

Create a variable to store your age and print its type using type()

```
age = 25
print(age)
print(type(age))
```

3. Declare a string variable called x and assign it the value "Hello".

```
x = "Hello"
print(x)
```

a. Print out the value of x

```
print(x)
```

4. Take different data types and print values using print function.

```
my_integer = 10
print("Integer:", my_integer, type(my_integer))

my_float = 3.14
print("Float:", my_float, type(my_float))
my_string = "Hello Python!"
print("String:", my_string, type(my_string))
is_active = True
print("Boolean:", is_active, type(is_active))
my_list = [1, 2, 3, "apple"]
print("List:", my_list, type(my_list))
my_dict = {"name": "Alice", "age": 30}
print("Dictionary:", my_dict, type(my_dict))
my_tuple = (10, 20, 30)
print("Tuple:", my_tuple, type(my_tuple))
my_set = {1, 2, 3, 3, 4}
print("Set:", my_set, type(my_set))
```

5. Declare these variables (x, y and z) as integers. Assign a value of 9 to x, Assign a value of 7 to y, perform addition, multiplication, division and subtraction on these two variables and Print out the result

```
x = 9
y = 7

addition_result = x + y
print(f"Addition: {x} + {y} = {addition_result}")
multiplication_result = x * y
print(f"Multiplication: {x} * {y} = {multiplication_result}")
division_result = x / y
print(f"Division: {x} / {y} = {division_result}")
subtraction_result = x - y
print(f"Subtraction: {x} - {y} = {subtraction_result}")
```

6. Write a program to compute the length of the hypotenuse (c) of a right triangle using Pythagoras theorem.

```
import math
side_a = float(input("Enter the length of side 'a': "))
side_b = float(input("Enter the length of side 'b': "))
hypotenuse_c = math.sqrt(side_a**2 + side_b**2)
print(f"The length of the hypotenuse (c) is: {hypotenuse_c:.2f}")
```

7. Write a program to find simple interest

```
principal = float(input("Enter the principal amount: "))
rate = float(input("Enter the annual interest rate (in percentage): "))
time = float(input("Enter the time period (in years): "))
simple_interest = (principal * rate * time) / 100

print(f"The simple interest is: {simple_interest:.2f}")
```

8. Write a program to find area of triangle when length of sides are given.

```
import math
a = float(input("Enter the length of side 'a': "))
b = float(input("Enter the length of side 'b': "))
c = float(input("Enter the length of side 'c': "))

s = (a + b + c) / 2
if (s - a) < 0 or (s - b) < 0 or (s - c) < 0:
    print("Error: The given side lengths do not form a valid triangle.")
else:
    area = math.sqrt(s * (s - a) * (s - b) * (s - c))
    print(f"The area of the triangle is: {area:.2f}")
```

9. Write a program to convert given seconds into hours, minutes and remaining seconds.

```
total_seconds = int(input("Enter the total number of seconds: "))

hours = total_seconds // 3600
remaining_seconds = total_seconds % 3600
minutes = remaining_seconds // 60
seconds = remaining_seconds % 60
print(f"{total_seconds} seconds is equal to {hours} hours, {minutes} minutes, and {seconds} seconds.")

Enter the total number of seconds: 86400
86400 seconds is equal to 24 hours, 0 minutes, and 0 seconds.
```

10. Write a program to swap two numbers without taking additional variable.

```
num1 = int(input("Enter the first number: "))
num2 = int(input("Enter the second number: "))

print(f"Before swapping: num1 = {num1}, num2 = {num2}")
num1 = num1 + num2
num2 = num1 - num2
num1 = num1 - num2

print(f"After swapping: num1 = {num1}, num2 = {num2}")
```

11. Write a program to find sum of first n natural numbers.

```
n = int(input("Enter a positive integer (n): "))

if n <= 0:
    print("Please enter a positive integer.")
else:
    # Using the formula: sum = n * (n + 1) / 2
    sum_natural_numbers = n * (n + 1) // 2
    print(f"The sum of the first {n} natural numbers is: {sum_natural_numbers}")
```

12. Write a program to print truth table for bitwise operators (&, | and ^ operators)

```
print("Truth Table for Bitwise Operators")
print("-----")
print("A\tB\tA&B\tA|B\tA^B")
print("-----")

for a in [0, 1]:
    for b in [0, 1]:
        bitwise_and = a & b
        bitwise_or = a | b
        bitwise_xor = a ^ b
```

```
print(f"{a}\t{b}\t{bitwise_and}\t{bitwise_or}\t{bitwise_xor}")
print("-----")
```

13. Write a program to find left shift and right shift values of a given number

```
number = int(input("Enter an integer: "))
shift_amount = int(input("Enter the number of bits to shift: "))

left_shifted_value = number << shift_amount
print(f"Original number: {number}")
print(f"Left shifted by {shift_amount} bits: {left_shifted_value}")

right_shifted_value = number >> shift_amount
print(f"Right shifted by {shift_amount} bits: {right_shifted_value}")
```

14. Using membership operator find whether a given number is in sequence (10,20,56,78,89)

```
sequence = (10, 20, 56, 78, 89)
number_to_check = int(input("Enter a number to check: "))

if number_to_check in sequence:
    print(f"The number {number_to_check} is in the sequence {sequence}.")
else:
    print(f"The number {number_to_check} is NOT in the sequence {sequence}.")
```

Github repo link: <https://github.com/mahawarbhavya/pythonexperiments.git>

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