LAB # 02

Variable and Operators

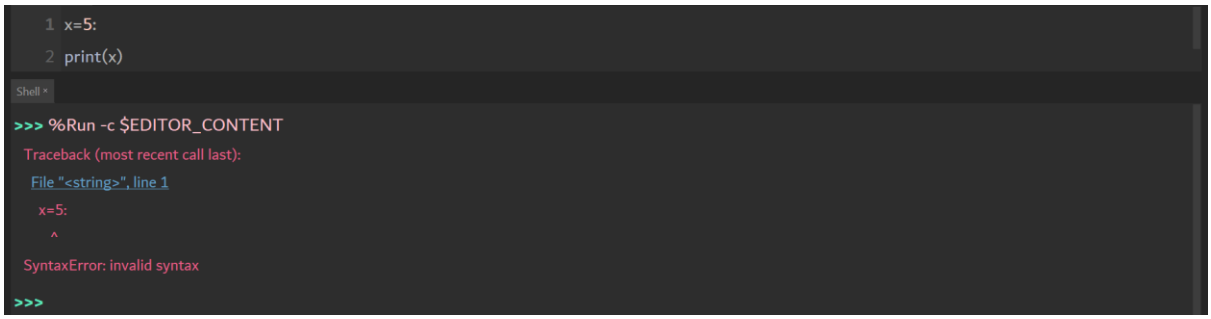
OBJECTIVE

Implement different type of data types, variables and operators used in Python.

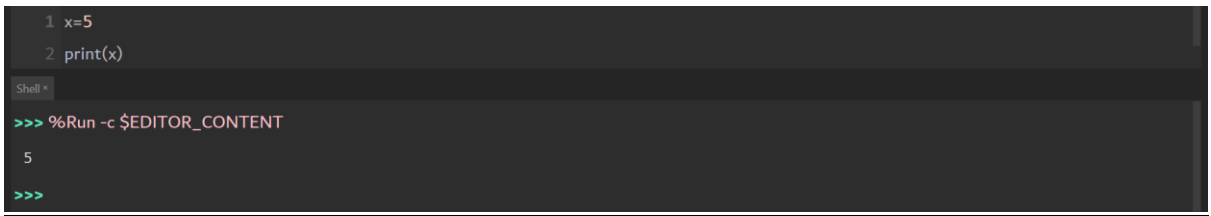
EXERCISE

A. Point out the errors, if any, and also paste the output in the following Python statements.

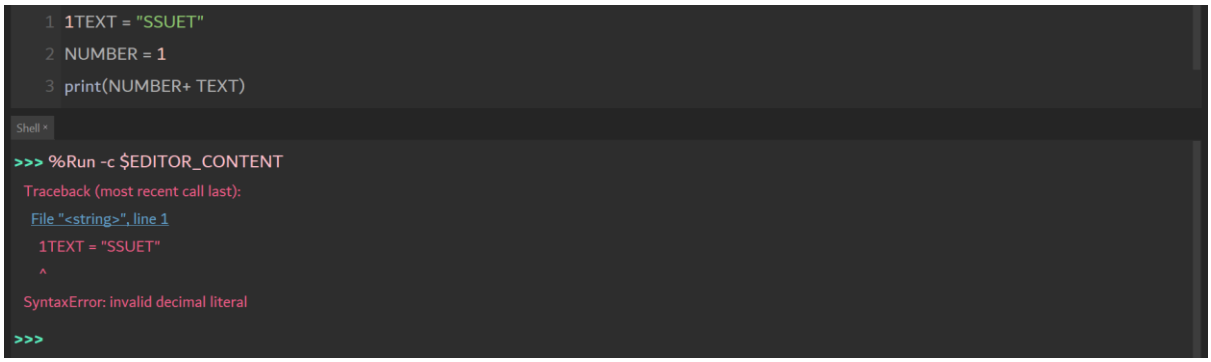
1.
```
x=5:
   print(x)
```



Putting a colon here is invalid syntax.



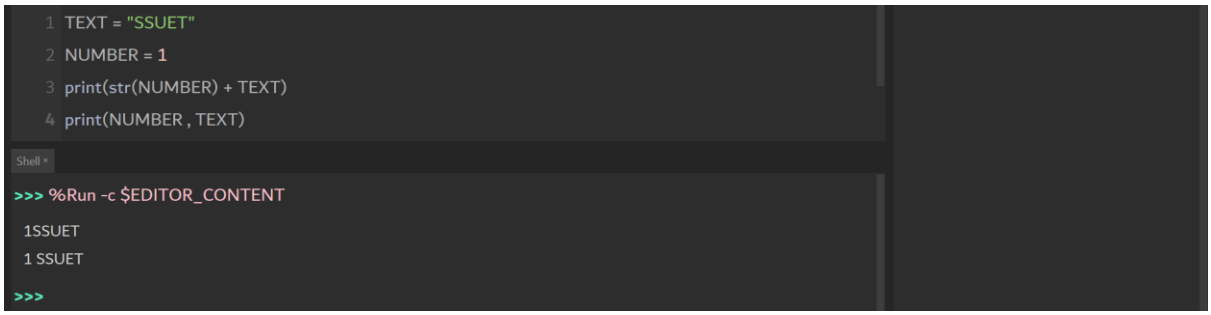
2. `1TEXT = "SSUET"`
`NUMBER = 1`
`print(NUMBER+ TEXT)`



