Q1:

```
package Q1;

public class Q1 {
   public static void main(String[] args) {
      int number=10;
      for(int row=1; row<=4;row++ ){
         for(int col=1; col<=10; col++){
            System.out.print(number+" ");
            number++;
         }
         System.out.println();
      }
     }
}
```

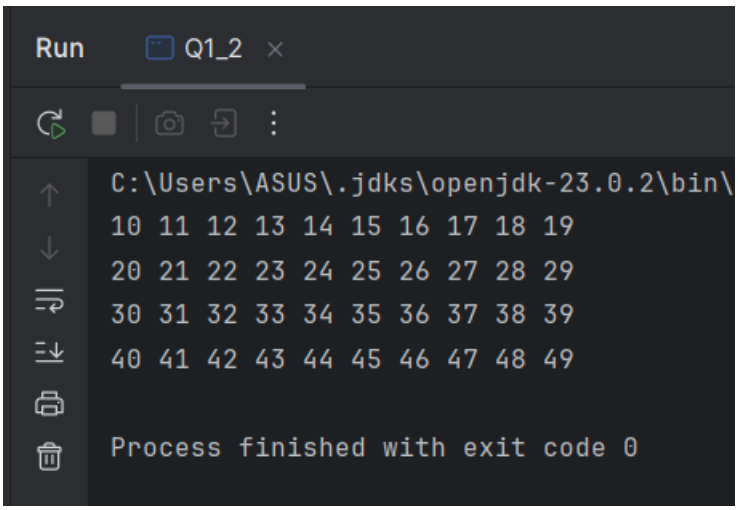
Output:

```
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-
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
```

Q1 Method 2:

```
package Q1;

public class Q1_2 {
  public static void main(String[] args) {
    int count = 0;
    for (int i = 10; i < 50; i++) {
      System.out.print(i + " ");
      count++;
      if (count == 10) {
        System.out.println();
        count = 0;
      }
    }
  }
  }
```

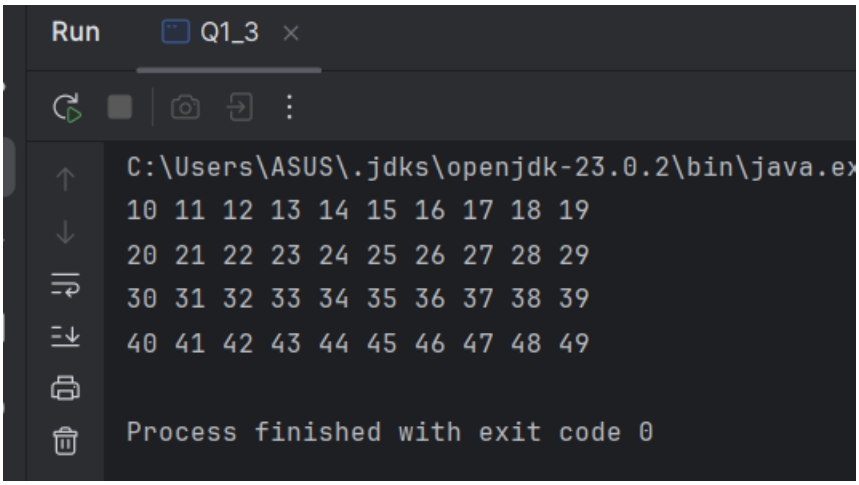
Output:



Q1 Method 3:

```
package Q1;

public class Q1_3 {
   public static void main(String[] args) {
      for(int i=10; i<50; i++){
         System.out.print(i+" ");
         if((i+1)%10==0){
            System.out.println();
         }
      }
   }
}
```

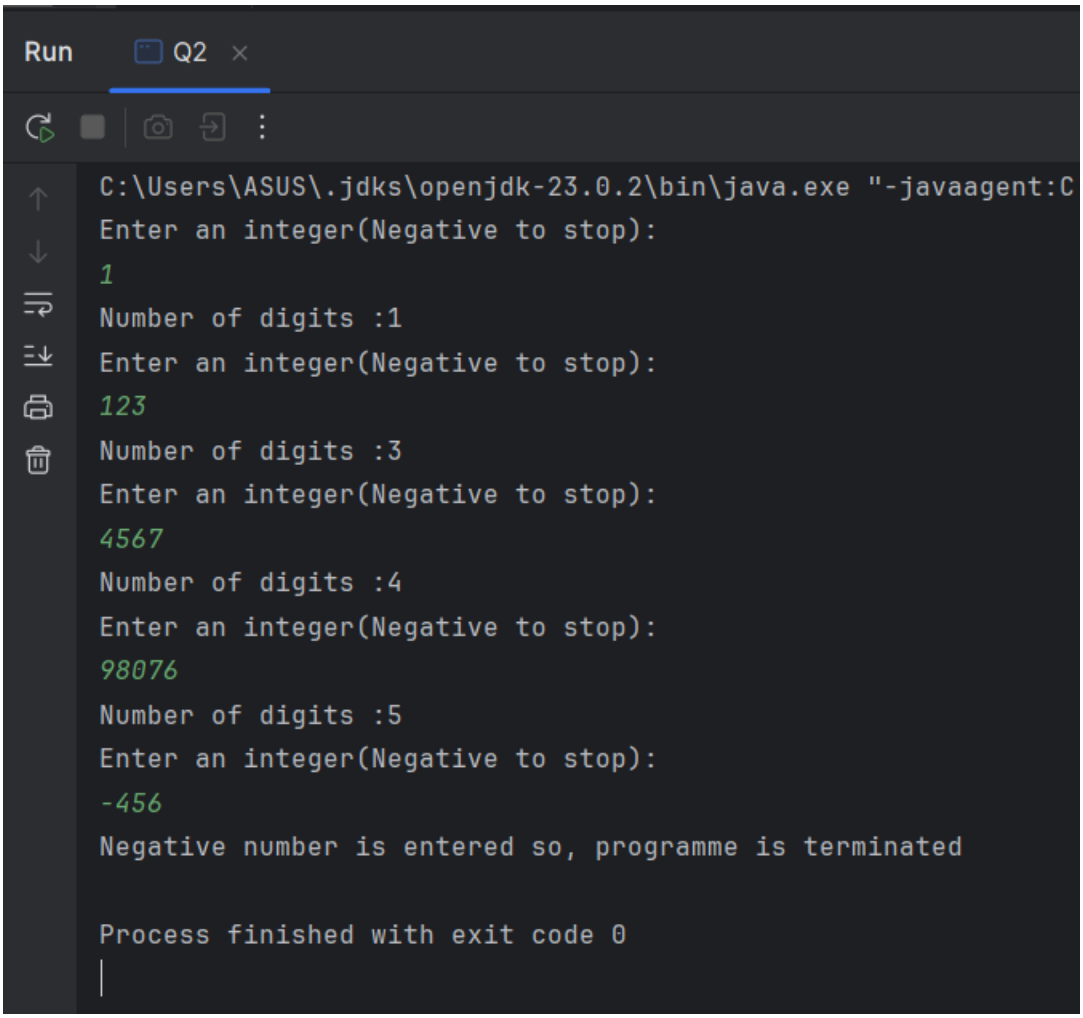
Output:



Q2:

```
package Q2;

import java.util.Scanner;

public class Q2 {
   public static int countDigit(int number){
      return String.valueOf(number).length();
      //to convert integer to string and getting the length
   }

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

      while(true){
         System.out.println("Enter an integer(Negative to stop):");
         int input= scanner.nextInt();

         if(input<0){
            System.out.println("Negative number is entered so, programme is terminated");
            break;
         }

         System.out.println("Number of digits :"+countDigit(input));
      }

   }
}
```

