1.Dynamic typing

```
x = 10
print(x, type(x))

x = "Hello Python"
print(x, type(x))
```

```
10 <class 'int'>
Hello Python <class 'str'>
```

2.Mutable vs Immutable Datatypes

```
my_list = [1, 2, 3]
my_list[0] = 10
print(my_list)

my_tuple = (1, 2, 3)
# my_tuple[0] = 10   # Error: tuple is immutable
print(my_tuple)
```

```
[10, 2, 3]
(1, 2, 3)
```

3.Local and Global Variables

```
x = 100

def demo():
    y = 50
    print(x, y)

demo()
```

```
100 50
```

4.Return Statement in a Function

```
def add(a, b):
    return a + b

result = add(5, 3)
print(result)
```

```
8
```

5.List Comprehension

```
squares = [x * x for x in range(1, 11)]
print(squares)
```

```
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```

6.break,continue and pass

```
for i in range(1, 11):
    if i == 3:
        continue
    if i == 5:
        break
    if i == 7:
        pass
    print(i)
```

```
1
2
4
```

7.Recursion

```
def factorial(n):
    if n == 0:
        return 1
    return n * factorial(n - 1)

print(factorial(5))
```

```
120
```

8.Lambda Function

```
square = lambda x: x * x
print(square(4))
```

```
16
```

9. is vs ==

```
a = [1, 2, 3]
b = [1, 2, 3]

print(a == b)
print(a is b)
```

```
True
False
```

## 10.Docstrings

```
def greet():
    """This function prints a greeting message"""
    print("Hello Python")

greet()
print(greet.__doc__)
```

```
Hello Python
This function prints a greeting message
```