

Lab worksheet 5: Repetition Statements

Q1.

Code:

```
package Q_01;

public class Q_01 {
    public static void main(String[] args) {
        for (int i = 10; i <= 49; i++) {
            System.out.print(i + " ");
            // Print a new line after every 10 numbers
            if ((i - 10) % 10 == 9) {
                System.out.println();
            }
        }
    }
}
```

Output:



```
Run Q_01 x
C:\Users\ADMIN\.jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Comm
10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47 48 49
Process finished with exit code 0
```

Q2

```
package Q_02;
import java.util.Scanner;

public class Q_02 {
    public static int countDigits(int number) {
        if (number == 0) {
            return 1;
        }

        number = Math.abs(number);

        int count = 0;
```

```

        while (number > 0) {
            number /= 10; // Remove the last digit
            count++; // Increment the digit count
        }
        return count;
    }

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

        // Repeatedly ask for input until a negative number
        is entered
        do {
            System.out.print("Enter an integer (negative to
            stop): ");
            input = scanner.nextInt();
            if (input >= 0) {
                int digitCount = countDigits(input);
                System.out.println("The number " + input + "
                has " + digitCount + " digits.");
            }
        } while (input >= 0);

        System.out.println("Program terminated.");
        scanner.close();
    }
}

```

Run Q_02 x

```

C:\Users\ADMIN\jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ ID
Enter an integer (negative to stop): 23498
The number 23498 has 5 digits.
Enter an integer (negative to stop): 567
The number 567 has 3 digits.
Enter an integer (negative to stop): -7
Program terminated.

Process finished with exit code 0

```

Q3

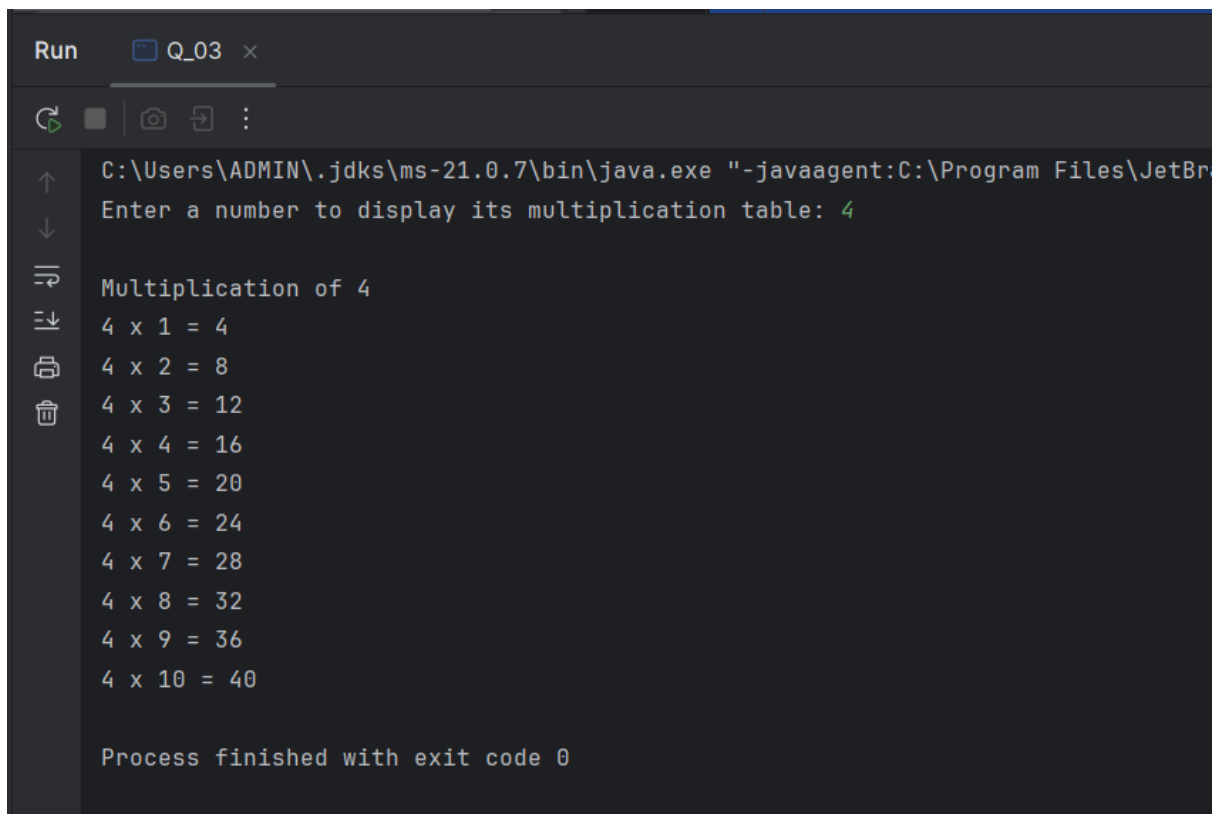
```
package Q_03;

import java.util.Scanner;

public class Q_03 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a number to display its
multiplication table: ");
        int N = scanner.nextInt();
        System.out.println("\nMultiplication of "+ N);

        for (int i = 1; i <= 10; i++) {
            System.out.println(N + " x " + i + " = " + (N *
i));
        }
        scanner.close();
    }
}
```



