United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Mid Term Exam, Trimester: Fall 2022

Course Code: CSI 321/CSE 3421, Course Title: SOFTWARE ENGINEERING

Total Marks: 30, Duration: 1 hour 45 minutes

Any examinee found adopting unfair means will be expelled from the trimester/ program as per UIU disciplinary rules.

(Answer All Questions)

Section A: Software Development Methodologies and Testing

1. Mr. X is working on a project where the client wants the release of the working version of the software periodically. [CO1] 3+3

   i) Which model you should follow to accomplish the task and why?

   ii) How it is different from any other software development model that you think will not be suitable in this case?

2. Suppose you have been assigned to develop UCAM. Now, your team has already completed the coding portion, integrated the sub-modules and modules, and performed necessary unit and integration testing phases. [CO1] 2+4

   i) Can we deliver the software to the client now?

   ii) If not, what sort of testing your team should conduct before releasing it? Describe the necessary testing types based on the UCAM software.

Section B: Version Controlling, Design Pattern, and Code Refactoring

3. Write appropriate git commands to perform the following tasks: [CO2] 6

   - Initiate a git repository
   - Create two branches named branch-1 and branch-2
   - Create a file named "a.txt" in the local directory, and commit it in branch-1
   - Update "a.txt", and commit it again in branch-1
   - Create a new file named "b.txt" in the local directory, and commit it in branch-2
   - Edit the file "b.txt", and commit it again in branch-2
   - Revert back to the first commit of branch-2 (Let hash code of 1st commit of branch-2 is "a92929292111")
   - Merge branch-1 and branch-2 with the master branch

4. Draw UML diagram for the following scenario using appropriate design pattern: Suppose, you are developing a system which will provide statistics of cricket players and teams. The app collects data from multiple sources in XML format and then displays advance analysis of the players for the user. At some point, you decide to improve the app by integrating a smart 3rd-party analytics library. But there's a catch: the analytics library only works with data in JSON format. [CO2] 6

5. Refactor the following code: [CO2]

```
class c1
{
        public   int   a1,a2;
        c1(int a1, int a2){
                this.a1 = a1;
                this.a2 = a2;
                int c = a1+a2;
                System.out.println("sum="+ad(a1,a2));
                c = a1-a2;
                System.out.println("sub="+c);
                m(a1,a2);
                c2 cc = new c2();
                c2.div(a1,a2);
         }
         public void m(int a1,a2){
                System.out.println("mul="+ (a1*a2));
         }
         public void ad(int a1,a2){
                System.out.println("add="+ (a1+a2));
         }
}

class c2 extends c1
{
         public void div(){
                System.out.println("div="+(a1/a2));
         }
         public float area(int a){
                return a*a;
         }
         public float cube(int a){
                return a*a*a;
         }
}
```