**Department of Computer Science and Engineering**

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| **Course Code:CSE110** | **Credits: 1.5** |
| **Course Name: Programming Language 1** | **Semester: Fall’18** |

**Lab 08  
Introduction to Loop with Java**

1. **Topic Overview:**

In today’s lab, we will look at the basic loop structures – mainly while loop and for loop. We will see the different loops available in java, how to create building blocks for each type and use condition inside the loop. We will conclude by writing a few nested loops using the java programming language.

1. **Lesson Fit:**

We have to complete the previous labs which consist of flowcharts with loop conditions and basic java program writing for this lab.

1. **Learning Outcome:**

After this lecture, the students will be able to:

* 1. Play with loops using Java codes
  2. Perform little complex operations
  3. Differentiate and find proper usage of various loops
  4. Get acquainted with different shape with stars problem
  5. Observe how one problem statement can be converted into codes

1. **Anticipated Challenges and Possible Solutions**
   1. Teaching whole portion about loops might feel overwhelming for the students since it’s a completely new thing they are being introduced to

**Solutions:**

* + 1. Go slow, step by step.
  1. Confused to differentiate between condition and nested loop

1. **Acceptance and Evaluation**

Students will show their progress as they complete each problem. They will be marked according to their class performance. Their maybe students who might not be able to finish all 11 tasks, they will submit them later and give a viva to get their performance mark.

1. **Activity Detail**
   1. **Hour: 1  
      Discussion: Different types of Loop  
      Open Dr. Java:**

Write some basic loop statement to understand the structure.

Java program, which prints the following sequences of values in loops:

* + 1. 24, 18, 12, 6, 0, -6
    2. -10, -5, 0, 5, 10, 15, 20
    3. 18, 27, 36, 45, 54, 63
    4. 18,-27,36,-45,54,-63

**Hour: 2**

**Discussion: Code Practice**

1. Java program, which adds all numbers that are multiples of both 7 and 9 up to 600.
2. Java program, which adds all numbers that are multiples of either 7 or 9 or both up to 600. Ensure that numbers like 63 are added only once in the sum.
3. Java program, which adds all numbers that are multiples of either 7 or 9 but not both, up to 600.
4. Java program that asks the user for 20 numbers and prints if those numbers are odd or even.
5. Java program that asks the user for a *quantity* , then takes that many numbers and prints if those numbers are odd or even.
6. Java program that asks the user for a *quantity* , then takes that many numbers and prints the maximum, minimum and average of those numbers.
   1. **Hour: 3**

**Discussion: Introducing divisor, prime numbers and perfect numbers with practice.**

1. Java program that takes a number from user and prints the divisors of that number and then how many divisors there were. If user gives 6, your program should print, 1, 2, 3, 6, total 4 divisors.. If user gives 121, your program should print 1,11,121, total 3 divisors.

2. An integer number is said to be a perfect number if its factors, including 1 but not the number itself, sum to the number. For example, 6 is a perfect number because factors of 6 are 1, 2, 3, 6 and if we add all factors except itself, 6 = 1 + 2 + 3. Java program, which takes a number and tells if it is a perfect number or not.

**3.** Java program that asks user for one number and tells if it is a prime number or not. Hint: use the divisor count from task 8. If a number has only two divisors, (1 and itself), then it is prime. If it is divisible by more numbers, then it is not a prime.

**4.** Java program that prints all prime numbers between 40 and 50.