Day 20 – Conditional Statements in Python

Conditional statements are used to perform **different actions** based on **different conditions**. They allow us to control the flow of our program based on whether a condition is `True` or `False`.

These are essential in decision-making logic in any application or script.

Types of Conditional Statements:

1. `if` statement
2. `if-else`
3. `if-elif-else`
4. Nested `if`
5. Logical operators (`and` , `or` , `not`)

if

Example 1: Simple if condition with True and False

In [1]:
```
if True:
    print('Data Science')
```

```
Data Science
```

In [2]:
```
if False:
    print('Data Science')

print('bye for now')
```

```
bye for now
```

In [3]:
```
if True:
    print('Data Science')
print('Bye for now')
```

```
Data Science
Bye for now
```

Example 2: Checking even or odd

In [4]:
```
x = 4
r = x % 2

if r == 0:
    print('Even number')
```

```
Even number
```

In [5]:
```
x = 5
r = x % 2

if r == 0:
    print('Even number')
```

if-else

Example 3: Using if-else

In [6]:
```
x = 5
r = x % 2

if r == 0:
    print('Even Number')
else:
    print('Odd Number')
```

```
Odd Number
```

In [7]:
```
x = 8
r = x % 2

if r == 0:
    print('Even number')
else:
    print('Odd number')
```

```
Even number
```

Example 4: Using multiple if

In [8]:
```
x = 9
r = x % 2

if r == 0:
    print('Even Number')
if r == 1:
    print('Odd Number')
```

```
Odd Number
```

In [9]:
```
x = 15
r = x % 2

if r == 0:
    print('Even Number')
if r != 0:
    print('Odd Number')
```

```
Odd Number
```

Nested if

Example 5: Nested if statements

In [10]:
```
x = 3
r = x % 2

if r == 0:
    print('Even Number')
    if x>5:
          ('Greater Number')
else:
    print('Odd Number')
```

```
Odd Number
```

In [11]:
```
x = 10
r = x % 2

if r == 0:
    print('Even Number')
    if x > 5:
        print('Greater Number')
```

```
Even Number
Greater Number
```

In [12]:
```
x = 4
r = x % 2

if r == 0:
    print('Even Number')
    if x>5:
        print('Greater Number')
    else:
        print('Smaller Number')
else:
    print('Odd Number')
```

```
Even Number
Smaller Number
```

if-elif-else

In [13]:
```
x = 2

if x == 1:
    print('One')
if x == 2:
    print('Two')
if x == 3:
    print('Three')
if x == 4:
    print('Four')
```

```
Two
```

Example 6: Using if-elif-else

In [14]:
```
x = 4

if x == 1:
    print('One')
elif x == 2:
    print('Two')
elif x == 3:
    print('Three')
elif x == 4:
    print('Four')
else:
    print('Number not found')
```

```
Four
```

In [15]:
```
x = 10

if x == 1:
    print('One')
elif x == 2:
    print('Two')
elif x == 3:
    print('Three')
elif x == 4:
    print('Four')
else:
    print('Number not found')
```

```
Number not found
```

More Examples

In [16]:
```
age = 20
```

```
if age >= 18:
    print("Eligible to vote.")
```

```
Eligible to vote.
```

In [17]:
```
age = 19
if age > 18: print('Eligible to Vote.')
```

```
Eligible to Vote.
```

In [18]:
```
age = 10

if age <= 12:
    print('Travel for free')
else:
    print('Pay for ticket')
```

```
Travel for free
```

In [19]:
```
marks = 45
res = 'Pass' if marks >= 40 else 'Fail'

print(f"Result: {res}")
```

```
Result: Pass
```

In [20]:
```
age = 30

if age <= 12:
    print('Child')
elif age <= 19:
    print('Teenager')
elif age <= 35:
    print('Young Adult')
else:
    print('Adult')
```

```
Young Adult
```

In [21]:
```
age = 70
is_member = True

if age >= 60:
    if is_member:
        print('30% senior discount')
    else:
        print('20% senior discount')
else:
    print('Not eligible for senior discount')
```

```
30% senior discount
```

Example: Check if number is positive, negative, or zero

In [22]:
```
num = int(input("Enter a number: "))
if num > 0:
    print("Positive")
elif num == 0:
    print("Zero")
else:
    print("Negative")
```

```
Positive
```

Example: Check if a number is divisible by 3

In [23]:
```
num = int(input("Enter a number: "))
if num % 3 == 0:
    print("Divisible by 3")
else:
    print("Not divisible by 3")
```

```
Divisible by 3
```

Example: Check if number is divisible by both 3 and 7

In [24]:
```
num = int(input("Enter a number: "))
if num % 3 == 0 and num % 7 == 0:
    print("Divisible by both 3 and 7")
else:
    print("Not divisible by both 3 and 7")
```

```
Divisible by both 3 and 7
```

Example: Check if number is prime

In [25]:
```
num = int(input("Enter a number: "))
if num > 1:
    for i in range(2, num):
        if num % i == 0:
            print(num, "is not a prime number")
            break
    else:
        print(num, "is a prime number")
else:
    print(num, "is not a prime number")
```

```
5 is a prime number
```

Example: Check if a year is a leap year

In [26]:
```
year = int(input('Enter a year: '))

if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
    print(year, 'is a leap year')
else:
    print(year, 'is not a leap year')
```

```
2024 is a leap year
```

Example: Check if number is a multiple of 10

In [27]:
```
num = int(input('Enter a number: '))
if num %10 == 0:
    print('Multiple of 10')
else:
    print('Not a multiple of 10')
```

```
Multiple of 10
```

Example: Check if number is divisible by both 3 and 5

In [28]:
```
num = int(input("Enter a number: "))
if num % 3 == 0 and num % 5 == 0:
    print("Divisible by both 3 and 5")
else:
    print("Not divisible by both 3 and 5")
```

```
Divisible by both 3 and 5
```