



COMSATS University Islamabad
Department of Computer Science
Midterm Examination - Spring 2025

Class: BSCS/BSSE/BSDS/BSCT/BSAI
Subject: CSC103-Programming Fundamentals
Instructor: Dr. Manzoor I. Tamimy

Marks: 25
Time allowed: 90 Min
Date: 14-April-2025

Instructions:

- All questions are self-explanatory and require no further explanation during exam time.
- Make sure to sign the attendance sheet before leaving the examination room.
- Return the question paper along with the answer sheet.

[CLO-1]-Demonstrate the fundamental concepts of programming.

Question# 1:

(5 marks)

Show the output of the following code snippets.

i.	<pre>public class A { public static void main(String[] args) { double price = 19.99; int roundedPrice = (int)(price + 0.5); roundedPrice *= 2; System.out.println(roundedPrice);}}</pre>	ii.	<pre>public class A { public static void main(String[] args) { int p = 20, q = 6; int result = (p % q) * 2 + (p / q); System.out.println("Result: " + result);}}</pre>
iii.	<pre>public class A { public static void main(String[] args) { int a = 7; 008.141 double b = 3.14159; System.out.printf("Value A: %2d Value B: %7.3f Total: %.2f\n", a, b, a + b);}}</pre>	iv.	<pre>char ch = (char)((int) (Math.random() * 26) + 97); System.out.println(ch);</pre>
v.	<pre>int i = 10, j = 3, k = 1; int output = i++ - --j + k++ + ++i - j--; System.out.println("Output: " + output); System.out.println("i = " + i + ", j = " + j + ", k = " + k);</pre>	vi.	<pre>public static void main(String[] args) { int x = 130; byte b = (byte) x; System.out.println(b); }</pre>

[CLO-2]- Employ programming constructs using a programming language.

Question# 2:

(5 marks)

Your job is to write a program that would help a company create card numbers. In order to write the program, you have to follow the following rules:

- Start with a **four-digit number** (like 4737 or 4631).
- Add all four digits together.

- If the sum is **even**, add a **0** at the end.
If the sum is **odd**, add a **1** at the end.
This last digit is called the **check digit**.
- Show the original number and the new number with the check digit.

Original Number = 4737 Output Number= 47371

Original Number = 4631 Output Number =46310

Question# 3:

(5marks)

Web sites impose certain rules for passwords. Write a program that checks whether a string is a valid password. Suppose the password rules are as follows:

- A password must have at least eight characters.
- A password must consist of only letters and digits.
- A password must contain at least two digits.

Write a program that prompts the user to enter a password and displays

- "valid password" if the rules are followed
- "invalid password" otherwise

Question# 4:

(10 Marks)

Write a Java program to simulate a simple ATM system using methods. The program should start with a predefined balance (e.g., Rs 100,000) and a fixed 4-digit PIN (e.g., 1234). The user must enter the correct PIN to access the system, with a maximum of 3 attempts allowed. If the correct PIN is entered, display a menu as per following, otherwise show a message "Card has been blocked" and exit the program:

```
ABC ATM System
Enter your PIN: 1234
Welcome to ATM System
Press 1: Check Balance
Press 2: Deposit money
Press 0: Exit the system
Enter your Choice: 2
Enter amount to Deposit: 5000
Your new Balance: 105000
Do you want to perform another transaction: 1
Your Balance is: 105000
Do you want to perform another transaction: 0
Thank you for using ATM System
```

To develop ATM System, you are required to implement the following methods:

```
public static boolean pinVerification(int pin)
public static void checkBalance(int balance)
public static int depositMoney(int balance)
```
