

Day10_Operators_Errors_NumberSystems

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1 Day 10 – Operators, Errors & Number Systems

Today I explored Python operators, common types of errors, and number systems like binary, decimal, octal, and hexadecimal. These are some of the most important foundational concepts in Python.

1.1 Topics Covered:

1.2 Types of operators

Arithmetic: +, -, *, /, //, %, **

Comparison: ==, !=, >, <, >=, <=

Logical: and, or, not

Assignment: =, +=, -=, etc.

Identity: is, is not

Membership: in, not in

1.3 Types of errors

Syntax Error

Runtime Error

Logical Error

1.4 Number systems

Decimal to Binary: `bin(25)` → 0b11001

Decimal to Octal: `oct(25)` → 0o31

Decimal to Hex: `hex(25)` → 0x19

Converting back to Decimal: `int('11001', 2) → 25` These basics will help me avoid bugs, write better code, and understand how Python works behind the scenes.

2 Operators in Python

```
[1]: # Arithmetic Operators
a = 10
b = 3
print(a + b)    # 13
print(a - b)    # 7
print(a * b)    # 30
print(a / b)    # 3.33
print(a % b)    # 1
print(a ** b)   # 1000
print(a // b)   # 3
```

```
13
7
30
3.3333333333333335
1
1000
3
```

```
[2]: # Comparison Operators
print(a > b)    # True
print(a == b)   # False
```

```
True
False
```

```
[3]: # Logical Operators
x = True
y = False
print(x and y)  # False
print(x or y)   # True
print(not x)    # False
```

```
False
True
False
```

```
[4]: # Assignment Operators
a += 2 # Now a is 12
print(a)
```

```
12
```

```
[5]: # Identity Operators
print(a is b)      # False
print(a is not b)  # True
```

False

True

```
[6]: # Membership Operators
mylist = [1, 2, 3]
print(2 in mylist)      # True
print(4 not in mylist)  # True
```

True

True

3 Types of Errors in Python

```
[7]: # Syntax Error (won't run)
print("Hello
# missing end quote
```

Cell In[7], line 2

print("Hello

^

IndentationError: unexpected indent

```
[8]: # Runtime Error (runs but crashes)
num = 5
print(num / 0)
# ZeroDivisionError
```

ZeroDivisionError Traceback (most recent call last)

Cell In[8], line 3

1 # Runtime Error (runs but crashes)

2 num = 5

----> 3 print(num / 0)

ZeroDivisionError: division by zero

```
[9]: # Logical Error (no crash but wrong logic)
marks = [90, 80, 70]
average = sum(marks) / 2 # wrong logic, should be len(marks)
print("Average:", average)
```

Average: 120.0

4 Number Systems & Conversions

```
[10]: # Decimal to Other Number Systems
num = 25
print(bin(num)) # 0b11001 → binary
print(oct(num)) # 0o31 → octal
print(hex(num)) # 0x19 → hexadecimal
```

0b11001

0o31

0x19

```
[11]: # Decimal to Other Number Systems
num = 25
print(bin(num)) # 0b11001 → binary
print(oct(num)) # 0o31 → octal
print(hex(num)) # 0x19 → hexadecimal
```

0b11001

0o31

0x19