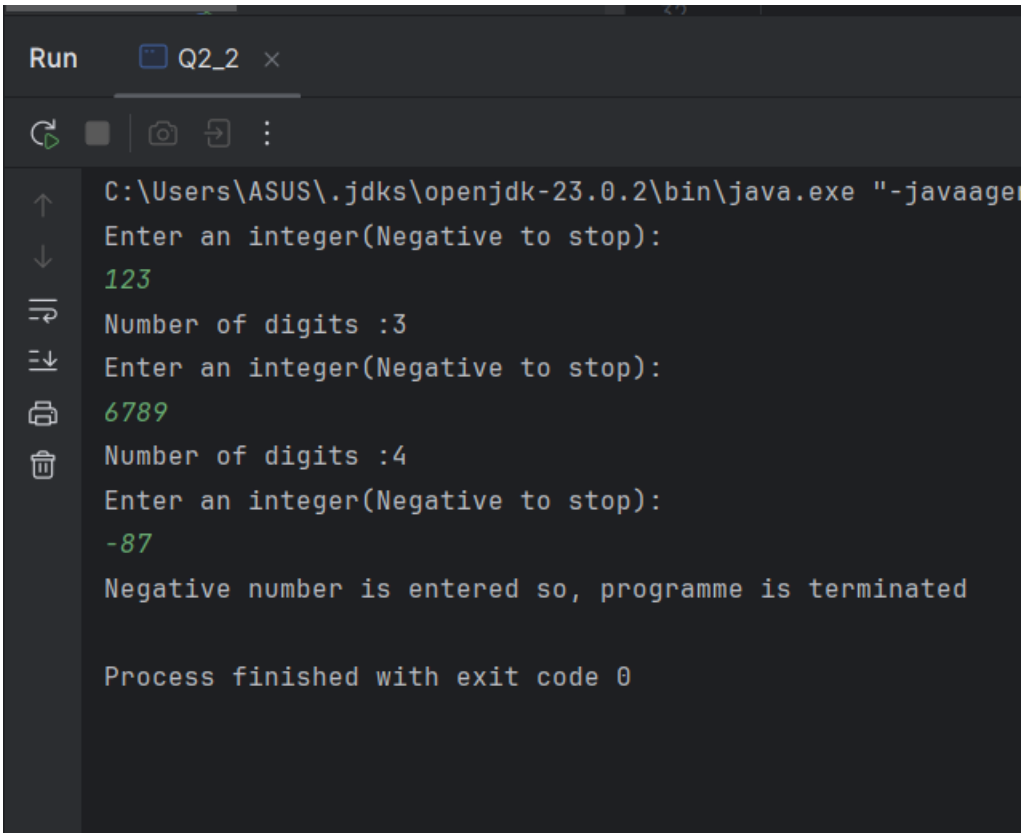
Output:


Run
Q2
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaagent:C
Enter an integer(Negative to stop):
1
Number of digits :1
Enter an integer(Negative to stop):
123
Number of digits :3
Enter an integer(Negative to stop):
4567
Number of digits :4
Enter an integer(Negative to stop):
98076
Number of digits :5
Enter an integer(Negative to stop):
-456
Negative number is entered so, programme is terminated
Process finished with exit code 0

Q2 Method 2:

```
package Q2;
import java.util.Scanner;

public class Q2_2 {
   public static int countDigit(int number){
      if(number==0){
         return 1;
      }
      int count=0;
      while(number>0){
         number/=10;
         count++;
      }
      return count;
   }
   public static void main(String[] args) {
      Scanner scanner=new Scanner(System.in);

      while(true){
         System.out.println("Enter an integer(Negative to stop):");
         int input= scanner.nextInt();

         if(input<0){
            System.out.println("Negative number is entered so, programme is terminated");
            break;
         }

         System.out.println("Number of digits :"+countDigit(input));
      }
   }
}
```

Output:


Run
Q2_2
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaage
Enter an integer(Negative to stop):
123
Number of digits :3
Enter an integer(Negative to stop):
6789
Number of digits :4
Enter an integer(Negative to stop):
-87
Negative number is entered so, programme is terminated
Process finished with exit code 0

Q3:

```
package Q3;

import java.util.Scanner;

public class Q3 {
   public static void main(String[] args) {
      Scanner scanner=new Scanner(System.in);
      System.out.println("Enter an integer:");
      int n= scanner.nextInt();

      System.out.println("**********MULTIPLICATION TABLE OF "+n+"*************");
      for(int i=1; i<11; i++){
         System.out.println(n+"*"+i+"="+(i*n));
      }
   }
}
```

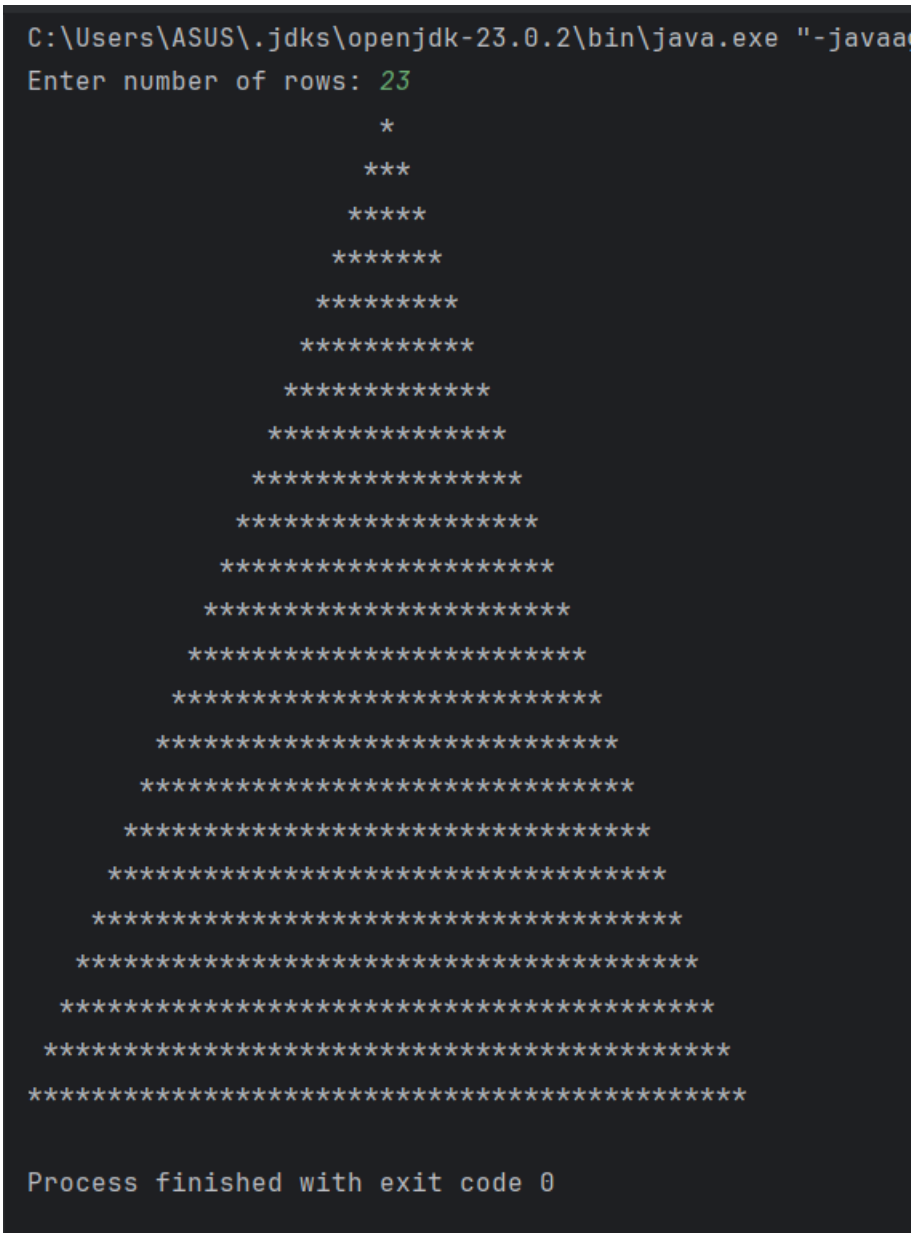
Output:

```
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-j
Enter an integer:
10
**********MULTIPLICATION TABLE OF 10*************
10*1=10
10*2=20
10*3=30
10*4=40
10*5=50
10*6=60
10*7=70
10*8=80
10*9=90
10*10=100

Process finished with exit code 0
```

