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Assignment - 1

1. Scenario 1 : Student Grading System

Scenario : A teacher needs a simple program to calculate students grades based on their scores. The grading criteria are as follows :

* Score >= 90 : Grade A
* Score >= 80 and < 90 : Grade B
* Score >= 70 and < 80 : Grade C
* Score >= 60 and < 70 : Grade D
* Score < 60 : Grade F

Question :

1. Design a Java program that takes a student's score as input and outputs the corresponding grade using an if-else control structure.

2. Test Case :

- Input : 85
- Expected Output : Grade B

3. Additional Requirement : Implement a loop that allows the teacher to enter scores for multiple students and display the grades for each one until the teacher decides to stop.

A)

```
import java.util.Scanner;
Public Class StudentGradingSystem{
    Public Static Void main(String[] args){
```

```
Scanner scanner = new Scanner(System.in);
    String continueInput;
    do {
        System.out.print("Enter the student's score: ");
        int score = scanner.nextInt();
        char grade;
        if (score >= 90) {
            grade = 'A';
        } else if (score >= 80) {
            grade = 'B';
        } else if (score >= 70) {
            grade = 'C';
        } else if (score >= 60) {
            grade = 'D';
        } else {
            grade = 'F';
        }
        System.out.print("Grade: " + grade);
        continueInput = scanner.next();
    } while
(continueInput.equalsIgnoreCase("yes"));
        scanner.close();
    }
}
```

Scenario 2: Number Guessing Game

Scenario : A simple number guessing game where the program randomly selects a number between 1 and 10, and the player has to guess it. The player has three attempts to guess the number correctly.

Question:

1. Implement a Java program that generates a random no. blw 1 & 10. Use a for loop to give the player 3 attempts to guess the no. After each incorrect guess, the program should provide a hint (e.g., "Too high" or "Too low").

A)

```
import java.util.Random;
import java.util.Scanner;
Public Class NumberGuessingGame {
    Public Static Void main(String[] args){
        Random rand = new Random();
        Scanner scanner=new Scanner(System.in);
        boolean playAgain= true;
        while (playAgain){
        int numberToGuess =rand.nextInt(10)+1;
        int attempts =0;
        System.out.println("Guess a no. blw 1 & 10:");
        for(; attempts<3; attempts ++) {
            int playerGuess =scanner.nextInt();
            if(playerGuess == numberToGuess) {
```

```
System.out.println("Correct! You guessed it in " + (attempts
                                        + 1) + " attempts.");

break;
} else if (playerGuess < numberToGuess) {
    System.out.println("Too low");
    } else {
      system.out.println("Too high");
  }
    scanner.close();
}
}
```

3. Scenario 3 : Multiplication Table Generator

Question :

1. Create a Java program that takes a number as input and uses a for loop to generate & print the multiplication table for that number (from 1 to 10).

A)

```
import java.util.Scanner;
Public Class MultiplicationTableGenerator {
    Public static void main(string [] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number : ");
        int number = Scanner.nextInt();
        system.out.print("Enter the range : ");
        int range = Scanner.nextInt();
        System.out.println("Multiplication Table " + number +
```

```
"from 1 to" + range + ":");
        for (int i=1; i<=range; i++) {
            System.out.println(number + "x" + i + "=" +
                                (number * i));
        }
        scanner.close();
    }
}
```

Scenario 4: Even and Odd Number Counter

Question:

Develop a Java program that takes an array of integers as i/p & uses a for loop to count how many even and odd numbers are in the array. Use an if-else statement to determine if a number is even or odd.

```
Public class EvenOddCounter {
    Public static void main(String[] args) {
        int[] numbers = {2, 3, 4, 5, 6};
        int evenCount = 0;
        int OddCount = 0;
        int evenSum = 0;
        int oddSum = 0;
        for (int num: numbers) {
            if (num % 2 == 0) {
                even count++;
                evenSum += num;
```

```
        }else {
            oddCount++;
            oddSum += num;
        }
    }
    System.out.println("Even Count: " + evenCount);
    System.out.println("Odd Count: " + oddCount);
    System.out.println("Sum of even no.'s: " + evenSum);
    System.out.println("Sum of odd no.'s: " + oddSum);
  }
}
```

5. Scenario 5: Simple ATM Simulation

Question:

Write a Java program that presents a menu to the user using a switch statement. Based on the user's selection, the program should perform the appropriate action: check balance, deposit money, or withdraw money. Use a loop to allow the user to perform multiple actions until they choose to exit.

A)

```
import java.util.Scanner;
Public Class ATM {
    Public static void main(String[] args){
    Scanner scanner = new Scanner(System.in);
    double balance = 1000;
    int choice;
    do {
        System.out.println("ATM Menu:");
        System.out.println("1. Check Balance");
```

```
System.out.println("2. Deposit Money");
System.out.println("3. Withdraw Money");
System.out.println("4. Exit");
System.out.println("Enter your choice:");
    choice = Scanner.nextInt();
    switch (choice){
    case 1:
      System.out.println("Your balance is: $" + balance);
      break;
    balance -= withdrawAmount;
    System.out.println("Withdrawl successful. Your new
      balance is: $" + balance);
      }
      break;
    case 4:
      System.out.println("thank you for using the ATM");
      break;
    default;
    system.out.println("Invalid choice. Please try
                        again.");
    }
    } while (choice != 4);
  }
}
```