The screenshot shows a 'Run' window in a Java IDE. The title bar indicates the file 'Q_03'. The command line shows the execution of 'java.exe' with a Java agent. The program prompts the user to 'Enter a number to display its multiplication table:' and the input '4' is shown. The output displays the 'Multiplication of 4' followed by a list of multiplication facts from 4 x 1 to 4 x 10. The window concludes with 'Process finished with exit code 0'.

```
Run Q_03 x
C:\Users\ADMIN\.jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\JetBr
Enter a number to display its multiplication table: 4

Multiplication of 4
4 x 1 = 4
4 x 2 = 8
4 x 3 = 12
4 x 4 = 16
4 x 5 = 20
4 x 6 = 24
4 x 7 = 28
4 x 8 = 32
4 x 9 = 36
4 x 10 = 40

Process finished with exit code 0
```

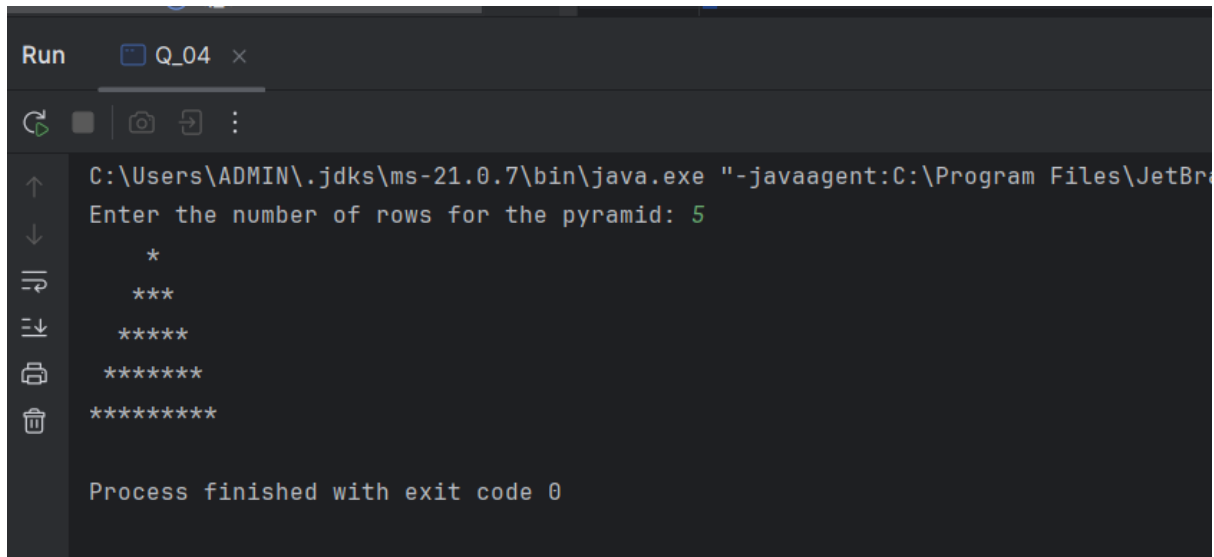
Q4

```
package Q_04;
import java.util.Scanner;

public class Q_04 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of rows for the
pyramid: ");
        int rows = scanner.nextInt();

        for (int i = 1; i <= rows; i++) {
            // Print spaces
            for (int j = i; j < rows; j++) {
                System.out.print(" ");
            }
            // Print asterisks
            for (int k = 1; k <= (2 * i - 1); k++) {
                System.out.print("*");
            }
            // Move to the next line
            System.out.println();
        }

        scanner.close();
    }
}
```



The screenshot shows a terminal window titled "Run" with a tab "Q_04". The command executed is `C:\Users\ADMIN\.jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\JetBr"`. The program prompts the user to "Enter the number of rows for the pyramid:" and the input is `5`. The output is a pyramid of stars: `*`, `***`, `*****`, `*****`, and `*****`. The terminal also shows "Process finished with exit code 0".

