KINGDOM OF SAUDI ARABIA
Ministry of Higher Education
KING ABDULAZIZ UNIVERSITY
Faculty of Engineering

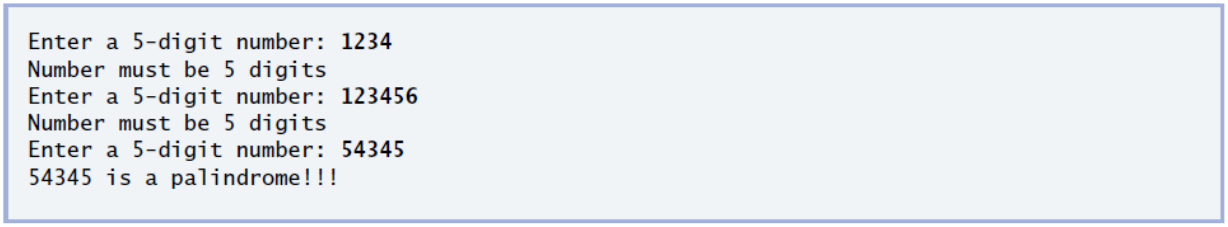
المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز
كلية الهندسة

EE202 Lab (4)

Part 1:

A palindrome is a sequence of characters that reads the same backward as forward. For example, each of the following five-digit integers is a palindrome: 12321, 55555, 45554 and 11611. Write an application that reads in a five-digit integer and determines whether it is a palindrome. If the number is not five digits long, display an error message and allow the user to enter a new value.

Sample Output



```
Enter a 5-digit number: 1234
Number must be 5 digits
Enter a 5-digit number: 123456
Number must be 5 digits
Enter a 5-digit number: 54345
54345 is a palindrome!!!
```

Program Template

```
// Lab 4: Palindrome.java
// Program tests for a palindrome
import java.util.Scanner;

public class Palindrome
{
// checks if a 5-digit number is a palindrome
public void checkPalindrome()
{
Scanner input = new Scanner( System.in );

int number; // user input number
int digit1; // first digit
int digit2; // second digit
int digit4; // fourth digit
int digit5; // fifth digit
int digits; // number of digits in input

number = 0;
digits = 0;

/* Write code that inputs a five-digit number. Display an error message
if the number is not five digits. Loop until a valid input is received. */

/* Write code that separates the digits in the five digit number. Use
division to isolate the left-most digit in the number, use a remainder
calculation to remove that digit from the number. Then repeat this
process. */

/* Write code that determines whether the first and last digits are
identical and the second and Fourth digits are identical. Output
whether or not the original string is a palindrome. */

} // end method checkPalindrome
} // end class Palindrome
```

```
// Lab 4: PalindromeTest.java
// Test application for class Palindrome
public class PalindromeTest
{
public static void main( String args[] )
{
Palindrome application = new Palindrome();
application.checkPalindrome();
} // end main
} // end class PalindromeTest
```

Part 2:

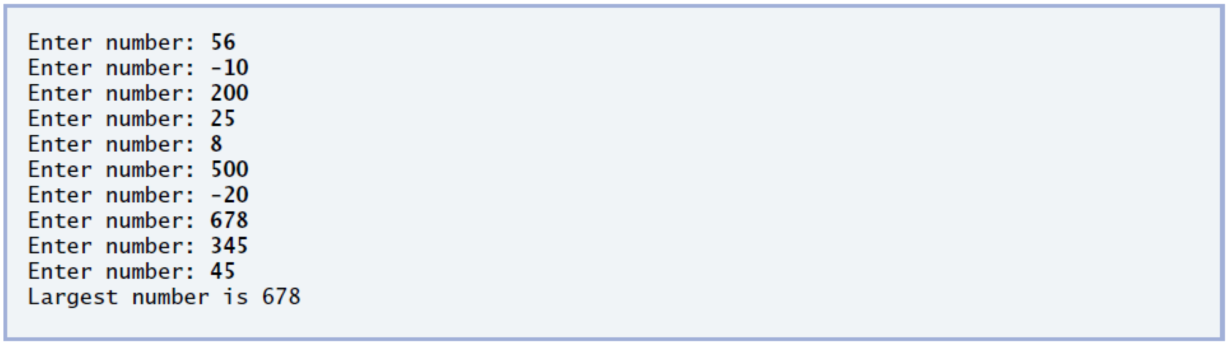
Write a Java application that inputs a series of 10 integers and determines and prints the largest integer. Your program should use at least the following three variables:

a) counter: A counter to count to 10 (i.e., to keep track of how many numbers have been input and to determine when all 10 numbers have been processed).

b) number: The integer most recently input by the user.

c) largest: The largest number found so far.

Sample Output



```
Enter number: 56
Enter number: -10
Enter number: 200
Enter number: 25
Enter number: 8
Enter number: 500
Enter number: -20
Enter number: 678
Enter number: 345
Enter number: 45
Largest number is 678
```

Program Template

```
// Lab 4: Largest.java
// Program determines and prints the largest of ten numbers.
import java.util.Scanner;

public class Largest
{
// determine the largest of 10 numbers
public void determineLargest()
{
Scanner input = new Scanner( System.in );

int largest; // largest number
int number; // user input
int counter; // number of values entered

/* write code to get the first integer and store it in variable largest */

/* write code to initialize the number of integers entered */

/* write code to loop until 10 numbers are entered */

/* write code to prompt the user to enter a number and read tat number */

/* write code to test whether the number entered is greater than the largest
if so, replace the value of largest with the entered number */

/* write code to increment the number of integers entered */

```

```java
System.out.printf( "Largest number is %d\n", largest );
} // end method determineLargest
} // end class Largest
```

```java
// Lab 3: LargestTest.java
// Test application for class Largest
public class LargestTest
{
public static void main( String args[] )
{
Largest application = new Largest();
application.determineLargest();
} // end main
} // end class LargestTest
```