

Day 2

Task 2

What is a variable?

- a Variable is a symbol or a place holder that represents a value that can change
- Variables are used to store data
 - ↳ Variable names can only contain letters, digits & underscores
 - ↳ A variable name cannot start with a digit

- ② How does python store values in memory when you create a variable?
- ↳ When you create a variable of any type, Python doesn't directly store the value inside the variable name. Instead it creates an object in memory to hold that value.

- ③ What is the diff. bet' ent, float, string, boolean

- int (integer) :- int represents whole numbers without any decimal part (5, -100, 0)
 - Value is represented by int class
 - It contains +ve or -ve whole no.
- float :- • Value is represented by float class
 - It is a real no. with a floating-point representation
- string :- • String is a sequence of characters enclosed in quotes
- boolean :- Boolean value can be of two types only i.e either True or False

What is type casting & why do we need it

- ↳ It is the process of converting value from one data to another
- ↳ We need it when an operation requires a specific data type

What is the purpose of id() & type()

id() :- id() function is built-in fun

- I that returns the unique identifier of an object

↳ The identifier is an integer

- ↳ id() function commonly used to check if two variables as objects refer to the same memory location

type() :- The type() function is mostly used for debugging purpose

↳ 2 types of arguments

Syntax: type (obj, bases, dict)

Task 2

Create variables of different types	Output
<pre>▶ # Create variables a = 10 b = 3.14 c = "Hello" d = True # Print variable details print("Variable a:") print("Value:", a) print("Data Type:", type(a)) print("Memory Address:", id(a)) print() print("Variable b:") print("Value:", b) print("Data Type:", type(b)) print("Memory Address:", id(b)) print() print("Variable c:") print("Value:", c) print("Data Type:", type(c)) print("Memory Address:", id(c)) print() print("Variable d:") print("Value:", d) print("Data Type:", type(d)) print("Memory Address:", id(d))</pre>	<pre>... Variable a: Value: 10 Data Type: <class 'int'> Memory Address: 11654664 Variable b: Value: 3.14 Data Type: <class 'float'> Memory Address: 138037524295664 Variable c: Value: Hello Data Type: <class 'str'> Memory Address: 138037524433392 Variable d: Value: True Data Type: <class 'bool'> Memory Address: 10557792</pre>

Type Casting

```
# int to float
x = 10
print(f"int to float: {x} -> {float(x)}")

# float to int
y = 3.14
print(f"float to int: {y} -> {int(y)}")

# string to int
z = "25"
print(f"string to int: {z} -> {int(z)}")

# int to string
a = 100
print(f"int to string: {a} -> '{str(a)}'"')
```



```
int to float: 10 -> 10.0
float to int: 3.14 -> 3
string to int: 25 -> 25
int to string: 100 -> '100'
```

Operators

```
▶ num1 = input("Enter first number: ")
num2 = input("Enter second number: ")

print(f"Before conversion: {type(num1)}, {type(num2)}")

num1, num2 = float(num1), float(num2)

print(f"After conversion: {type(num1)}, {type(num2)}")

print(f"Addition: {num1 + num2}")
print(f"Subtraction: {num1 - num2}")
print(f"Multiplication: {num1 * num2}")
print(f"Division: {num1 / num2}")
print(f"Floor Division: {num1 // num2}")
print(f"Modulus: {num1 % num2}")
print(f"Power: {num1 ** num2}")

...
*** Enter first number: 12
Enter second number: 13
Addition: 25.0
Subtraction: -1.0
Multiplication: 156.0
Division: 0.9230769230769231
Floor Division: 0.0
Modulus: 12.0
Power: 106993205379072.0
```

Swapping Two Variables

```
# Method 1: Using a temporary variable
a = 5
b = 10
print(f"Before swap (Method 1): a = {a}, b = {b}")
temp = a
a = b
b = temp
print(f"After swap (Method 1): a = {a}, b = {b}")
```

```
Before swap (Method 1): a = 5, b = 10
After swap (Method 1): a = 10, b = 5
```

```
# Method 2: Without temporary variable
a = 5
b = 10
print(f"\nBefore swap (Method 2): a = {a}, b = {b}")
a = a + b
b = a - b
a = a - b
print(f"After swap (Method 2): a = {a}, b = {b}")
```

```
Before swap (Method 2): a = 5, b = 10
After swap (Method 2): a = 10, b = 5
```

▶ # Method 3: Python special swap

```
a = 5
b = 10
print(f"\nBefore swap (Method 3): a = {a}, b = {b}")
a, b = b, a
print(f"After swap (Method 3): a = {a}, b = {b}")
```

...

```
Before swap (Method 3): a = 5, b = 10
After swap (Method 3): a = 10, b = 5
```

Task 3

Age

```
name = input("Enter your name: ")
age = int(input("Enter your age: "))

# Calculate the year when they'll turn 100
current_year = 2024
year_100 = current_year + (100 - age)

# Print the message
print(f"Hello {name}, you will turn 100 years old in the year {year_100}.")
```

```
Enter your name: Shru
Enter your age: 20
Hello Shru, you will turn 100 years old in the year 2104.
```