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Q1. Install Python and write the steps of installation and understand difference between scripting and interactive modes in IDLE.

Ans 1 Steps to Install Python:

Go to https://www.python.org

Click on Downloads

Download latest version

Run the installer

Click “Add Python to PATH”

Click Install Now

Difference Between Modes:

Interactive Mode Scripting Mode Runs line by line Runs full program at once Used for testing Used for full programs Shows >>> prompt Runs .py file

Q2. Create a variable to store your age and print its type using type().

```
age = 18


print(type(age))
```

```
<class 'int'>
```

Q3. Declare a string variable called x and assign it the value "Hello".

```
x = "Hello"

print(x)
```

```
Hello
```

Q4. Take different data types and print values using print function.

```
# Different data types

# Integer
a = 10

# Float
b = 3.14

# String
c = "Hello"

# Boolean
d = True

# List
e = [1, 2, 3]

# Tuple
f = (4, 5, 6)

# Dictionary
g = {"name": "Pranav", "age": 18}

# Printing values
print(a)
print(b)
print(c)
print(d)
```

```
print(e)
print(f)
print(g)
```

```
10
3.14
Hello
True
[1, 2, 3]
(4, 5, 6)
{'name': 'Pranav', 'age': 18}
```

Q5. 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
z = 0


print("Addition:", x + y)
print("Multiplication:", x * y)
print("Division:", x / y)
print("Subtraction:", x - y)
```

```
Addition: 16
Multiplication: 63
Division: 1.2857142857142858
Subtraction: 2
```

Q6. Write a program to compute the length of the hypotenuse (c) of a right triangle using Pythagoras theorem.

```
import math


a = float(input("Enter side a: "))
b = float(input("Enter side b: "))


c = math.sqrt(a*a + b*b)


print("Hypotenuse =", c)
```

```
Enter side a: 4
Enter side b: 3
Hypotenuse = 5.0
```

Q7. Write a program to find simple interest.

```
p = float(input("Enter Principal amount: "))
r = float(input("Enter Rate of interest: "))
t = float(input("Enter Time: "))


si = (p * r * t) / 100


print("Simple Interest =", si)
```

```
Enter Principal amount: 100
Enter Rate of interest: 5
Enter Time: 2
Simple Interest = 10.0
```

Q8. Write a program to find area of triangle when length of sides are given.

```
import math

a = float(input("Enter side a: "))
b = float(input("Enter side b: "))
```

```
c = float(input("Enter side c: "))


s = (a + b + c) / 2

area = math.sqrt(s * (s - a) * (s - b) * (s - c))


print("Area of triangle =", area)
```

```
Enter side a: 10
Enter side b: 10
Enter side c: 10
Area of triangle = 43.30127018922193
```

Q9.Write a program to convert given seconds into hours, minutes and remaining seconds.

```
seconds = int(input("Enter total seconds: "))

hours = seconds // 3600
minutes = (seconds % 3600) // 60
remaining_seconds = seconds % 60


print("Hours:", hours)
print("Minutes:", minutes)
print("Seconds:", remaining_seconds)
```

```
Enter total seconds: 3600
Hours: 1
Minutes: 0
Seconds: 0
```

Q10. Write a program to swap two numbers without taking additional variable.

```
a = int(input("Enter first number: "))
b = int(input("Enter second number: "))


a, b = b, a

print("After swapping:")
print("a =", a)
print("b =", b)
```

```
Enter first number: 5
Enter second number: 6
After swapping:
a = 6
b = 5
```

Q11. Write a program to find sum of first n natural numbers.

```
n = int(input("Enter a number: "))

sum_n = n * (n + 1) // 2

print("Sum of first", n, "natural numbers =", sum_n)
```

```
Enter a number: 5
Sum of first 5 natural numbers = 15
```

Q12. Write a program to print truth table for bitwise operators (&, | and ^ operators)

```
print("A B  A&B  A|B  A^B")

for a in [0, 1]:
    for b in [0, 1]:
        print(a, b, "  ", a & b, "  ", a | b, "  ", a ^ b)
```

```
A B  A&B  A|B  A^B
0 0    0    0    0
0 1    0    1    1
1 0    0    1    1
1 1    1    1    0
```

Q13. Write a program to find left shift and right shift values of a given number.

```
num = int(input("Enter a number: "))
shift = int(input("Enter number of positions to shift: "))

left_shift = num << shift
right_shift = num >> shift

print("Left Shift value:", left_shift)
print("Right Shift value:", right_shift)
```

```
Enter a number: 8
Enter number of positions to shift: 2
Left Shift value: 32
Right Shift value: 2
```

Q14. Using membership operator find whether a given number is in sequence (10,20,56,78,89)

```
seq = (10, 20, 56, 78, 89)

num = int(input("Enter a number: "))

if num in seq:
    print("Number is present in the sequence")
else:
    print("Number is not present in the sequence")
```

```
Enter a number: 56
Number is present in the sequence
```

Git hub link = https://github.com/pranavssinha11-glitch/Python.git