Q4:

```
package Q4;

import java.util.Scanner;

public class Q4 {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter number of rows: ");
      int rows = scanner.nextInt();

      for (int i = 1; i <= rows; i++) {
         // print spaces
         for (int j = i; j < rows; j++) {
            System.out.print(" ");
         }
         // print stars
         for (int l = 1; l <= (2 * i - 1); l++) {
            System.out.print("*");
         }
         System.out.println();
      }
   }
}
```

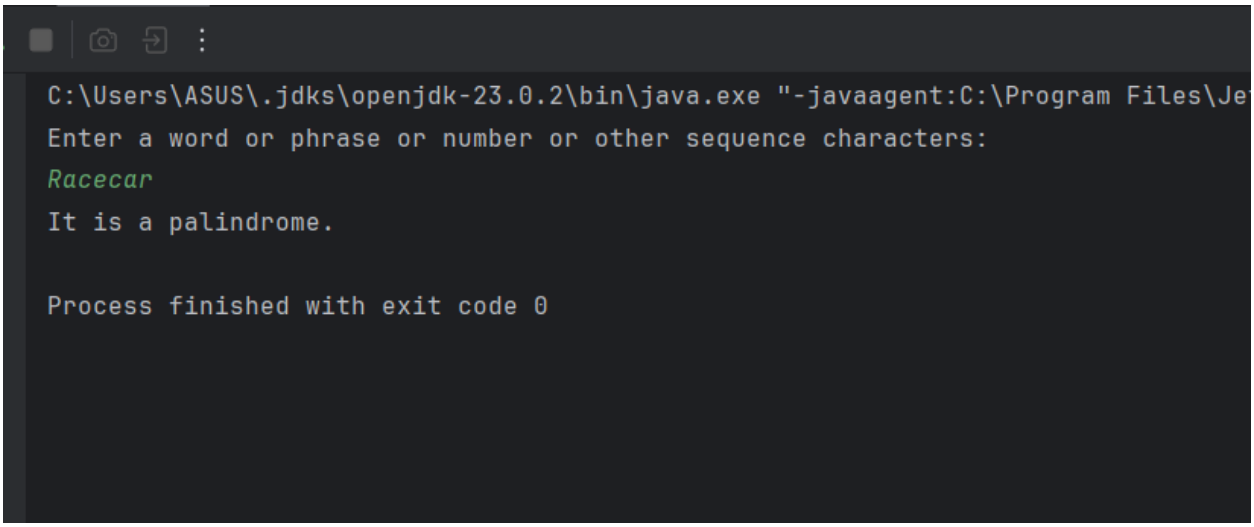
Output:

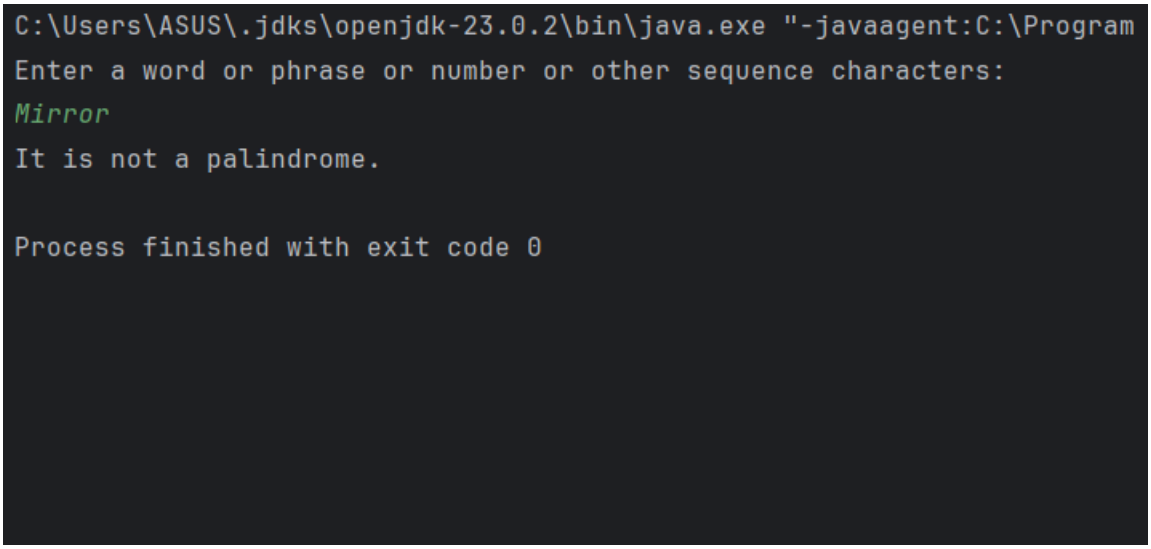

C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaa
Enter number of rows: 23
*
***
*****
****
****
****
****
****
****
****
****
****
****
****
****
****
****
****
****
****
****
****
Process finished with exit code 0

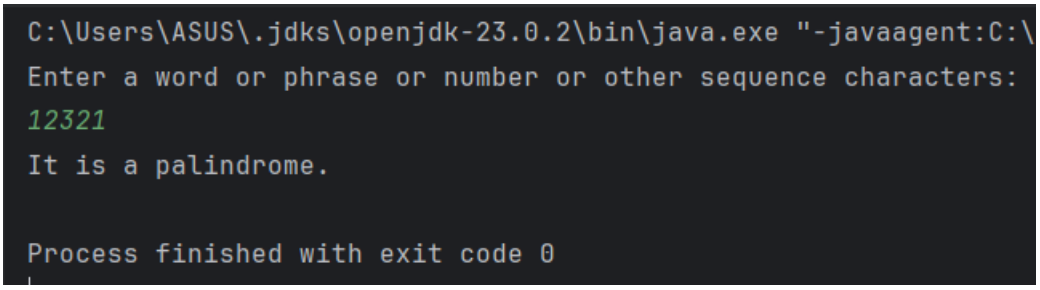
Q5:

```
package Q5;

import java.util.Scanner;

public class Q5 {
   public static void main(String[] args) {
      Scanner scanner =new Scanner(System.in);

      System.out.println("Enter a word or phrase or number or other sequence
characters:");
      String input=scanner.nextLine().replaceAll("[^a-zA-Z0-9]","").toLowerCase();
      //This removes everything that is not a letter or digit (i.e., spaces, punctuation,
special characters).

      String reversed="";
      for(int i=input.length()-1; i>=0; i--){
         reversed += input.charAt(i);
      }
      if (input.equals(reversed)) {
         System.out.println("It is a palindrome.");
      } else {
         System.out.println("It is not a palindrome.");
      }//Compares the **original cleaned input** with the **reversed string**-----
`.equals()` checks if they are **exactly the same**.
   }
}
```

Output:


C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaagent:C:\Program Files\Je
Enter a word or phrase or number or other sequence characters:
Racecar
It is a palindrome.
Process finished with exit code 0

