Department of Computer Engineering
Faculty of Engineering, University of Jaffna EC2010 – Computer Programming
Lab 04

Date: **Duration: 3 Hours**

Instructions:

- Any plagiarized work will be given **0** marks.
- Submit your lab work as a zip file named ***LAB04_20YYEXXX*** *(20YYEXXX – Your Registration Number)* **on/before the given deadline** via teams.
- The zip file should contain all ".cpp" code files and your report.
- Prepare your lab report with the snippets of the **COMPLETE CODE** and the corresponding outputs. The code **must be** in text format not screen shots.
- Failure to adhere to any of the above instructions may also result in zero marks.
- The .cpp file **MUST** be named 'Q1' , 'Q2', 'Q3', 'Q4', 'Q5' and 'Q6' appropriately. Do not modify these names in any manner.
- **Do not** even annex your index number to the file name. **Do not** change case.

Q1) Write a C++ program to print the following pattern. Use the nested for loop to generate the pattern .

```
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

Q2) Write a program to print all Armstrong numbers between 1 and 500. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number.(**using for loop**)

For example, 371 = (3 * 3 * 3) + (7 * 7* 7) + (1 * 1 * 1)

Q3) Write a program in C++ to display the multiplication table vertically from 1 to n. (using for loop). Consider the table up to multiplication by 12.

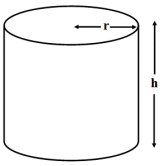
Below figure is the sample output only

```
Input the number upto: 4
Multiplication table from 1 to 4
1x1=1           2x1=2           3x1=3           4x1=4
1x2=2           2x2=4           3x2=6           4x2=8
1x3=3           2x3=6           3x3=9           4x3=12
1x4=4           2x4=8           3x4=12          4x4=16
1x5=5           2x5=10          3x5=15          4x5=20
1x6=6           2x6=12          3x6=18          4x6=24
1x7=7           2x7=14          3x7=21          4x7=28
1x8=8           2x8=16          3x8=24          4x8=32
1x9=9           2x9=18          3x9=27          4x9=36
1x10=10         2x10=20         3x10=30         4x10=40
1x11=11         2x11=22         3x11=33         4x11=44
1x12=12         2x12=24         3x12=36         4x12=48
```

Q4) Write a program using function for calculate the volume of cylinder and return it's volume function. Call this function from main method and print the results in main method.

Assume pi=3.14

$V = \pi r^2 h$



Q5) Write a function that produces a table of the numbers, their squares, and their cubes. Make sure your function is called from main method. The user should input **the starting number**, **the ending number** and **the increment between the starting and ending numbers**.

Q6) Write a program for simple calculator that takes two integer numbers from the user , you need to use a basic math operator (+,-,*,/), and have it print the result of the mathematical operation. The mathematical operations should be wrapped inside of calculate function. Make sure your function is called from main method.

Here:

+ is addition
- is subtraction
* is multiplication
/ is division