



**CTU** training solutions

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## Question 1:

1.1 Palindrome is a word, verse, or sentence (such as "Able was I ere I saw Elba") or a number (such as 1881) that reads the same backward or forward. Create a Java application to check if a number provided by the user is a Palindrome or not. Give appropriate messages to the user. See sample output:

```
import java.util.Scanner;

public class PalindromeGabriella {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a number: ");

        int number = scanner.nextInt();

        if (isPalindrome(number)) {

            System.out.println(number + " is a palindrome.");

        } else {

            System.out.println(number + " is not a palindrome.");

        }

    }

    public static boolean isPalindrome(int number) {

        int originalNumber = number;

        int reversedNumber = 0;

        while (number != 0) {

            int digit = number % 10;

            reversedNumber = reversedNumber * 10 + digit;

            number /= 10;

        }

        return originalNumber == reversedNumber;

    }

}
```

```
}
```

```
return originalNumber == reversedNumber;
```

```
}
```

```
}
```

1.2 Create a lottery game application. Generate three random numbers, each between 0 and 9. Allow the user to guess three numbers.

```
import java.util.Scanner;

public class Lottery {

    public static void main(String[] args) {

        // Generate a lottery
        int lottery = (int) (Math.random() * 1000);

        // Prompt the user to enter a guess
        Scanner input = new Scanner(System.in);
        System.out.print("Enter your guess: ");
        int guess = input.nextInt();

        // Get digits from lottery
        int lotteryDigit1 = lottery / 100;
        int lotteryDigit2 = (lottery % 100) / 10;
        int lotteryDigit3 = lottery % 10;

        // Get digits from guess
        int guessDigit1 = guess / 100;
        int guessDigit2 = (guess % 100) / 10;
        int guessDigit3 = guess % 10;

        System.out.println("The lottery number is " + lotteryDigit1
            + lotteryDigit2 + lotteryDigit3);

        // Check the guess
```

```

if (guess == lottery) {
    System.out.println("Exact match: you win $10,000");
} else if ((guessDigit1 == lotteryDigit2 && guessDigit2 == lotteryDigit1 && guessDigit3 ==
lotteryDigit3)
    || (guessDigit1 == lotteryDigit2
    && guessDigit1 == lotteryDigit3 && guessDigit3 == lotteryDigit1)
    || (guessDigit1 == lotteryDigit3
    && guessDigit2 == lotteryDigit1 && guessDigit3 == lotteryDigit2)
    || (guessDigit1 == lotteryDigit3
    && guessDigit2 == lotteryDigit2 && guessDigit3 == lotteryDigit1)
    || (guessDigit1 == lotteryDigit1
    && guessDigit2 == lotteryDigit3 && guessDigit3 == lotteryDigit2)) {
    System.out.println("Match all digits: you win $5,000");
} else if (guessDigit1 == lotteryDigit1 || guessDigit1 == lotteryDigit2
    || guessDigit1 == lotteryDigit3 || guessDigit2 == lotteryDigit1
    || guessDigit2 == lotteryDigit2 || guessDigit2 == lotteryDigit3
    || guessDigit3 == lotteryDigit1 || guessDigit3 == lotteryDigit2
    || guessDigit3 == lotteryDigit3) {
    System.out.println("Match one digit: you win $1,000");
} else {
    System.out.println("Sorry, no match");
}
}
}

```

1.3 Write a Java console application for an Exam Entrance Calculator that allows a user to input the name of a module and the marks obtained in its three formative assessments (each worth 16.66%). The application should then calculate the student's semester mark and output whether the student has qualified to write the exam or not. Use constants to store the weight of each assessment. The pass mark for the module to write and exam is 30%.

```
import java.util.Scanner;

public class ExamEntranceCalculator {

    // Constants for the weight of each assessment
    private static final double ASSESSMENT_WEIGHT = 0.1666;

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Get the name of the module from the user
        System.out.print("Enter the name of the module: ");
        String moduleName = scanner.nextLine();

        // Get the marks for each assessment from the user
        System.out.print("Enter the marks for the first assessment: ");
        double assessment1 = scanner.nextDouble();

        System.out.print("Enter the marks for the second assessment: ");
        double assessment2 = scanner.nextDouble();

        System.out.print("Enter the marks for the third assessment: ");
        double assessment3 = scanner.nextDouble();

        // Calculate the semester mark
```

```
double semesterMark = (assessment1 + assessment2 + assessment3) * ASSESSMENT_WEIGHT;
```

```
// Output the semester mark
```

```
System.out.println("Semester mark for " + moduleName + ": " + semesterMark);
```

```
// Check if the student has qualified to write the exam
```

```
if (semesterMark >= 0.3) {
```

```
System.out.println("Congratulations! You have qualified to write the exam.");
```

```
} else {
```

```
System.out.println("Sorry, you have not qualified to write the exam.");
```

```
}
```

```
}
```

```
}
```



## Completed Declaration of Authenticity

I Gabriella Rakgotsoka

\_ hereby

(FULL NAME)

declare that the contents of this assignment JD521\_FA4 is entirely my own  
work except for the following documents: (List the documents and page numbers of work in this  
portfolio  
that were generated in a group)

Activi ty	Da te



Signature:

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