NAME:

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"BSCS - 1"

PROGRAMING FUNDAMENTAL

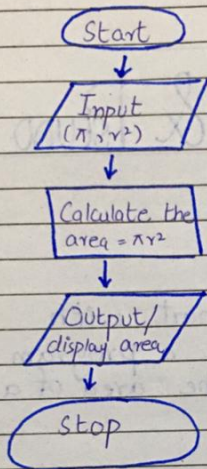## LAB ASSIGNMENT

LAB 1:

FLOWCHART & PSEUDO CODE

TASK 1:

Make a flowchart with pseudo-code. Write a program that calculates the area of a circle.

$$area = \pi r^2$$

Pseudo-code:

Step 1: Start
Step 2: Input (π, r^2)
Step 3: Calculate the area.
Step 4: Output (area)
Step 5: stop

Flowchart :

```
        ( Start )
            ↓
      ┌──────────┐
      / Input    /
     / (π , r²) /
    └──────────┘
            ↓
    ┌───────────────┐
    │ Calculate the │
    │ area = πr²    │
    └───────────────┘
            ↓
      ┌──────────┐
      / Output/  /
     / display area /
    └──────────┘
            ↓
       ( Stop )
```

Task 2:

Creating flowchart and pseudo-code for program that calculates and displays the average of three numbers. The program should take three input from the user and then compute average

The average of the three numbers using the formula :

$$Average = \frac{Num\ 1 + Num\ 2 + Num\ 3}{3}$$

Pseudo-code:

Step 1 : Start

Step 2 : Input (Num1, Num2, Num3)

Step 3 : Calculate sum = Num1 + Num2 + Num3

Step 4 : Calculate average = Sum / 3

Step 5 : Output (average)

Step 6 : Stop

DATE : __/__/__

Flowchart:

```
        ┌─────────┐
        │  Start  │
        └─────────┘
             │
             ▼
      ╱───────────────╱
     ╱    Input      ╱
    ╱ (Num1, Num2, Num3)╱
   ╱───────────────╱
             │
             ▼
      ┌───────────────────┐
      │ Calculate sum     │
      │ Sum = Num1+Num2+Num3│
      └───────────────────┘
             │
             ▼
      ┌───────────────────┐
      │ Calculate average │
      │      Sum          │
      │      ───          │
      │       3           │
      └───────────────────┘
             │
             ▼
      ╱───────────────╱
     ╱   Output      ╱
    ╱  (average)    ╱
   ╱───────────────╱
             │
             ▼
        ┌─────────┐
        │  stop   │
        └─────────┘
```
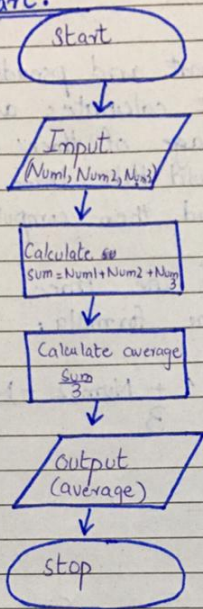
TASK 3:

Given the expression
$$x = y^*2 - z/3$$

where, y, and z are equal to 5, calculate the value of x.

Given data:

$$y = 5$$
$$z = 5$$

To find:

$$x = ?$$

Solution:

$$x = y^*2 - \frac{z}{3}$$

$$= 5^*2 - \frac{5}{3}$$

$$= 10 - 1.66$$

$$\boxed{x = 8.34} \quad \text{Answer.}$$

```
        1.66
   3 ) 5.00
      -3↓
       20
       18↓
       20
       18
```

R.w

TASK 4 :

Create an expression with a mix of addition, subtraction, multiplication division, and modulus operators, AND operators, OR operator, and challenge students to simplify and calculate the final result.

Expression:
$$((12-3)*4/2 +5) \,\&\&\, (3<4 \,||\, 7>=8)$$

Solution:

$$((12-3)*4\tfrac{2}{2_1} +5) \,\&\&\, (3<4 \,||\, 7>=8)$$

$$((12-3)*2 +5) \,\&\&\, (3<4 \,||\, 7> =8)$$

$$\cancel{(12-3)^*}$$

$$((9)*2 +5) \,\&\&\, (3<4 \,||\, 7>=8)$$

$$(18 +5) \,\&\&\, (3<4 \,||\, 7>=8)$$

$$(23) \,\&\&\, (3<4 \,||\, 7>=8)$$

$$True \,\&\&\, (True \,||\, False)$$

$$(True) \,\&\&\, (True)$$

| True | Answer |

Expression,
$$(8^*2)/4 + (10\%\ 3))\ ||\ (6==6\ \&\&\ 3>2)$$

Solution:

$$((8^*2)/4 + (10\%\ 3))\ ||\ (6==6\ \&\&\ 3>2)$$

$$((16/4 + 1))\ ||\ (6==6\ \&\&\ 3>2)$$

$$(4+1)\ ||\ (6=='6\ \&\&\ 3>2)$$

$$5\ ||\ (6==6\ \&\&\ 3>2)$$

$$5\ ||\ (True\ \&\&\ True)$$

$$5\ ||\ (True)$$

$$True\ ||\ True$$

| True | Answer