



Introduction to Computer Programming (CSE1001)

Assignment-4

Iterative Statements and Looping

Question No	Questions	Course Outcome
1.	<p>Write a Java Program to check whether a number is divisible by 9. Use while loop.</p> <p>Rule: An integer n is divisible by 9 if the sum of its digits is divisible by 9. Use this concept in your program to determine whether or not the number is divisible by 9.</p> <p>Test it on the following numbers: n = 123456 n = 154368 n = 621594</p> <p>Hint: Use the % operator to get each digit; then use / operator to remove the digit.</p> <p>Sample run1: Enter a number: 154368 The number 154368 is divisible by 9.</p> <p>Sample run2: Enter a number: 123456 The number 123456 is not divisible by 9.</p>	CO3
2.	<p>Write a Java Program to print the following output using for loop. Where, input is the number of rows in output pattern.</p> <p>For input, N = 4. 1 121 1213121 121312141213121</p> <p>Sample run: Enter number of rows: 5 1 121 1213121 121312141213121 12131214121312151213121413121213121</p>	CO3
3.	<p>Write a Java program using a do-while loop to repeatedly ask the user to enter a number, and display whether it is even or odd.</p> <p>The program should stop when the user enters 0.</p> <p>Sample run: Enter a number (0 to stop): 5 5 is an odd number.</p>	CO3

	<p>Enter a number (0 to stop): 12 12 is an even number.</p> <p>Enter a number (0 to stop): 0 Program terminated.</p>	
4.	<p>Write a Java program that generates a random integer number between 1 and 10. The program should repeatedly ask the user to guess the number until the correct guess is made.</p> <ul style="list-style-type: none"> • If the user's guess is greater than the random number, display the message: "<i>Too high, try again.</i>" • If the user's guess is less than the random number, display the message: "<i>Too low, try again.</i>" • If the user guesses correctly, display the message: "<i>Good guess!</i>" <p>The program must use a do-while loop to continue prompting the user until the correct number is guessed.</p> <p>Sample run:</p> <pre>Guess the number between 1 and 10! Enter your guess: 7 Too high, try again. Enter your guess: 3 Too low, try again. Enter your guess: 5 Good guess!</pre>	CO3
5.	<p>Write a Java Program that gets three integer numbers from the user. Count from the first number to the second number increments by the third number. Use for loop to do it.</p> <p>Also, display the sum of numbers displayed between the first number and second number.</p> <p>Sample run:</p> <pre>Enter first number: 4 Enter second number: 13 Enter third number: 3 4 7 10 13 The sum of number displayed is 34</pre>	CO3
6.	<p>Write a Java Program that takes an integer as input and reverses its digits using a while loop.</p> <p>After reversing, the program should check whether the number is a palindrome.</p> <p>A palindrome number is one that remains the same when its digits are reversed. For example, 121 and 1221 are palindrome numbers, but 123 is not.</p> <p>Sample run:</p> <pre>Enter a number: 121 Reversed number: 121 121 is a palindrome.</pre>	CO4

	Enter a number: 345 Reversed number: 543 345 is not a palindrome.	
7.	<p>Write a Java Program to display the multiplication table of a number entered by the user.</p> <p>The program should use three different types of loops to print the table in parts as follows:</p> <ul style="list-style-type: none"> • Use a for loop to print the table from 1 to 3 • Use a while loop to print the table from 4 to 6 • Use a do-while loop to print the table from 7 to 10 <p>Sample run: Enter a number: 5</p> <p>Using for loop (1 to 3) : 5 x 1 = 5 5 x 2 = 10 5 x 3 = 15</p> <p>Using while loop (4 to 6) : 5 x 4 = 20 5 x 5 = 25 5 x 6 = 30</p> <p>Using do-while loop (7 to 10) : 5 x 7 = 35 5 x 8 = 40 5 x 9 = 45 5 x 10 = 50</p>	CO3
8.	<p>Write a Java Program that finds greatest common divisor (GCD) of two numbers using Euclid's algorithm, which is an iterative computation based on the following observation:</p> <p>If y divides x, the GCD of x and y is y; otherwise, the GCD of x and y is same as GCD of x % y and y.</p> <p>Sample run: Enter the first number: 56 Enter the second number: 98 GCD of 56 and 98 is 14.</p>	CO4
9.	<p>Write the Java Program to check whether a number is a “Niven number” or not.</p> <p>A number is called as the Niven number if the number is divisible by its sum.</p> <p>Example: 18 is a Niven number. Sum of the digit of 18 = (1+8) = 9 18 is divisible by 9</p> <p>Sample run: Enter a number: 18 18 is a Niven number.</p>	CO4

	Enter a number: 21 21 is not a Niven number.	
10.	<p>Write a Java Program to take an integer input from the user and print the input by removing all zeros.</p> <p>Example: Input = 10200 then Output = 12.</p> <p>Sample run: Enter an integer number: 10203040 After removing 0 from number 10203040, the new number is 1234.</p>	CO4

HOME ASSIGNMENT

11.	<p>Write a Java Program to check if a number is perfect number or not.</p> <p>Hints: A number N is called perfect number, if the sum of factors except N as a factor is equals to the number N.</p> <p>Example: N = 28 is a perfect number as $(1 + 2 + 4 + 7 + 14 = 28)$.</p> <p>Sample run: Enter a number: 496 496 is a perfect number.</p> <p>Enter a number: 490 490 is not a perfect number.</p>	CO4
12.	<p>Write a Java program that accepts two numbers from the user — a base and an exponent.</p> <p>The program should calculate the result of raising the base to the power of the exponent (i.e., base^{Exponent}) without using any built-in power functions such as <i>Math.pow()</i>.</p> <p>Use a loop to perform the repeated multiplication.</p> <p>Sample run: Enter the base: 5 Enter the power: 4 5 to the power 4 is: 625</p>	CO3
13.	<p>Write a Java program to find the sum of all natural numbers within a given range that are multiples of 3 or 5.</p> <p>For example, if we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6, and 9.</p> <p>The sum of these multiples is 23.</p> <p>Your program should accept a positive integer N as input and display the sum of all the multiples of 3 or 5 below N.</p> <p>Sample run: Enter the range (N): 10 The sum of all multiples of 3 or 5 below 10 is: 23</p> <p>Enter the range (N): 1000 The sum of all multiples of 3 or 5 below 1000 is: 233168</p>	CO4

14.	<p>Write a Java Program to print the sum of all even numbers and the product of all odd numbers from 1 to N. Where, N is the input to the program.</p> <p>Example: For input, N = 10 Sum of all even numbers = $2 + 4 + 6 + 8 + 10 = 30$ Product of all odd numbers = $1 * 3 * 5 * 7 * 9 = 945$</p> <p>Sample run: Enter the value of N: 10 Sum of all even numbers = 30 Product of all odd numbers = 945</p>	CO3
15.	<p>Write a Java Program to find the difference between the sum of the squares of the first one hundred natural numbers and the square of the sum.</p> <p>Example: The sum of the squares of the first ten natural numbers is, $1^2 + 2^2 + \dots + 10^2 = 385$ The square of the sum of the first ten natural numbers is, $(1 + 2 + \dots + 10)^2 = 55^2 = 3025$ Hence the difference between the sum of the squares of the first ten natural numbers and the square of the sum is $3025 - 385 = 2640$.</p> <p>Sample run: Sum of squares of first 100 natural numbers = 338350 Square of the sum of first 100 natural numbers = 25502500 Difference = 25164150</p>	CO4