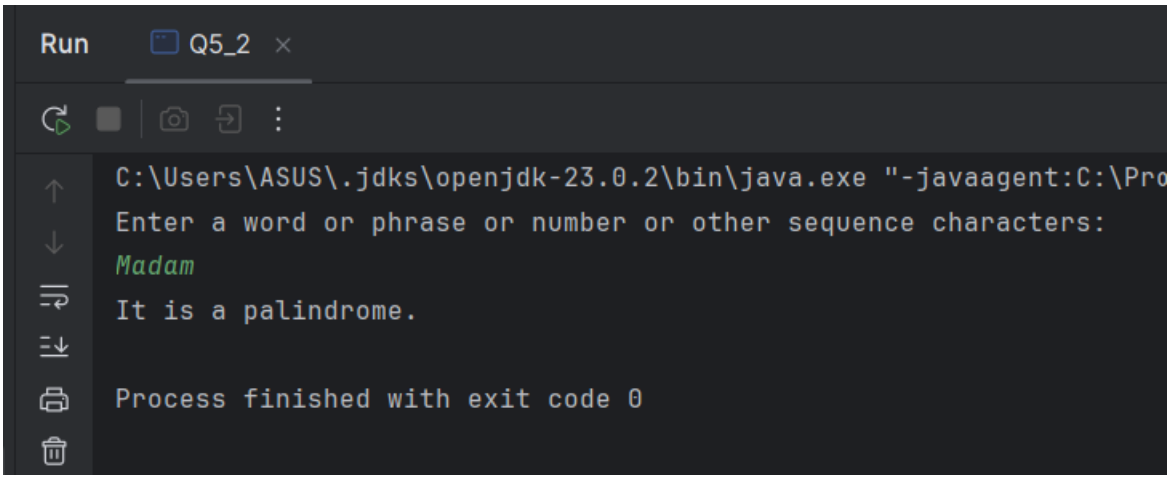

C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaagent:C:\Program
Enter a word or phrase or number or other sequence characters:
Mirror
It is not a palindrome.
Process finished with exit code 0

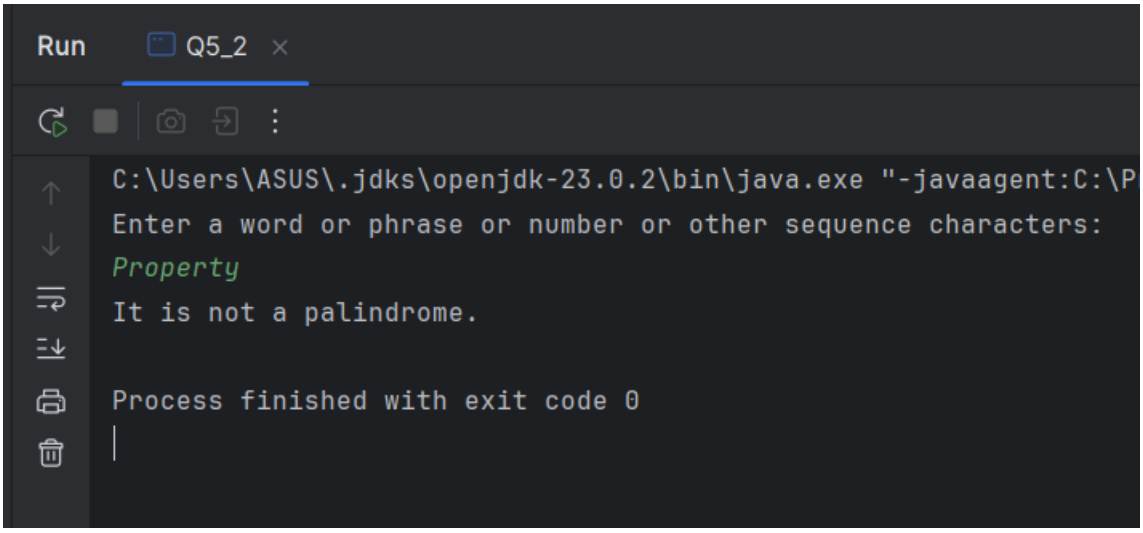

C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaagent:C:\
Enter a word or phrase or number or other sequence characters:
12321
It is a palindrome.
Process finished with exit code 0

Q5 Method 2:

```
package Q5;

import java.util.Scanner;

public class Q5_2 {
   public static void main(String[] args) {
      Scanner scanner=new Scanner(System.in);

      System.out.println("Enter a word or phrase or number or other sequence characters:");
      String input=scanner.nextLine().replaceAll("[^a-zA-Z0-9]","").toLowerCase();

      boolean isPalindrome = true;
      int start = 0;
      int end = input.length() - 1;

      while (start < end) {
         if (input.charAt(start) != input.charAt(end)) {
            isPalindrome = false;
            break;
         }
         start++;
         end--;
      }
      System.out.println(isPalindrome ? "It is a palindrome." : "It is not a palindrome.");
   }
}
```

Q5 Method 2 output:

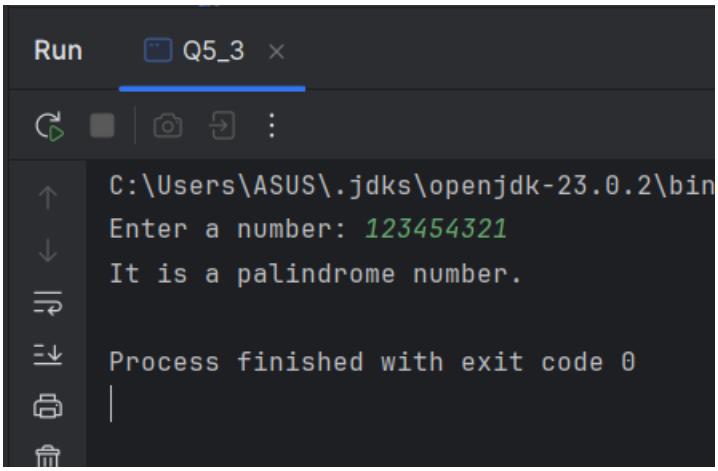


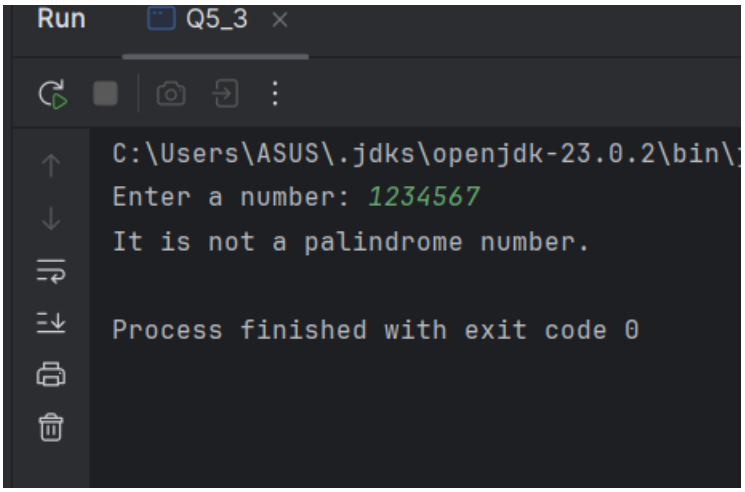


Q5 Method 3 (Palindrome checker for numbers):

```
package Q5;
//PALINDROME CHECKER FOR NUMBERS

import java.util.Scanner;

public class Q5_3 {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter a number: ");
      int num = scanner.nextInt();
      int original = num;
      int reversed = 0;

      while (num > 0) {
         int digit = num % 10;
         reversed = reversed * 10 + digit;
         num /= 10;
      }

      if (original == reversed) {
         System.out.println("It is a palindrome number.");
      } else {
         System.out.println("It is not a palindrome number.");
      }
   }
}
```

Q5 Method 3 Output:

