



EAST WEST UNIVERSITY

Department of Computer Science and Engineering

B.Sc. in Computer Science and Engineering Program

Final Examination, Spring 2024 Semester

Course: CSE 430 Software Testing and Quality Assurance, Section 1

Instructor: Anika Tabassum, Lecturer, Dept. of CSE

Full Marks: 40 (Will be converted to 30)

Time: 1 Hour 15 minutes

Note: There are 6 (SIX) questions, answer ALL of them.

1. Consider the following program that calculates the Fibonacci sequence and determines whether the nth term is a prime number. [CO3 15 marks]

[CO3, C3,
Marks:
5+4+6 =
15]

```
#include <stdio.h>
int fibonacci(int n);
int isPrime(int num);
int main() {
1. int n, fib;
2. printf("Enter the value of n: ");
3. scanf("%d", &n);

4. fib = fibonacci(n);
5. printf("The %dth term of Fibonacci sequence is: %d\n", n, fib);
6. if (isPrime(fib))
7. printf("%d is a prime number.\n", fib);
8. else
9. printf("%d is not a prime number.\n", fib);
10. return 0;
11. }

int fibonacci(int n) {
1. if (n <= 1)
2. return n;
3. else
4. return fibonacci(n - 1) + fibonacci(n - 2);
5. }

int isPrime(int num) {
1. if (num <= 1)
2. return 0; // Not a prime number
3. for (int i = 2; i * i <= num; i++) {
4. if (num % i == 0)
5. return 0; // Not a prime number
6. }
7. return 1; // Prime number
8. }
```

- (a) Draw the DD graph for the program.
- (b) Calculate the cyclomatic complexity of the program using all four methods.
- (c) List all independent paths.

2. What is Smoke Testing? What is external testing metrics? [CO3, C2, Marks: 1+2=3]

3. Let's consider a scenario where a travel agency is offering different travel packages based on the destination and the traveller's age group. Here are the partitions for testing the booking module: [CO2, C3, Marks: 8]

Destination: Beach Resort:

- Age < 18: Family Package (includes activities suitable for children)
- Age between 18 and 35: Adventure Package (includes water sports and outdoor activities)
- Age > 35: Relaxation Package (includes spa treatments and beachside relaxation)

Destination: Mountain Retreat:

- Age < 18: Family Adventure Package (includes easy hiking trails and family-friendly activities)
- Age between 18 and 35: Extreme Adventure Package (includes mountain climbing and adrenaline-inducing activities)
- Age > 35: Scenic Package (includes guided tours and peaceful nature walks)

Write down test cases using **Domain testing** Technique.

4. You are tasked with testing the integration between different modules of a library management system. The system consists of the following modules such as [CO3, C3, Marks: 7]

- User Authentication
- Book Catalog
 - Novel
 - Mystery (not developed yet)
 - Poem
 - Academic Books (not developed yet)
- Borrowing and Returning Books
 - Borrow
 - Return (not developed yet)
- User Notifications (not developed yet)
- Reporting.
 - Make report
 - Send through email (not developed yet)
 - Send through mobile

In the given scenario, which type of **integration testing** would be performed and why?

5. Let's consider a software development company that creates mobile applications. How should the company spend in Prevention cost and Appraisal cost to reduce internal failure cost and external failure cost? [CO3, C2, Marks: 5]
6. Suppose you're testing a messaging app with the following configuration parameters and their potential values: [CO2 7 marks] [CO2, C3, Marks: 7]
- a. Notification Settings: {On, Off, Vibrate, Silent}
 - b. Message Priority: {High, Medium, Low, Urgent}
 - c. Encryption: {Enabled, Disabled}
 - d. Message Type: {Text, Image, Video}

Now design test cases using **all-pair testing technique** for the given scenario.

Good Luck!