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LAB: 01

Task 1:

Make 2-2 programs of each datatype.

● NUMERIC TYPES:

❖ Integer:

```
num1 = 4
num2 = 8
sum = num1 + num2
print("The sum is:", sum)
```

The sum is: 12



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```
num = 2

if num % 2 == 0:
    print("The number is even")
else:
    print("The number is odd")
```

The number is even

❖ Float:

```
num1 = 3.5
num2 = 8.5
result = num1 - num2

print("The result is:", result)
```

The result is: -5.0

```
num1 = 1.0
num2 = 5.0

result = num1 / num2

print("The answer is:", result)
```

The answer is: 0.2

❖ Complex:



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```
num1 = 4 + 4j
num2 = 5 + 4j
result = num1 + num2
print("The sum is:", result)
```

The sum is: (9+8j)

```
num1 = 6 + 3j
num2 = 2 + 2j

result = num1 * num2

print("The product is:", result)
```

The product is: (6+18j)

● SEQUENCE TYPES:

❖ String

```
: first_name = "Maheen"
  last_name = "Fatima"
  full_name = first_name + " " + last_name
  print("Full name is:", full_name)
```

Full name is: Maheen Fatima

```
: message = "Hello, world!"
  print(message)
```

Hello, world!

❖ List:



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```
fruits = ["orange", "banana", "watermelon"]
for fruit in fruits:
    print(fruit)
```

orange
banana
watermelon

```
numbers = [1, 2, 3]
numbers.append(5)
print("Updated list:", numbers)
```

Updated list: [1, 2, 3, 5]

❖ Tuple:

```
] colors = ("pink", "brown", "blue")
print("Second color is:", colors[1])
```

Second color is: brown

```
] fruits = ("grapes", "banana", "cherry")

for fruit in fruits:
    print(fruit)
```

grapes
banana
cherry

❖ Range:



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```
11]: for num in range(1, 6):  
      print(num)
```

1
2
3
4
5

```
12]: for num in range(2, 11, 2):  
      print(num)
```

2
4
6
8
10

● SET TYPES:

❖ Set:

```
fruits = {"apple", "banana", "mango"}  
  
print("Fruits set:", fruits)
```

Fruits set: {'apple', 'banana', 'mango'}

```
numbers = {1, 2, 3}  
numbers.add(4)  
  
print("Updated set:", numbers)
```

Updated set: {1, 2, 3, 4}

❖ Frozen set:



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```
5]: num = frozenset([1,2,3,4])

print("num frozenset:", num)

num frozenset: frozenset({1, 2, 3, 4})
```

```
6]: set1 = frozenset([1, 2, 3])
set2 = frozenset([3, 4, 5])
common = set1.intersection(set2)

print("Common items:", common)

Common items: frozenset({3})
```

● MAPPING TYPE:

❖ Dictionary dict:

```
student = {
    "name": "maheen",
    "age": 18,
    "class": "BS IT"
}

print("Student Info:", student)
```

Student Info: {'name': 'maheen', 'age': 18, 'class': 'BS IT'}

```
person = {
    "name": "maheen",
    "city": "Karachi"
}

print("Name is:", person["name"])
```

Name is: maheen

● BOLEAN TYPE:



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```
] :  
a = 30  
b = 10  
  
result = a > b  
print("Is a greater than b?", result)
```

Is a greater than b? True

```
] : x = 10  
y = 10  
  
print("Are x and y equal?", x == y)
```

Are x and y equal? True

Task 2:

Make up to 5 shapes programs using *

```
print("Square Shape:")  
print("* * * * *")  
print("* * * * *")  
print("* * * * *")  
print("* * * * *")  
print("* * * * *")  
print("* * * * *")  
print("Right-Angled Triangle:")  
print("*")  
print("* *")  
print("* * *")  
print("* * * *")  
print("* * * * *")  
print("Inverted Triangle:")  
print("* * * * *")  
print("* * * *")  
print("* * *")  
print("* *")  
print("*")
```



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Square Shape:

```
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *
```

Right-Angled Triangle:

```
*  
* *  
* * *  
* * * *  
* * * * *
```

Inverted Triangle:

```
* * * * *  
* * * *  
* * *  
* *  
*
```

```
print("Pyramid Shape:")  
print("  *")  
print(" * *")  
print(" * * *")  
print(" * * * *")  
print("* * * * *")  
print("Diamond Shape:")  
print("  *")  
print(" * *")  
print(" * * *")  
print(" * *")  
print("  *")
```

Pyramid Shape:

```
*  
* *  
* * *  
* * * *  
* * * * *
```

Diamond Shape:

```
*  
* *  
* * *  
* *  
*
```

]:



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Task 3:

Make same shapes you have made in task 2, using * multiple by number.

Program:

```
] : print("Square Shape:")
print("* " * 5)
print("* " * 5)
print("* " * 5)
print("* " * 5)
print("* " * 5)
print("Right-Angled Triangle:")
print("* " * 1)
print("* " * 2)
print("* " * 3)
print("* " * 4)
print("* " * 5)
print("Inverted Triangle:")
print("* " * 5)
print("* " * 4)
print("* " * 3)
print("* " * 2)
print("* " * 1)
print("Pyramid Shape:")
print(" " * 4 + "* ")
print(" " * 3 + "* " * 2)
print(" " * 2 + "* " * 3)
print(" " * 1 + "* " * 4)
print(" " * 0 + "* " * 5)
```

```
print("Diamond Shape:")
print(" " * 4 + "* ")
print(" " * 3 + "* " * 2)
print(" " * 2 + "* " * 3)
print(" " * 3 + "* " * 2)
print(" " * 4 + "* ")
```



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Square Shape:

```
* * * * *  
* * * * *  
* * * * *  
* * * * *  
* * * * *
```

Right-Angled Triangle:

```
*  
* *  
* * *  
* * * *  
* * * * *
```

Inverted Triangle:

```
* * * * *  
* * * *  
* * *  
* *  
*
```

Pyramid Shape:

```
 *  
  * *  
 * * *  
* * * *  
* * * * *
```

Diamond Shape:

```
 *  
  * *  
 * * *  
  * *  
   *
```



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