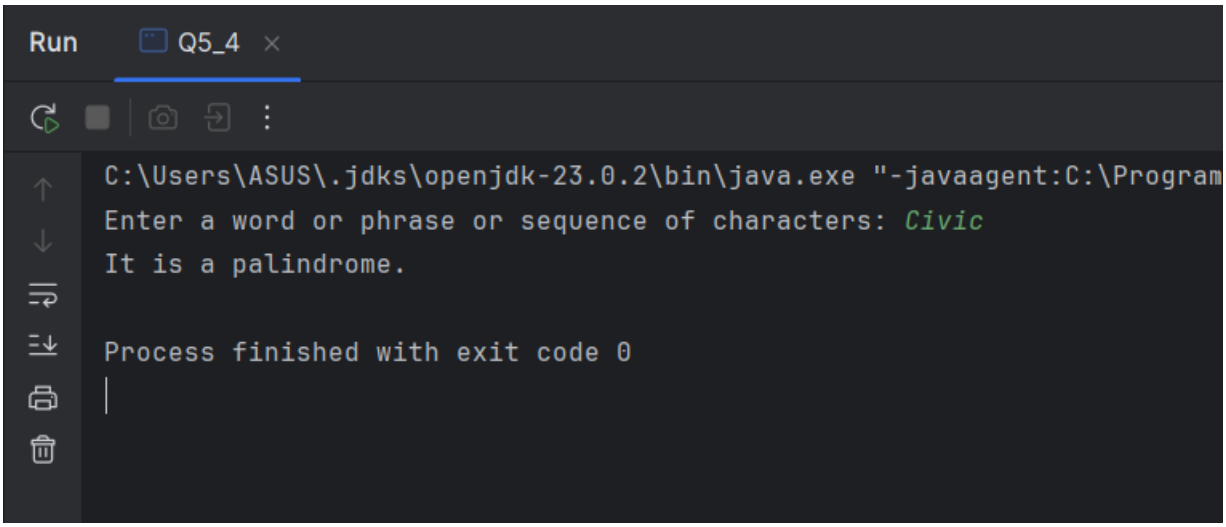


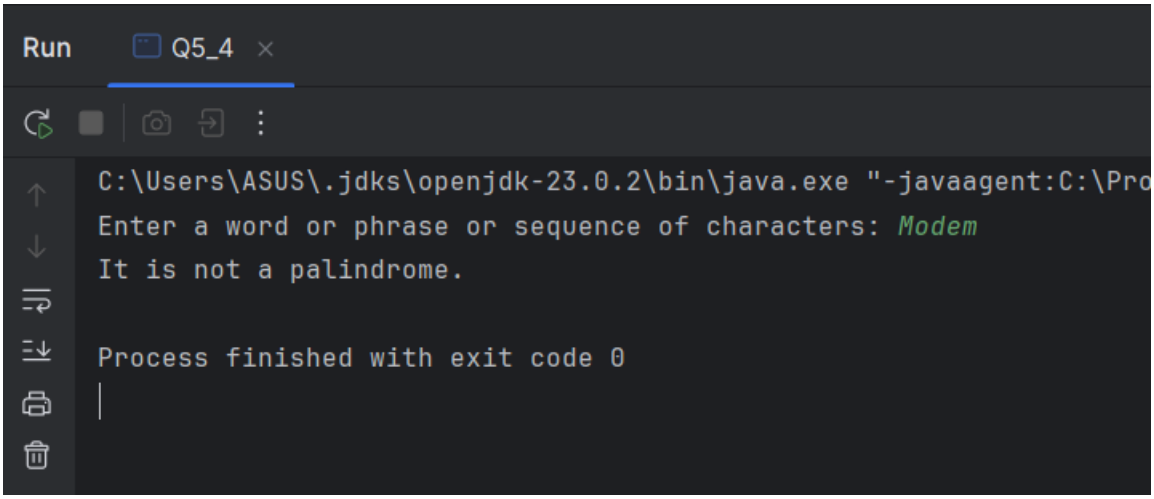


Q5 Method 4(palindrome with recursion):

```
package Q5;

import java.util.Scanner;

public class Q5_4 {
   public static boolean isPalindrome(String s, int start, int end) {
      if (start >= end) {
         return true;
      }
      if (s.charAt(start) != s.charAt(end)) {
         return false;
      }
      return isPalindrome(s, start + 1, end - 1);
   }

   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter a word or phrase or sequence of characters: ");
      String input = sc.nextLine().replaceAll("[^a-zA-Z0-9]", "").toLowerCase();

      if (isPalindrome(input, 0, input.length() - 1)) {
         System.out.println("It is a palindrome.");
      } else {
         System.out.println("It is not a palindrome.");
      }
   }
}
```

Q5 Method 4 Output:

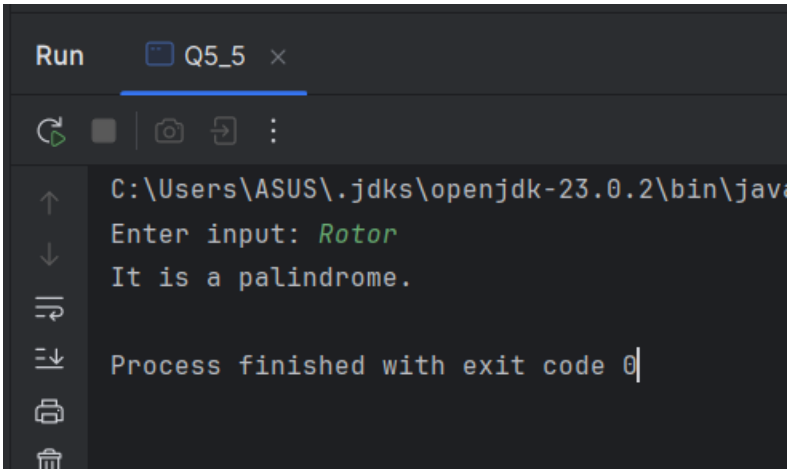




Q5 Method 5(String Builder method):

```
package Q5;

import java.util.Scanner;

public class Q5_5 {
  public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter input: ");
        String str = sc.nextLine().replaceAll("[^a-zA-Z0-9]", "").toLowerCase();

        StringBuilder sb = new StringBuilder(str);
        System.out.println(str.equals(sb.reverse().toString()) ? "It is a palindrome." : "It is not a palindrome.");
    }
  }
```

Output for method 5:



Q6:

```
package Q6;

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

public class Q6 {
    public static void main(String[] args) {
        Random random = new Random();
        int randomNum = random.nextInt(100) + 1;
        Scanner input = new Scanner(System.in);
        int guess = 0;

        System.out.println("\uD83C\uDFAF A number between 1 and 100 has been chosen!");
        System.out.println("\uD83E\uDD14 Can you guess it?");

        while (guess != randomNum) {
            System.out.print("Your guess: ");
            guess = input.nextInt();
            int diff = Math.abs(guess - randomNum);

            if (guess == randomNum) {
                break;
            } else if (diff >= 20) {
                System.out.println(guess < randomNum ? "\uD83D\uDCC9 Way too low!" :
"\uD83D\uDCC8 Way too high!");
            } else if (diff >= 10) {
                System.out.println(guess < randomNum ? "\uFE0FA bit low!" : "\uFE0F A bit
high!");
            } else if (diff >= 5) {
                System.out.println(guess < randomNum ? "\uD83D\uDE2C Close, try higher!" : "
\uD83D\uDE2CClose, try lower!");
            }
```

```
else {
            System.out.println(guess < randomNum ? "\uD83D\uDD25 Very close! Just a little higher!" : " \uD83D\uDD25Very close! Just a little lower!");
        }
    }

    System.out.println("\uD83C\uDF89 Correct! The number was " + randomNum);
  }
}
```

Output:

