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Roll Number:

Thapar Institute of Engineering and Technology, Patiala
Computer Science & Engineering Department

BE CoE, ENC- Third Year
MST- October 23, 2021
Time: 2 Hours; MM: 45

Course Code: UCS 503
Course Name: Software Engineering
Instructors: VBH, ASH, HAR, RKD, PUK, SAT, NT7

Note: Attempt ANY FIVE questions.

Q1. a) Discuss Extreme Programming (XP) along with XP phases. How User Stories help in creating User Cards. Explain with help of a suitable example. 6,3

b) Suggest a suitable process model for a data entry project to be implemented for office staff, who have not used computers before. User interface and user-friendliness are extremely important. And customers are not able to express their requirements completely

Q2 Draw the Context Level Diagram and DFD Level 1 for the following case. 9

A video rental store buys its videos from a local supplier and lends them to customers for a fee. The local video supplier sends a list of available titles to video rental store, who decide whether to send them an order and payment. The local supplier sends the requested videos to the store on successful placement of the order. For every new purchased video, a new stock form is filled and is placed in the stock file.
New customers register themselves by filling out a form with their personal and credit card details. Upon successful registration, a membership card is given to each new customer, by the counter staff and his/her form is added to the customer file.
The customer who is going to borrow a video, provides his/her membership card, payment fee and the empty box of the video they desire while borrowing a video. The payment is always done with a credit card which was provided while opening the customer account.

After watching the lent video, the customer returns it back to the video store. The video store charges the customer's credit card and send him/her a reminder in case the borrowed video is overdue by a day. Furthermore, every day following that, a credit card payment is made, and a reminder letter is sent weekly. This process continues until either the customer returns the video, or the charges becomes equal to the cost of replacing the video.

Q3. Consider the following case. 3,6
Club Membership Automation Software (CMS) should support the following three options: new member, renewal of membership and cancel membership. When the new member option is selected, the software should ask the member's name, address, and phone number. If proper information is entered, the software should create a membership record for the new member and print a bill for the annual membership charge and the security deposit payable. If the renewal option is chosen, the CMS should ask the member's name and his membership number and check whether he is a valid member. If the member details entered are valid, then the membership expiry date in the membership record should be updated and the annual membership charges payable by the member should be printed. If the membership details entered are invalid, an error message should be displayed. If the cancel membership option is selected and the name of a valid member is entered, then the membership is cancelled, a cheque for the balance amount due to the member is printed and his membership record is deleted.
a). Identify the classes
b). Draw the swimlane diagram for the whole process.

PTO

Q4. a). How will you decide the right number of modules considering development and integration cost for software design? Discuss with help of a suitable diagram. 3,6

b). A given project has 5 user inputs, 10 user outputs, 7 inquiries, 5 files, and 3 external interfaces. All of these have average complexity EXCEPT 2 of the inputs are complex, two of the outputs are complex, and one of the outputs is simple. Adjustment factors are all moderate except that the system will require a significant amount of online data entry, and it is essential that the code is designed with reuse in mind.

Calculate the number of Function Points for the above mentioned system.

Q5. Consider the activities with preceding activities and their duration 3,4,1,1

	Activity	Preceding Activity	Duration (days)
A	Prepare foundations		7
B	Make and position door frames		2
C	Lay drain, floor base and screed		15
D	Install services and fitting	E	8
E	Erect walls	A,B	10
F	Plaster ceiling	D,G	2
G	Erect roof	E	5
H	Install doors and windows	G	8
I	Fit gutters and pipes	C,F	2
J	Paint outside	I	3

a). Construct the Network Diagram.
b). Find out early start/early finish, late start/late finish and slack time for each activity in table.
c). Find the Critical Path.
d). Find the Critical Time

Q6. Differentiate between the following 3,3,3
a). Incremental Process and Iterative Process
b). Aggregation and Composition
c). Elicitation and Validation

Q7. a). Discuss the important elements of Analysis Model? How can analysis model be mapped/ transformed into Design Model? 3,3,3

b) Discuss Quality Function Deployment giving a suitable example.

c) Identify the following as Functional and Non Functional Requirement
i). Payment System charges Customer for the ride
ii). The Online Payment System shall be available for use between the hours of 6:00 a.m. and 11:00 PM
iii).The Medical System shall transmit patient records only when the patient has provided a written, signed release form authorizing the transmission.

----------Good Luck----------