ANKARA UNIVERSITY - DEPARTMENT OF COMPUTER ENGINEERING

COM 3068 - Final- 1.06. 2023 - Duration 180 minutes

Student Name	
Student Number	

Warning:
Write your solutions on paper, scan and submit them as a single .pdf file. Your solutions have to be handwritten. You have upload your solutions in 180 mins. Late submissions or e-mails will not be accepted. Good luck

PART 1.

1) Consider the following problem description: %40

A typical picture of an ATM system is shown in the figure. You are given a task to develop software for such an ATM system. The manager of the bank explains the first requirements of the system: The user can open and close accounts. He or she withdraws and deposits cash. The user can view his / her accounts, and can make cash transfer between his / her accounts.

The following detailed requirements are given for withdraw transaction by the bank manager to you:

"After the user is authenticated with a card and password, he or she selects the withdrawal transaction. The ATM machine first displays menu of withdrawal amount and option to cancel. Then it inputs the menu selection. If the user cancels the transaction, you exit. Otherwise (user selects an amount) it sets amount attribute, gets available balance of user's account from database. If the required amount is greater than the available balance, it displays an appropriate error message. Otherwise it tests whether sufficient cash is available in the cash dispenser. If there is insufficient cash in the cash dispenser, it displays an appropriate error message. Otherwise it interacts with the database to debit amount from user's account. Then it dispenses cash and instructs the user to take cash. If the user does not take the cash in 60 seconds, it takes the cash back and update the database accordingly"

a) You are given the task of developing a module to be used in ATM (Auto Teller Machine) of a Bank. What development methodology will be appropriate for this project? Why?
b) Find objects and relations between objects, and draw a class diagram. Try to use inheritance and composition.
c) What kind of software architecture will be appropriate for this system?. Explan.
d) Describe two OO design pattern that can be used to improve the quality of this software system. Explain how thesea are usefull for this system.

PART 2.

2) Compare and contrast XP and Scrum agile software development methodologies in terms of activities. %20

3) a) What is the difference between functional and domain requirements? Explain.

   b) What is the difference between functional and non-functional requirements? Explain. (Note, you can explain with examples) %20

4) a) Consider a program component Binary_Search (list, searched_string) which search a string in an array of maximum 300000 elements. What are test cases you would like to test this procedure with based on equivalence classes and boundary analysis.

   b) Why does decision *point coverage* usually require fewer test cases than *full path coverage*? What kinds of errors might this testing miss? %20