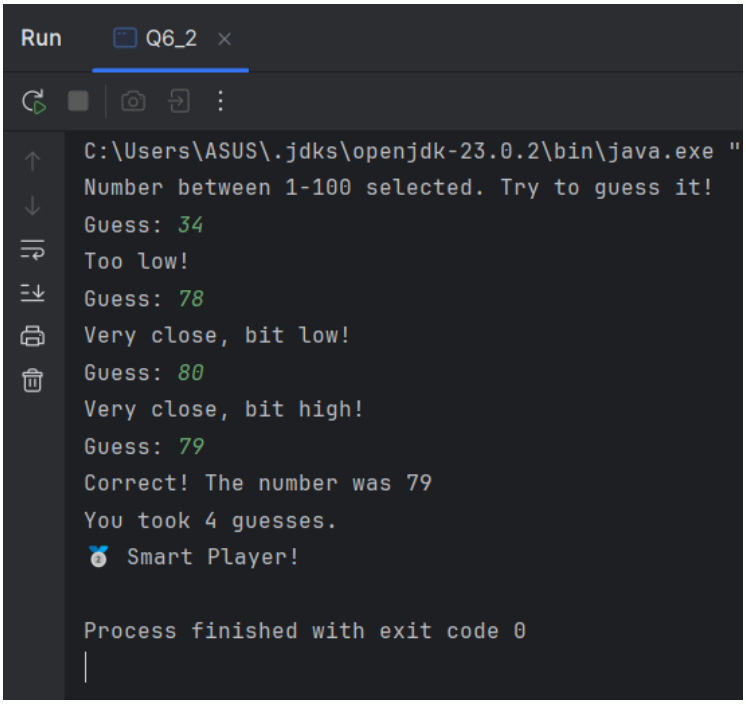
```
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-
🎯 A number between 1 and 100 has been chosen!
🤔 Can you guess it?
Your guess: 89
📈 Way too high!
Your guess: 78
   A bit high!
Your guess: 76
 😬Close, try lower!
Your guess: 75
 😬Close, try lower!
Your guess: 74
 😬Close, try lower!
Your guess: 72
 😬Close, try lower!
Your guess: 70
 🔥Very close! Just a little lower!
Your guess: 69
 🔥Very close! Just a little lower!
Your guess: 65
🔥 Very close! Just a little higher!
Your guess: 66
🔥 Very close! Just a little higher!
Your guess: 67
🎉 Correct! The number was 67

Process finished with exit code 0
```

Q6 method 2:

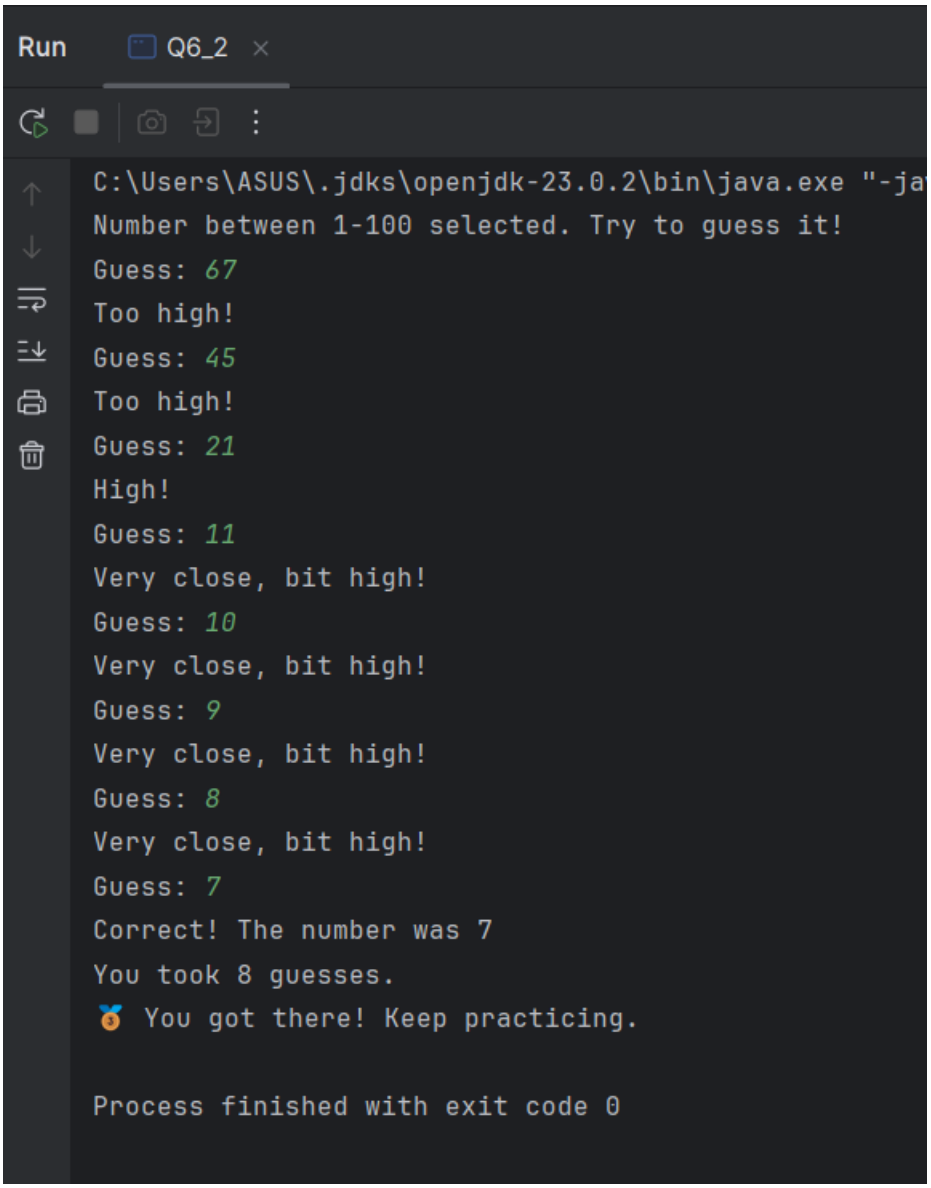
```
package Q6;

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

public class Q6_2 {
   public static void main(String[] args) {

      Random random = new Random();
      int randomNum = random.nextInt(100) + 1;
      Scanner input = new Scanner(System.in);
 pa     int guess = 0;
      int attempts = 0;

      System.out.println("Number between 1-100 selected. Try to guess it!");

      while (guess != randomNum) {
         System.out.print("Guess: ");
         guess = input.nextInt();
         attempts++;

         int diff = Math.abs(guess - randomNum);

         if (guess == randomNum) {
            break;
         } else if (diff > 20) {
            System.out.println(guess < randomNum ? "Too low!" : "Too high!");
         } else if (diff > 10) {
   System.out.println(guess < randomNum ? "Low!" : "High!");
} else if (diff > 5) {
   System.out.println(guess < randomNum ? "Almost there! Low!" : "Almost there! High!");
} else {
   System.out.println(guess < randomNum ? "Very close, bit low!" : "Very close, bit high!");
}
```

```
}

    System.out.println("Correct! The number was " + randomNum);
    System.out.println("You took " + attempts + " guesses.");

    // Give a fun ranking
    if (attempts <= 3) {
        System.out.println("🥇 Genius Guesser!");
    } else if (attempts <= 6) {
        System.out.println("🥈 Smart Player!");
    } else {
        System.out.println("🥉 You got there! Keep practicing.");
    }


  }

}
```

Output:



Output for method 2:



