United International University
Department of Computer Science and Engineering
CSE 3421: Software Engineering   Mid: Summer 2024

Total Marks: 30   Time: 1 hour and 45 minutes

Answer all the questions. Numbers to the right of the questions denote their marks.

1. (a) **Explain** how **GIT** helps in version controlling of a software. (2)

   (b) **Write GIT commands** for the following tasks: (4)
   i) Download a GIT repository from this link www.github.com/FunRepo
   ii) Create 2 new files named "Jerry.txt" and "Tom.txt"
   iii) Create 2 new branches named "CN" and "CNJr"
   iv) Edit the "Jerry.txt" file and commit it to the CNJr branch
   v) Edit the "Tom.txt" file and commit it to the main branch
   vi) Merge your work with the recent version in GitHub
   vii) Delete "Jerry.txt" and commit it to the CNJr branch
   viii) Merge all the branches to the main branch and upload your work to GitHub

2. (a) **Explain** the **Requirement Elicitation** process. What are some of **the ways** in which Requirement Elicitation is **conducted**? (2)

   (b) Arthur frequently logs into his online accounts using free Wi-Fi. One day, he finds his computer asking him to enter the username and password for one of his social media accounts. John bought a laptop from a shop with an operating system pre-installed. When John signs into four online accounts, he discovers that someone else gains access to these accounts as soon as he enters his username and password. He tries using a different browser and eventually finds his fifth account hacked as well. Then he uses a different computer, and the issue does not recur. What **kinds** of **cyber attacks** might Arthur and John be victims of? **Explain** your answer. (4)

3. (a) Your friend has sent you a description of a new keyboard he's selling online, including both marketing and user-end documentation. It says: "The keyboard needs to be assembled by placing the switches in their proper positions and then pushing the keycaps onto them. The keyboard supports a Type-C connector and should be connected to the Type-C port on your computer. The switches have a lifespan of 50 million keystrokes." **Identify** which **phrases** denote which **types** of documentation and **explain** you answer. (2)

   (b) You are the architect of a firm specializing in making baby formula for infants with complex heart diseases. The formula is sold in plastic containers. Your task is to design machines responsible for decontaminating the containers and producing the formula. While the decontamination process is well-established, the procedure for making the formula involves delicate movements that frequently fail. As a result, the formula often turns out unsuitable and needs to be disposed of. Therefore, you are trying to make the machine as accurate as possible. Which **models** would you use to **build** the project? **Explain** your answer with **suitable** reasoning. (4)

4. (a) **Explain** how **pair programming** help with the software development process. What are some ways in which a **40-hour work week** can **harm** the company? (2)

   (b) How does the concept of **small release** from **XP help** with **simple design**? How does the concept of **pair programming relate** to the concepts of **coding standards** and **refactoring**? Do they **complement** each other or cause **conflict**? **Defend** your answer. (4)

5. (a) **Refactor** the following **code**   (6)

```
class Food {
    String a;
    int b;

    Food(String a, int b)
    {
        this.a = a;
        this.b = b;
        System.out.println("Name: " + a + ", Price: " + b);
    }

    int f1(int a)
    {
        if(a < 0) return 0;
        else {
            int temp = 0;
            for (int i = 0; i < b; i++) {
                temp += a;
            }
            return temp;
        }
    }
}

class Burger {
    String a;
    int b;
    String c;

    Burger(String a, int b, String c)
    {
        this.a = a;
        this.b = b;
        this.c = c;
        System.out.println("Name: " + a + ", Price: " + b + "Meat Type: " + c);
    }

    int f1(int a)
    {
        if(a < 0) return 0;
        else {
            int temp = 0;
            for (int i = 0; i < b; i++) {
                temp += a;
            }
            return temp;
        }
    }
}
```