Q_05

```
package Q_05;

import java.util.Scanner;

public class Q_05 {

    public static boolean isPalindrome(String word) {
        String reverseWord= "";
        for(int i = word.length() - 1; i >=0; i--) {
            reverseWord = reverseWord + word.charAt(i);
        }
        return word.equals(reverseWord);
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the word (only lowercase
letters): ");

        String word = scanner.nextLine();

        if(isPalindrome(word)) {
            System.out.println("This word is palindrome! ");
        }
    }
}
```

```

    }
    else {
        System.out.println("This word is not palindrome!");
    }
    scanner.close();
}
}

```

Run Q_05 x

```

C:\Users\ADMIN\.jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA
Enter the word (only lowercase letters): level
This word is palindrome!

Process finished with exit code 0

```

Run Q_05 x

```

C:\Users\ADMIN\.jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\li
Enter the word (only lowercase letters): file
This word is not palindrome!

Process finished with exit code 0

```

Q_06

```

package Q_06;

import java.util.Random;
import java.util.Scanner;

public class Q_06 {
    public static void main(String[] args) {
        Random random = new Random();
        Scanner scanner = new Scanner(System.in);

        int secretNumber = random.nextInt(100);
        int guessNumber;
        int attempts = 0;
    }
}

```

```

        System.out.println("Welcome to the number guessing
game!");
        System.out.println("I have selected a random number
between 1 and 100.");
        do {
            System.out.print("Enter your guess: ");
            guessNumber = scanner.nextInt();
            attempts++;

            if (guessNumber > secretNumber) {
                System.out.println(" Higher. Try again");
            }
            else if (guessNumber < secretNumber) {
                System.out.println("Lower. Try again ");
            }
            else {
                System.out.println("Congratulations! You
guessed the secretNumber correctly in "+ attempts +"
attempts.\nThe secretNumber is "+ secretNumber);
            }

        }while (guessNumber != secretNumber);
        scanner.close();
    }
}

```

```

Run    Q_06 x
C:\Users\ADMIN\.jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\Jet
Welcome to the number guessing game!
I have selected a random number between 1 and 100.
Enter your guess: 50
Higher. Try again
Enter your guess: 40
Higher. Try again
Enter your guess: 30
Higher. Try again
Enter your guess: 20
Higher. Try again
Enter your guess: 10
Congratulations! You guessed the secretNumber correctly in 5 attempts.
The secretNumber is 10

Process finished with exit code 0

```

Q_07.

```
package Q_07;

import java.util.Scanner;

public class Q_07 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a sentence: ");
        String sentence = scanner.nextLine();

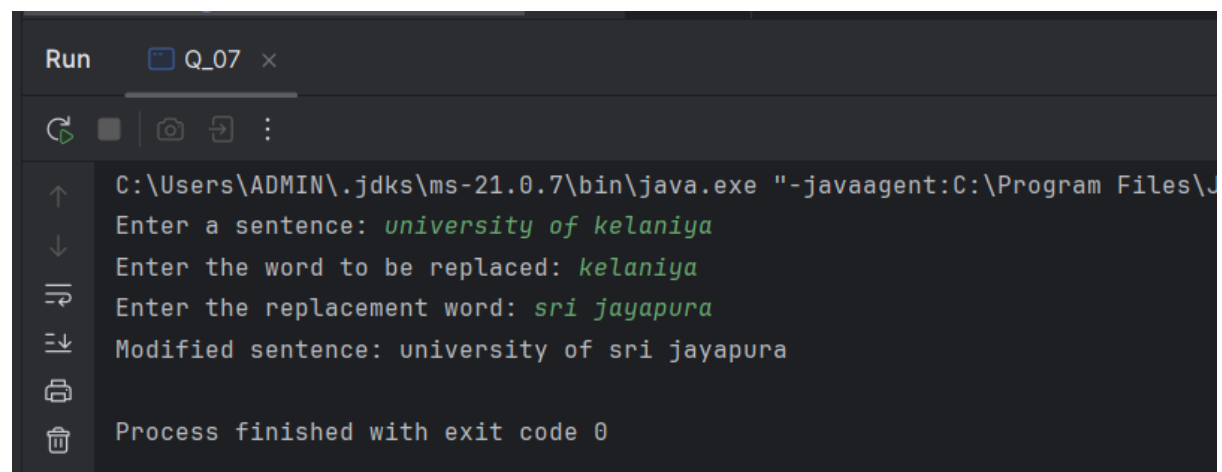
        System.out.print("Enter the word to be replaced: ");
        String wordToReplace = scanner.nextLine();

        System.out.print("Enter the replacement word: ");
        String replacementWord = scanner.nextLine();

        String modifiedSentence = sentence.replaceAll("\\b" +
wordToReplace + "\\b", replacementWord);

        System.out.println("Modified sentence: " +
modifiedSentence);

        scanner.close();
    }
}
```



Run Q_07 x

C:\Users\ADMIN\.jdk\ms-21.0.7\bin\java.exe "-javaagent:C:\Program Files\J...

Enter a sentence: university of kelaniya

Enter the word to be replaced: kelaniya

Enter the replacement word: sri jayapura

Modified sentence: university of sri jayapura

Process finished with exit code 0