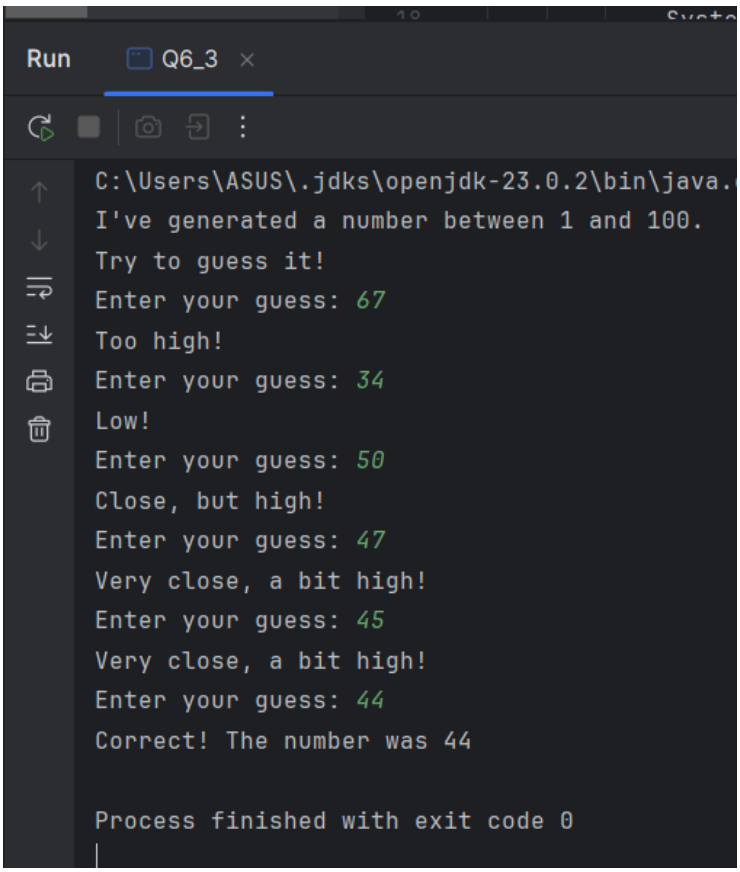
Q6 method 3:

```
package Q6;

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

public class Q6_3 {
   public static void main(String[] args) {
      Random random = new Random();
      int randomNum = random.nextInt(100) + 1;

      Scanner input = new Scanner(System.in);
      int guess = 0;

      System.out.println("I've generated a number between 1 and 100.");
      System.out.println("Try to guess it!");

      while (guess != randomNum) {
         System.out.print("Enter your guess: ");
         guess = input.nextInt();

         int diff = Math.abs(randomNum - guess);

         if (guess == randomNum) {
            break;
         } else if (diff >= 20) {
            System.out.println(guess < randomNum ? "Too low!" : "Too high!");
         }
```

continue.....

```
else if (diff >= 10) {
            System.out.println(guess < randomNum ? "Low!" : "High!");
        } else if (diff >= 5) {
            System.out.println(guess < randomNum ? "Close, but low!" : "Close, but high!");
        } else {
            System.out.println(guess < randomNum ? "Very close, a bit low!" : "Very close, a bit
high!");
        }
    }

    System.out.println("Correct! The number was " + randomNum);
  }
}
```

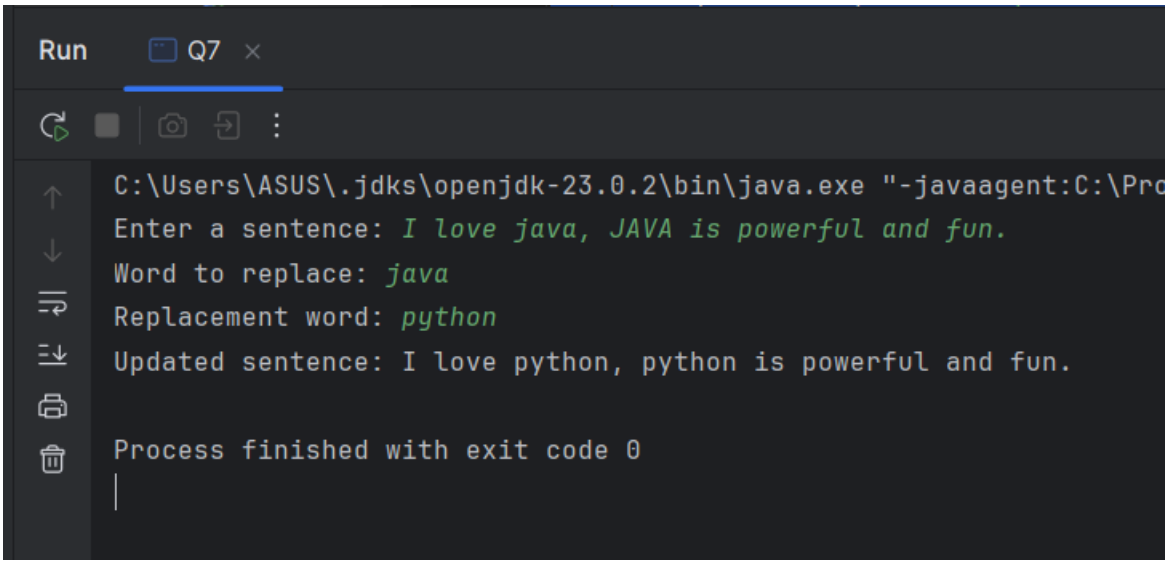
Output for method 3:

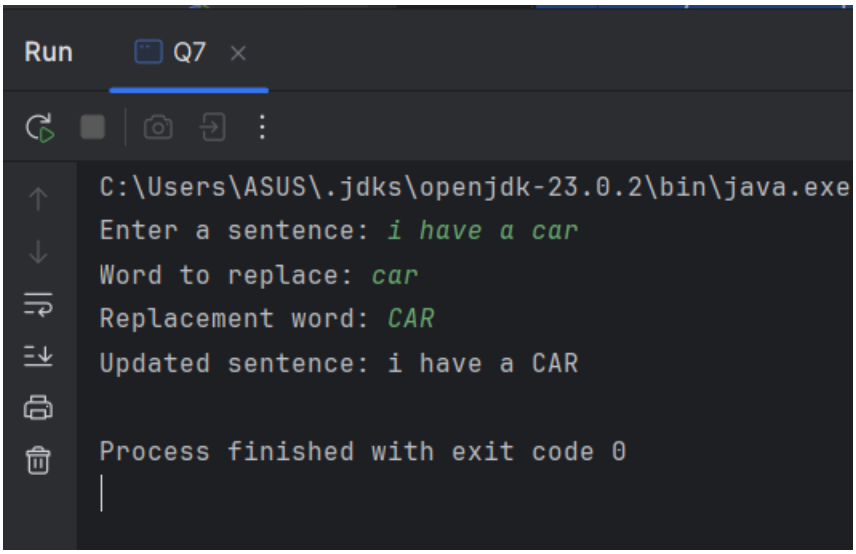


Q7:

```
package Q7;

import java.util.Scanner;

public class Q7 {
   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("Word to replace: ");
      String word = scanner.nextLine();

      System.out.print("Replacement word: ");
      String replace = scanner.nextLine();

      String[] parts = sentence.split("\\b");
      StringBuilder result = new StringBuilder();

      for (String part : parts) {
         if (part.equalsIgnoreCase(word)) {
            result.append(replace);
         } else {
            result.append(part);
         }
      }

      System.out.println("Updated sentence: " + result.toString());
   }
}
```

Output:

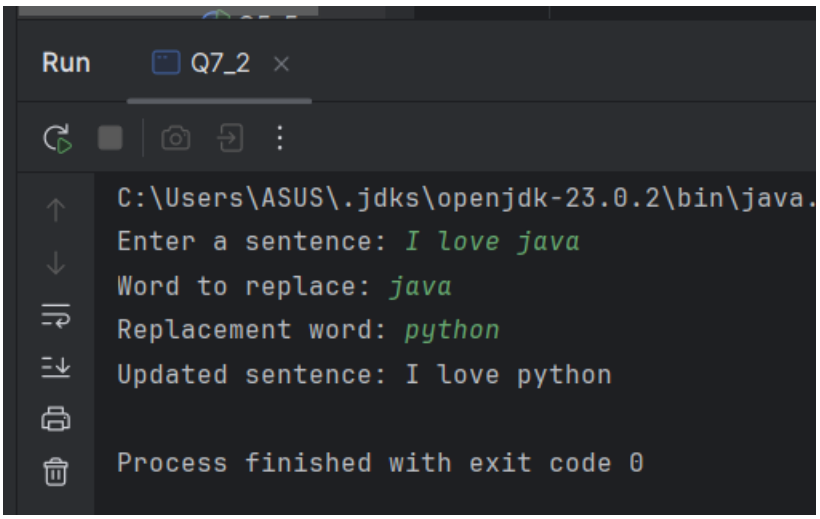

Run
Q7
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaagent:C:\Pro
Enter a sentence: I love java, JAVA is powerful and fun.
Word to replace: java
Replacement word: python
Updated sentence: I love python, python is powerful and fun.
Process finished with exit code 0


