Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Final Examination, Summer 2021 @ DIU Blended Learning Center
Course Code: CSE333, Course Title: Software Engineering
Level: 3,Term: 3 Section: All
Date: Thursday 26 August, 2021 Time: 01:30pm-05:00pm
Time: 3:30 hours, Marks: 40

Answer all the following questions

You must answer parts of a question sequentially. The figure in square brace at the right side of a question indicates the marks allocated to the questions.

The main idea is to implement an online system for managing the internet customers and complaint system for customers for raising complaints on the issues related to ISP provider and provide best customer care service for users using this application. There are many Internet security providers in a country that will provide internet services for users on different packages. Basically ISP works on three connections, Dial Up using telephone service, Broad band and wireless connections.

Admin manages the whole system by performing task such as adding/viewing/editing/deleting employee details. System allows admin to add customer details and predict the internet plans based on their business type, region or age. Internet plan expiry dates of each customer will be displayed to admin if the plan is expiring in 5 days. All the complaint details will be displayed to the admin as well as employee to enter the complaint resolution.

Employee can login using valid id and password which is provided by the admin. After login, employee can view all the unsolved complaints received from the customers. After resolving the complaint, employee can update the provided resolution and close the complaint. Once the complaint is closed, an email will be sent to customer will resolution details. After receiving the mail, customer can view the resolution and can rate accordingly. Admin can view the report of complaint resolution provided by the employee. Report will be displayed in the form of pie chart.

1. Draw the Class Diagram for the above scenario. *[CO3]* [10]

2. Draw a BPM and GUI for report of complain resolution for employee. *[CO3]* [10]

3. a) For the code below design 3 test suites using White Box Testing: *[CO4]* [5]

```
1  def classify(x,y,z):
2    """
3      Return codes:
4         -1: not a triangle
5        0: equillateral
6        1: isosceles
7        2: scalene
8    """
9
10   if x<y+z and y<z+x and z<x+y:
11     if x!=y and y!=z and z!=x:
12       return 2
13     else:
14       if x==y==z:
15         return 0
16       else:
17         return 1
18   else:
19     return -1
```

b) Imagine you have written a program which reads in the length of three sides of a triangle from user. Based on this three values your program shows the outputs a message naming the kind of triangle: EQUILATERAL, ISOCELES, or SCALENE. The length of the three sides are not in range 1 - 99 cause error message INVALID INPUT. If lengths don't make a triangle, output NOT A TRIANGLE. [5]

Write a complete set of Black Box test cases for testing of the program which solves the problem above.

4. Given the following COCOMO constants table: *[CO5]* [10]

Application	a	b	c	d
Organic	2.4	1.05	2.5	0.38
Semi-Detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

To find out the cost estimation of the project, assume that you are to use COCOMO to "cost" a project. The project is a rather simple stand-alone utility for a computer running Linux. A person on your team who has done this before estimates the total lines of code to be 30,000. There is a very complicated socket call needed. All the rest of the members on your team are very inexperienced and new. The program must be written in C and nobody on your team has written a C program in the last year. The team is very fluent in Linux. All other factors can be considered to be nominal.

a) Calculate what COCOMO application would predict for the total Programmer Months (PM) needed for this project.
b) Calculate what COCOMO would predict for the total duration of this project in months.
c) Calculate the suggested number of team members.