**Department of Computer Science and Engineering**

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| **Course Code:CSE110** | **Credits: 1.5** |
| **Course Name: Programming Language 1** | **Semester: Fall 2018** |

**Lab 01  
Introduction to Flowchart**

1. **Topic Overview:**

The students will solve problems to familiarize themselves with the shapes and their meaning in this lab. They also learn flow of a program through these problems. There are in total of 13 problems in this lab.

1. **Lesson Fit:**

There is pre-requisite to this lab. However, it is a practical lesson for the theory covered in the first week of course activity.

1. **Learning Outcome:**

After this lecture, the students will be able to:

* 1. Take input from the user
  2. Use control flow, if/else
  3. Print messages back to the user

1. **Anticipated Challenges and Possible Solutions**
   1. Task 3 : Students will make mistake for computing circles formula e.g. r^2

**Solutions:**

* + 1. Area = pi \* r \* r
  1. Task 7 : Students think that the first input is always larger

**Solutions:**

* + 1. Check both numbers in order to find the larger value

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 13 tasks, they will submit them later and give a viva to get their performance mark.

1. **Activity Detail**
   1. **Hour: 1  
      Discussion:**Explain all the shapes of a flowchart. Use Task 1 as an example to help students understand better. **Problem Task:**
      1. Task 1 to 4 (Page 3)
   2. **Hour: 2**

**Discussion:**

Check task 1 to 4 while the students continues with the rest.

**Problem Task:**

* + 1. Task 5 to 8 (Page 3 to 4)
  1. **Hour: 3**

**Discussion:**

Check task 5 to 9 while the students continues with the rest.

**Problem Task:**

* + 1. Task 9 to 12 (Page 4)

1. **Home tasks**
   1. Task 13
   2. Unfinished tasks

**Lab 1 Activity List**

**Task 1**

Draw the flowchart of a program that reads one number from the user, and prints it back to show which number was entered by the user.

**Task 2**

Draw the flowchart of a program that reads two numbers from the user, and prints their sum, product and result of subtracting 2nd number from 1st number. For example, if user gives 5 and 7 (sequentially), the program should print 12, 35 and -2.

**Task 3**

Draw the flowchart of a program that reads the radius of a circle and prints its circumference and area.

**Task 4**

Draw the flowchart of a program that reads two numbers from the user and prints “first” if the first number is greater than the second number.

**Task 5**

Draw the flowchart of a program that reads two numbers from the user. Your program should then print “first is greater” if the first number is greater, and “first is not greater” otherwise.

**Task 6**

Draw the flowchart of a program that reads two numbers from the user. Your program should then print “first is greater” if the first number is greater, “second is greater” if the second number is greater, and “the numbers are equal” otherwise.

**Task 7**

Draw the flowchart of a program that reads two numbers, and prints the absolute difference.

**Hint:** Subtract the smaller number from the larger one

**Task 8**

Draw the flowchart of a program that reads a number, and prints “The number is even” or “The number is odd”, depending on whether the number is even or odd.

**Hint:** Use the modulus operator

**Task 9**

Draw the flowchart of a program that prints the first ten positive whole numbers. [Do NOT use loops]

**Task 10**

Draw the flowchart of a program that prints the first ten even positive whole numbers. [Do NOT use loop or modulus operator for this problem]

**Task 11**

Draw the flowchart of a program that reads five numbers from the user, and prints their average. [Do NOT use loops]

**Task 12**

Draw the flowchart of a program that finds the sum of the first 100 positive numbers. Verify your answer by calculating this sum manually. [Do NOT use loops, use the mathematical formula for calculating sum of arithmetic series]

**Task 13**

Draw the flowchart of a program that reads five numbers as input from the user, and prints whether the numbers are odd or even. [Do NOT use loops]