

## Sample Problems

### Example 1:

Create a flowchart that display "Hello World!".

Pseudocode:

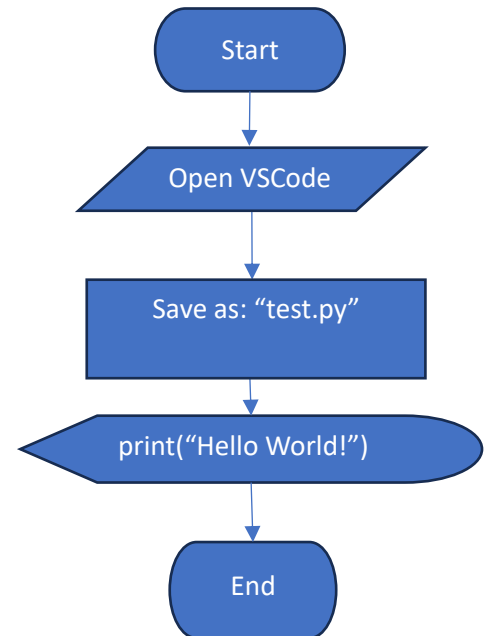
- Open VSCode
- Create python file then save as "test.py"
- Print "Hello World!"

Algorithm:

Step 1: Open VSCode

Step 2: Save as: "test.py"

Step 3: print("Hello World!")



### Example 2:

Create a flowchart that display the sum of 6 and 4.

Pseudocode:

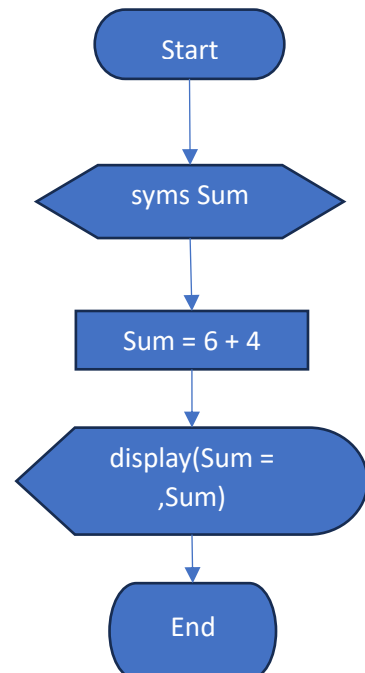
- Declare the Sum variable
- Compute Sum of 6 and 4;  
Sum = 6 + 4
- Print "Sum = " then print Sum

Algorithm:

Step 1: syms Sum

Step 2: Sum = 6 + 4

Step 3: display('Sum = ',Sum)



### Example 3:

Create a flowchart that ask the user's age. Compute and display his/her age 8 years from now.

Pseudocode:

- Let x is the age of the user, y is the 8 years from now, then z is the answer
- Enter the user's age
- Solution is  $z = x + y$
- Print the answer

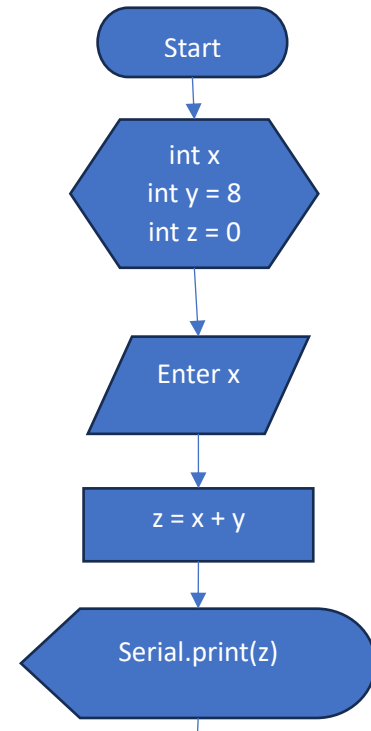
Algorithm:

Step 1: int x, int y = 8, int z = 0

Step 2: Enter x

Step 3:  $z = x + y$

Step 4: Serial.print(z)



### Example 4

Draw a flowchart that will ask the user to enter a character indicating the user's class section. If the user enters 'Afternoon Class' display "Your section is MEXE-3302".

