Final Assessment

Course Code: CSE333 (Day), Course Title: Software Engineering
Date: Sunday 18 April, 2021   Time: 10:00am-02:00pm
Four hours (4:00) to support online open/case study based assessment   Marks: 40

Answer all the following task

A bank has several automated teller machines (ATMs), which are geographically distributed and connected via a wide area network to a central server. Each ATM machine has a card reader, a cash dispenser, a keyboard/display, and a receipt printer. By using the ATM machine, a customer can withdraw cash from either checking or savings account, query the balance of an account, or transfer funds from one account to another. A transaction is initiated when a customer inserts an ATM card into the card reader. Encoded on the magnetic strip on the back of the ATM card are the card number, the start date, and the expiration date. Assuming the card is recognized, the system validates the ATM card to determine that the expiration date has not passed, that the user-entered PIN (personal identification number) matches the PIN maintained by the system, and that the card is not lost or stolen. The customer is allowed three attempts to enter the correct PIN; the card is confiscated if the third attempt fails. Cards that have been reported lost or stolen are also confiscated.

If the PIN is validated satisfactorily, the customer is prompted for a withdrawal, query, or transfer transaction. Before withdrawal transaction can be approved, the system determines that sufficient funds exist in the requested account, that the maximum daily limit will not be exceeded, and that there are sufficient funds available at the local cash dispenser. If the transaction is approved, the requested amount of cash is dispensed, a receipt is printed containing information about the transaction, and the card is ejected. Before a transfer transaction can be approved, the system determines that the customer has at least two accounts and that there are sufficient funds in the account to be debited. For approved query and transfer requests, a receipt is printed and card ejected. A customer may cancel a transaction at any time; the transaction is terminated and the card is ejected. Customer records, account records, and debit card records are all maintained at the server.

1. Draw the Class Diagram for the above scenario.   [10]

2. a) Construct a BPM for correction of voter information.   [5]

   b) Assume that the size of a semi-detached type software product has been estimated to be 45,300 lines of source code. Assume that the average salary of software engineers be Rs. 17,500/- per month. Determine the effort required to develop the software product and the nominal development time.   [5]

Find the maintenance cost of a software product where there are a total of 55000 lines of coding. During maintenance 80000 lines of coding was added and 3500 lines of coding was deleted. Development cost of the project was 5 lacs BDT.

3. a) For the code below design 3 test cases and for each describe the class of the test case it represent. [5]

```
char * triangle (int x, y, z) {
/* requires: The parameters are in ascending order (i.e. x <= y <= z)
   effects: If x, y and z are the lengths of the sides of a triangle,
   this function classifies the triangle using one of the three
   strings, "scalene", "isosceles" or "equilateral". If x, y, and z
   do not form a triangle, the empty string is returned.
*/
   char *r;
   r="scalene";
   if (x==y || y==z)
      r="equilateral";
   if (x==z)
      r="isosceles";
   if (x <= 0 || (x+y) <= z)
      r="";
   return (r); }
```

b) Mr. Samir Newaz is working in an aerospace company named **SkyBlueCorp**. This company used to carry out review and inspection of program code. But they have created an automatic coded generation tool which will be able to generate the program from the perspective on design notation. The problem that output tool is user friendly and hard to understand and poorly structured. For that point of view, **SkyBlueCorp** company has cancelled all the code review and inspections methods and plans to have faith on testing as its main verification technique. [5]

Now your task is to explain from your idea what are the advantages and disadvantages of this decision?

4. a) Different stake holders have raised some concerns regarding the business environment of Bangladesh. The complacency of the business owners is also of huge interest for government of Bangladesh (GOB) and as well as for many non-government organizations (NGO). A consultant group ABC is hired for conducting a research on the issue. After a primary brainstorming, ABC came to a decision to carry out a survey of the business owners. The businesses are categorized in three major groups: small, medium and large. A sample of 2100 businesses are planned to be selected and from each of the selected businesses, two types of information (business description and status of complacency) are planned to be collected. Major variables to be measured are: type of business, size of business (in terms of number persons employed), location, whether registered with the GOB, and satisfaction about business in regard to political situation, monetary policy, inflation, legal environment. [5]

      i) Research Problem   ii) Research Objectives   iii) Research Question

      iv) Research Methodology

b) BLC Course Progress, you will get time 11:59pm on 18th April 2021, to complete assignment submission, task complete, lecture video, H-5 interactive video, Q and Forum discussion etc. [5]

   i.   Marks 5.0: If your course progress is 100%.
   ii.   Marks 4.5: If your course progress is 90%.
  iii.   Marks 4.0: If your course progress is 80%.
  iv.   Marks 3.5: If your course progress is 70%.
   v.   Marks 3.0: If your course progress is 60%.