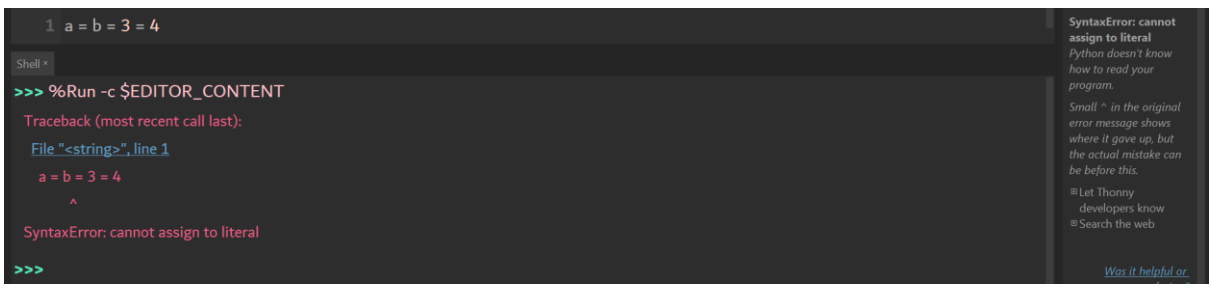
Step 01:
In Python variable names cannot start with a number.

Step 02:
You can't concatenate an int and a string together.

Step 03:
You can convert an int into string or use "," btw them to print the both.



3. `a = b = 3 = 4`



In Python, assignments go from right to left

3 is a literal constant you can't assign a value to it.

So, the correct code is given below in fig.

```
1 a = b = 4

Shell ×
>>> %Run -c $EDITOR_CONTENT
>>>
```

B. Evaluate the operation in each of the following statements, and show the resultant value after each statement is executed.

In Python, the order of operations is:

1. Parentheses
2. Exponentiation (**)
3. Multiplication, Division, Modulo (*, /, %)
4. Addition, Subtraction (+, -)

```
1. a = 2 % 2 + 2 * 2 - 2 / 2;
```

Steps:

1. a = 2 % 2 + 2 * 2 - 2 / 2 → solve Modulo
2. a = 0 + 4 - 2 / 2 → solve Multiplication
3. a = 0 + 4 - 2 / 2 → solve Division
4. a = 0 + 4 - 1.0 → solve Addition
5. a = 4 - 1.0 → solve Subtraction

6. **a = 3.0** → Final Result.

```
2. b = 3 / 2 + 5 * 4 / 3
```

Steps:

1. b = 3 / 2 + 5 * 4 / 3 → solve Division
2. b = 1.5+ 5 * 4 / 3 → solve Multiplication
3. b = 1.5 + 20 / 3 → solve Division
4. b = 1.5 + 6.66 → solve Addition

5. **b = 8.16** → Final Result.

3. `c = b = a = 3 + 4`

Steps:

1. c = b = a = 3 + 4 → solve Addition
2. c = b = a = 7 → Now 7 is assign to all three variables

3. **a = 7, b = 7, c = 7** → Final Result.

C. Write the following Python programs:

1. Write a program that calculates area of a circle $A = \pi r^2$. (Consider *r = 50*).

```
Area of Circle.py ×
1 print("\t\tArea of Circle\n")
2 Radius = eval(input("Enter your Radius: "))
3 PI = 3.14
4 Area = PI * (Radius * Radius)
5 print("The Area of Circle is", Area , "Sq km")
Shell ×
>>> %Run 'Area of Circle.py'
                Area of Circle

Enter your Radius: 50
The Area of Circle is 7850.0 Sq km
>>>
```

2. Write a program that performs the following four operations and prints their result on the screen.

1. 50 + 4
2. 50 – 4
3. 50 * 4
4. 50 / 4

Code:

```
1 print("\t\tCalculator\n")
2 a = eval(input("Enter your first value:"))
3 b = eval(input("Enter your second value:"))
4 Sum = a + b
5 print(a, "+", b, "=", Sum)
6 Sum = a - b
7 print(a, "-", b, "=", Sum)
8 Sum = a * b
9 print(a, "*", b, "=", Sum)
10 Sum = a / b
11 print(a, "/", b, "=", Sum)
```

Output:

```
Shell ×

>>> %Run Calculator.py
                    Calculator

 Enter your first value:2
 Enter your second value:2
 2 + 2 = 4
 2 - 2 = 0
 2 * 2 = 4
 2 / 2 = 1.0

>>>
```

3. Write a Python program to convert height (in feet and inches) to centimeters. Convert height of 5 feet 2 inches to centimeters.

```
program.py ×
1 feet = eval(input("Enter the feet: "))
2 inches = eval(input("Enter the inches: "))
3 total_inches = (feet * 12) + 2
4 centimeters = total_inches * 2.54
5 print(feet, "feet", inches, "inches is equal to", centimeters, "cm" )

Shell ×

>>> %Run program.py
 Enter the feet: 5
 Enter the inches: 2
 5 feet 2 inches is equal to 157.48 cm

>>>
```

4. Write a program to compute distance between two points by creating variables (Pythagorean Theorem)

Distance =((*x*2−*x*1) ^2+(*y*2−*y*1) ^2) ^1/2

```
program.py ×
2 y1 = 20
3 x2 = 30
4 y2 = 30
5 Distance =((x2-x1)**2+(y2-y1)**2)**1/2
6 print("The Distance btw two point is :" , Distance)

Shell ×

>>> %Run program.py
 The Distance btw two point is : 100.0

>>>
```