Pseudocode:

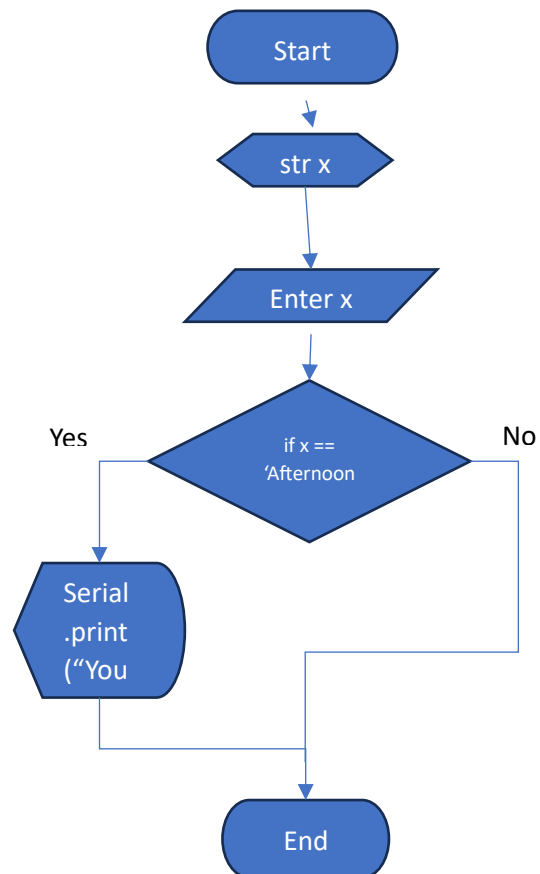
- Declare variable x
- Enter the characters in variable x
- If x is 'Afternoon Class' then print "Your section is MEXE-3302"

Algorithm:

Step 1: str x

Step 2: Enter x

Step 3: if x == 'Afternoon Class';



]Serial.print("Your section is  
MEXE-3302")

#### Example 5

Algorithm:

Step 1: str x

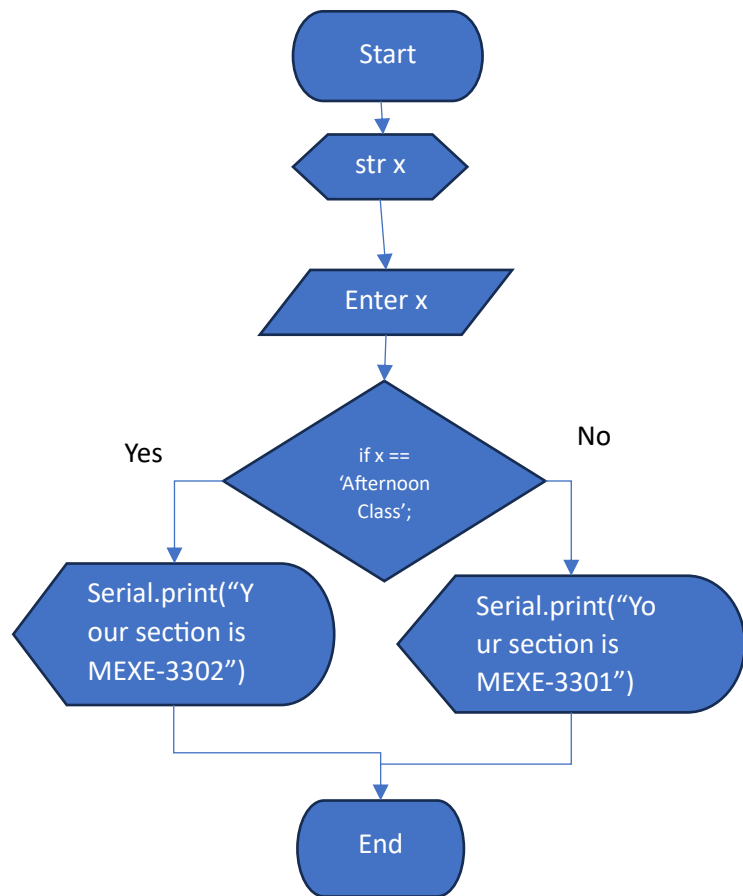
Step 2: Enter x

Step 3: if x == 'Afternoon  
Class';

Serial.print("Your section is  
MEXE-3302")

Step 4: if x == 'Morning Class';

Serial.print("Your section is  
MEXE-3301")



### Example 6 (Multiple Decision)

Create a flowchart that asks the user to push either of the buttons “FK”, “IK” and “Jacobian”. If “FK” is pushed, print the position vector (x, y, & z); if “IK” is pushed, print the joint variables ( $\theta_1$ ,  $\theta_2$ , &  $\theta_3$ ); and if “Jacobian” is pushed, print the velocity equation VE (differential equation). Otherwise, print “Invalid”.

Pseudocode:

- FK button, IK button, J button
- Button pushed
- If FK button is pushed, display x, y, & z
- If IK button is pushed, display  $\theta_1$ ,  $\theta_2$ , &  $\theta_3$
- If J button is pushed, display VE

Algorithm:

Step 1: FK\_button, IK\_button, J\_button

Step 2: Button pushed = HIGH

Step 3: If FK\_button == HIGH

Serial.print(x, y, & z)

Step 4: If IK\_button == HIGH

Serial.print( $\theta_1$ ,  $\theta_2$ , &  $\theta_3$ )

Step 5: If J\_button == HIGH

Serial.print(VE)

