**Student Name:**
**Department:**
**Group:**

# Assignment 1

### A. Sequence control Structure

### *Draw IPO Chart, design algorithm (write Pseudo code), and draw flowchart for the following problems:*

1. Calculate the area of triangle (area=0.5*base*height).

| input | processing | output |
|-------|------------|--------|
|       |            |        |

2. Calculate your age. (age= current year-birth year).

| input | processing | output |
|---|---|---|
|  |  |  |

3. Convert from minute to second. S=(M*60).
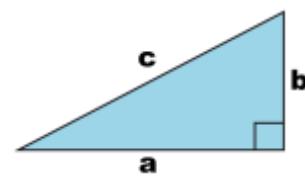
| input | processing | output |
|---|---|---|
| | | |

4.  Calculate and print Total price With Tax = 0.15

**Total = Price+(Price\*0.15)**

| input | processing | output |
|-------|------------|--------|
|       |            |        |

5. Calculate the Pythagorean theorem to Find the Length of C according to the law $c = \sqrt{a^2 + b^2}$

| input | processing | output |
|---|---|---|
|  |  |  |

6. Calculate the area of a circle for a given value of radius (r), where area of circle **Area** $= \pi r^2$.

| input | processing | output |
|---|---|---|
|  |  |  |

7. Calculate average of three numbers.

| input | processing | output |
|---|---|---|
| | | |

8.  Calculate and print the total amount of sale, where two numbers are given. The first number (U) represents the unit price of a book and the second number (Q) represents the quantity of the books sold. $Total = U * Q$

| input | processing | output |
|---|---|---|
|  |  |  |

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# Assignment 2

### B.  Branching (selection) control Structure

*Draw IPO Chart, design algorithm (write Pseudo code), and draw flowchart for the following problems:*

1.  Check whether a number is negative, positive or zero

| input | processing | output |
|---|---|---|
|  |  |  |

2. Input three numbers and find the maximum between the given three numbers

| input | processing | output |
|-------|------------|--------|
|       |            |        |

3.  Check whether a number is negative, positive or zero.

| input | processing | output |
|---|---|---|
|  |  |  |

4. Check whether a number is divisible by 5.

| input | processing | output |
|-------|------------|--------|
|       |            |        |

5.  Check whether a number is even or odd.

| input | processing | output |
|-------|-----------|--------|
|       |           |        |

6.  Check whether a character is alphabet or not.

| input | processing | output |
|-------|-----------|--------|
|       |           |        |

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# Assignment 3

C.  **Repetition control Structure**

*Draw IPO Chart, design algorithm ( write Pseudo code), and draw flowchart using (Pretest and Posttest) for the following problems:*

1.  Read and print your name 5 times

| input | processing | output |
|-------|------------|--------|
|       |            |        |

2. Print the even numbers from 0 to 10

| input | processing | output |
|---|---|---|
|  |  |  |

3. Calculate the multiplication of 5(from 1 to 5).

| input | processing | output |
|---|---|---|
|  |  |  |

4. Find the summation of first 10 numbers. (from 1 to 50)

| input | processing | output |
|-------|------------|--------|
|       |            |        |

*Dr. Belal Murshed*

5.  Calculate area of Circle 3 times (note: area= $\pi r^2$)

| input | processing | output |
|---|---|---|
|  |  |  |

6. Print the even numbers from 0 to 10 and summation.

| input | processing | output |
|-------|-----------|--------|
|       |           |        |

7. Calculate and print multiplication table from 1 to 12?

| input | processing | output |
|---|---|---|
|  |  |  |

8. Calculate and print area of Parallelogram 6 times (Note: area =base* height, base=3)

| input | processing | output |
|---|---|---|
|  |  |  |

9. Simulate the division operation for a given two numbers without using (/) operator. *[more important]*

| input | processing | output |
|---|---|---|
|  |  |  |

**10.** Simulate the Multiplication operation for a given two numbers without using (*) operator.
  *[more important]*

| input | processing | output |
|-------|-----------|--------|
|       |           |        |

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# Assignment 4 (More important)

After drawing the IPO, designing the algorithms (writing the pseudo codes), and drawing Flowcharts for all the previous problems, ***Write the codes (programs) using C++ to solve all the previous problems and then display what the output is for each program.***