Run
Q7
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe
Enter a sentence: i have a car
Word to replace: car
Replacement word: CAR
Updated sentence: i have a CAR
Process finished with exit code 0

Q7 method 2:

```
package Q7;

import java.util.Scanner;

public class Q7_2 {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter a sentence: ");
      String sentence = sc.nextLine();

      System.out.print("Word to replace: ");
      String oldWord = sc.nextLine();

      System.out.print("Replacement word: ");
      String newWord = sc.nextLine();

      String result = sentence.replace(oldWord, newWord);
      System.out.println("Updated sentence: " + result);
   }
}
```

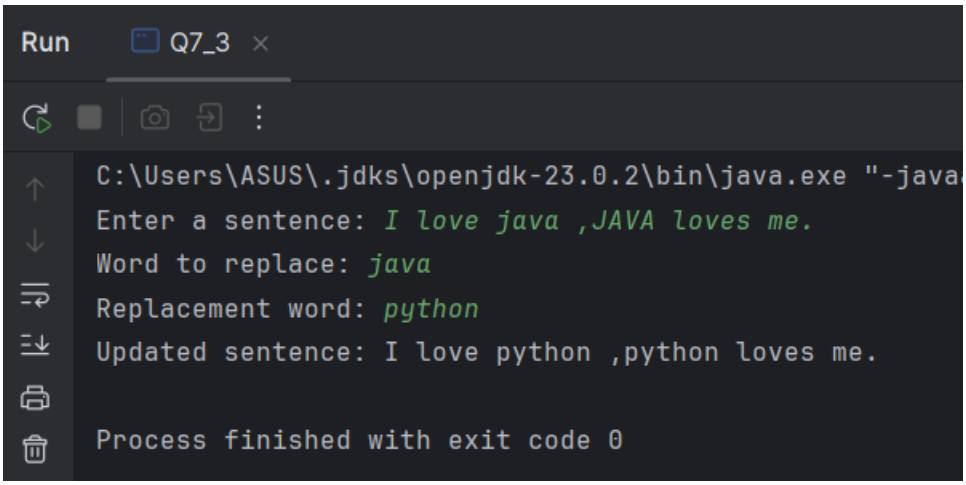
Output:



Q7 method 3:

```
package Q7;

import java.util.Scanner;

public class Q7_3 {
    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("Word to replace: ");
        String oldWord = scanner.nextLine();

        System.out.print("Replacement word: ");
        String newWord = scanner.nextLine();

        String result = sentence.replaceAll("(?i)\\b" + oldWord + "\\b", newWord);
        System.out.println("Updated sentence: " + result);
    }
}
```

Output:

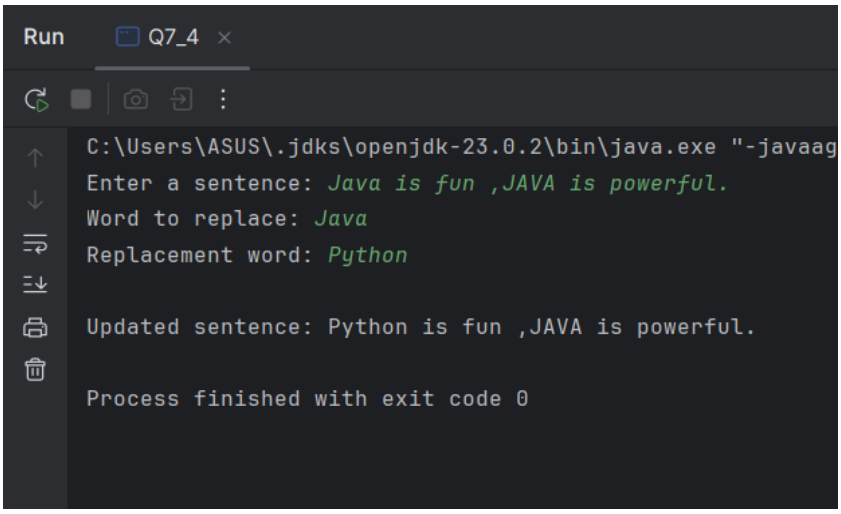


Q7 method 4:(case sensitive)

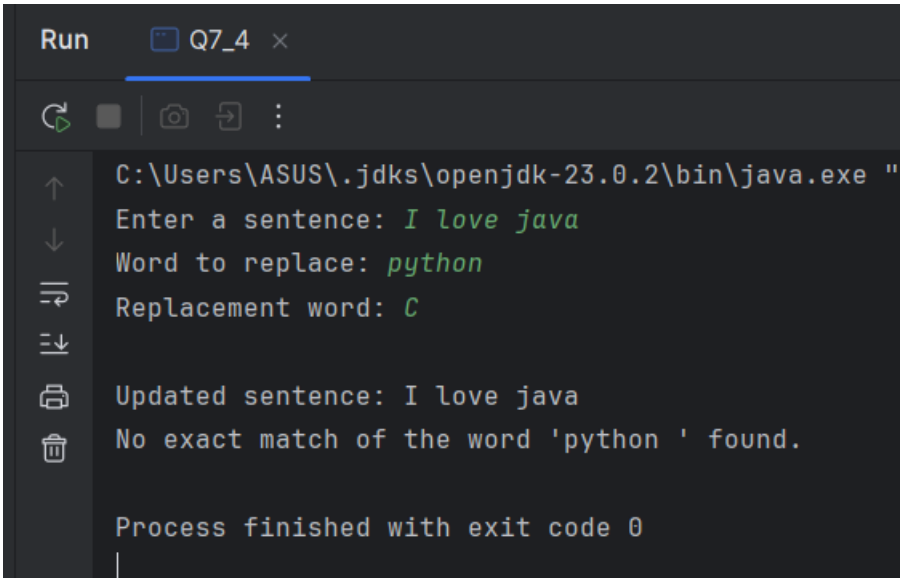
```
package Q7;
import java.util.Scanner;

public class Q7_4 {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

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

      System.out.print("Word to replace: ");
      String target = scanner.nextLine();

      System.out.print("Replacement word: ");
      String replacement = scanner.nextLine();

      // Split sentence into words
      String[] words = sentence.split(" ");
      StringBuilder newSentence = new StringBuilder();

      boolean foundCaseInsensitive = false;
      boolean foundExactMatch = false;

      for (String word : words) {
         if (word.equals(target)) {
            // Case-sensitive match
            newSentence.append(replacement).append(" ");
            foundExactMatch = true;
         } else {
            // Check if the word matches ignoring case
            if (word.equalsIgnoreCase(target)) {
               foundCaseInsensitive = true;
            }
            newSentence.append(word).append(" ");
         }
      }
```

```
System.out.println("\nUpdated sentence: " + newSentence.toString().trim());

    if (!foundExactMatch && foundCaseInsensitive) {
      System.out.println("The word exists with a different case (e.g., '" + target + "' vs '"
          + capitalizeDifferent(target, sentence) + "') but was not replaced due to case
sensitivity.");
    } else if (!foundExactMatch) {
      System.out.println("No exact match of the word '" + target + "' found.");
    }
  }

  // Helper method to find a mismatched case version
  private static String capitalizeDifferent(String target, String sentence) {
    for (String word : sentence.split(" ")) {
      if (word.equalsIgnoreCase(target) && !word.equals(target)) {
        return word;
      }
    }
    return target;
  }
}
```

Output for method 4:




Run
Q7_4
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Ed
Enter a sentence: Java is OOP laguaage.
Word to replace: java
Replacement word: JAVA
Updated sentence: Java is OOP laguaage.
The word exists with a different case (e.g., 'java' vs 'Java') but was not replaced due to case sensitivity.
Process finished with exit code 0


Run
Q7_4
C:\Users\ASUS\.jdks\openjdk-23.0.2\bin\java.exe "
Enter a sentence: I love java
Word to replace: python
Replacement word: C
Updated sentence: I love java
No exact match of the word 'python ' found.
Process finished with exit code 0