	Members file
Member to delete	Management	Deleted member	Members file

Major Steps Performed	Information for Steps
1. Customer calls and wishes to establish club membership. Member details are recorded.	New member request Member details
2. Customer needs to change member details (such as address).	Member information changes Member updates
3. Remove expired member from the club records.	 Member to delete

Use Case Name: Maintain memberships		ID: _2_	Importance Level: High
Primary Actor: Member			
Short Description: This describes how to add, renew, or delete memberships.			
Trigger: Customer enrolls in one or more clubs. Type: **External** / Temporal			

Major Inputs:		Major Outputs:	
Description	Source	Description	Destination
			P.T.O
Club request	Member	Membership record	Membership file
Club details	Club file	Renewal notice	Member
Club renewal	Member	Renewal membership	Membership file
Club term expiration	Calendar	Membership to delete	Membership file
Club cancellation	Member	Inactive status___	Membership file_
Membership details	Membership file	_____	_____

Major Steps Performed	Information for Steps
1. Member selects one or more clubs to join and membership in the club(s) is established.	Club request Club details Membership record
2. Member is sent renewal notice when end of club term nears.	Current Date Membership details Club term expiration Renewal notice
3. Member renews or cancels membership.	Club renewal or cancellation Club details Membership details Renewal membership Membership to delete
4. Membership expires without being renewed.	Membership details Current Date Inactive membership status

Use Case Name: Maintain club	ID: _3_	Importance Level: Medium
Primary Actor: Management		
Short Description: This describes how clubs are added, changed. or deleted.		
Trigger: Management wants to establish, change, or eliminate clubs.		
Type: **External** / Temporal		

Major Inputs:		Major Outputs:	
Description	Source	Description	Destination
Club details	Management	New club details	Clubs file
Club changes	Management	Updated club details	Clubs file
Club to delete	Management	Deleted club details	Clubs file
_____	_____	_____	_____
_____	_____	_____	_____

Major Steps Performed	Information for Steps
1. Management establishes new club.	Club details
2. Management wishes to change features of a club.	Club updates
3. Management wishes to eliminate a club.	Club to delete

End of Exam Questions

GOOD LUCK

Exam Committee Member:-

Dr. Walaa Medhat