United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Mid Term Exam, Trimester: Spring 2023

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)

1. (i) Explain the roles of people involved in scrum activity. [CO1] 2+4

   (ii) Consider that, you are working on a powerful business intelligence tool, and you need to release it periodically. As a project manager, you want someone from the client who will be present as a part of the development process in the meetings, and clear the developer's doubts. [CO1]
   - Which model should be used in this scenario and why?
   - Also describe the processes involved in that model considering the above scenario.

2. Write appropriate git commands to perform the following the tasks: [CO2] 6
   - Initiate a git repository
   - Create three branches named b1, b2, and b3
   - Consider that, you have created a file named "SE.cpp" in the local directory, and commit in b1
   - Consider that, you have created a file named "SE_newFeature.cpp" in the local directory, and commit in b2
   - Update "SE.cpp", and commit it again in b1
   - Consider that, you have created a file named "SE_newFeature2.cpp" in the local directory, and commit in b3
   - Update again "SE.cpp" and commit it again in b1
   - Edit the file "SE_newFeature.cpp", and commit it again in b2
   - Edit the file "SE_newFeature.cpp", and commit it again in b2
   - Revert back to the first commit of b1 in such a way that only contents of 1st commit will be preserved (Let hash code of 1st commit of b1 is "a11111"
   - Merge b1, b2, and b3 with the master branch

3. (i) Explain what you understand by refactoring, and why we need to adopt it in our software development processes. [CO2] 2+4

   (ii) Refactor the following code [CO2]:

```
class XYZ{
   public int v;
   private int x;

   public int cl(int k,int m){
      k=k*2;
      m=m+6;
      return 2*(k+m);
   }
   public int cl2(){
      return x*x;
   }
}
```

```
class Z extends XYZ{
   public int x;
   public int sum(int a, int b){
      return a+b;
   }
   public int sqr(){
      return x*x;
   }
}
```

4. Draw an UML diagram for the given scenario using the appropriate design pattern: Picasso is an art gallery company which creates different types of artwork. The three major artworks that are available in the company are Sketches, Portraits and Sculptures. Picasso provides multiple paint options such as Oil Paint, Pencils, Crayons. The paper options available are Art Paper, Canvass. Also multiple tools are available such as Brushes, Chisel and Hammer. Sketches are made on Art Paper with the help of Pencils and Crayons. Portraits require a Canvass, Brushes and Oil Paint. Sculptures need Marble and Chisel and Hammer to build. [CO2] 6

5. Suppose your company has received a large scale government project for the IT department. The government has provided you with ample time to complete the project. The catch is that the project needs to be of top quality, the risks should be handled well, and should be able to handle requirements changes if needed. The IT department officials would also like to constantly be involved in the project. [CO1] 1+3+2

- Which model should be used in such a scenario?
- Explain the main working parts of the model considering the above scenario.
- What are the major drawbacks of this model?