

Computer Programming Summer Interest Group

Session 2 / Variables, Data Types, Basic Input / Output

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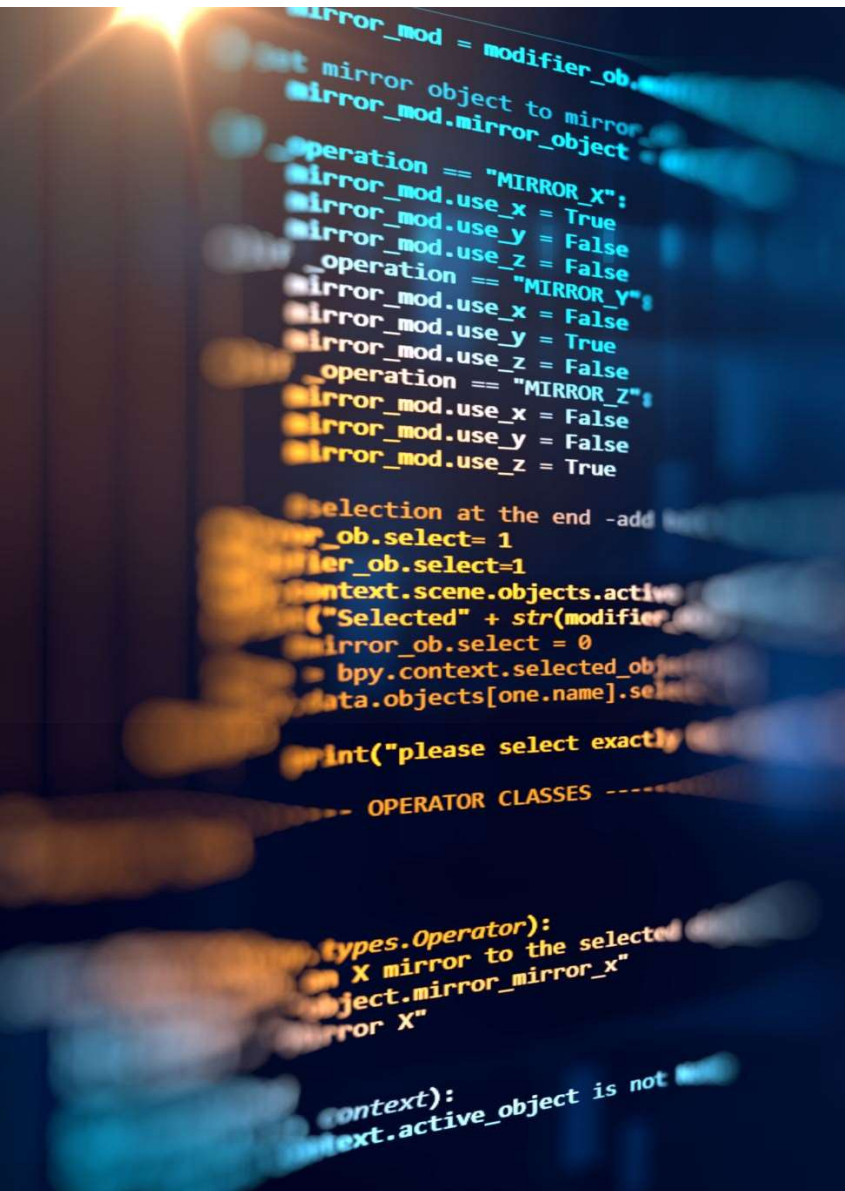
Are not two sparrows sold for a penny? And not one of them will fall to the ground apart from your Father.

But even the hairs of your head are all numbered.

Fear not, therefore; you are of more value than many sparrows.

Objectives

- By the end of this session, you will be able to:
 - Understand and use variables to store information in Python
 - Recognize and use basic data types (int, float, str, bool)
 - Perform basic arithmetic operations
 - Use input() and print() functions for simple I/O



Variables

- Variables hold values
- Variables have names
 - Allows access to the value the variable holds



Example of Variables

Example	Name of Variable	Value of Variable	Type of Value in Variable
name = "Alice" name = 'Alice'	name	"Alice"	str (Text String)
age = 25	age	25	int (Integer)
height = 1.75	height	1.75	float (Decimal Number)
is_student = True	Is_student	True	bool (Boolean)

Data Types

str – Text String

- Sequence of text characters

int – Integer

- Contains positive or negative whole numbers

float – Floating point
number

- Numbers with a decimal point and exponent

bool – Boolean value

- Contains either **True** or **False**

NoneType – Empty value

- Used to show a variable contains no value

Examples

Type	Examples
str	"Alice" 'Bob' "T'was Brillig and the Slythy Toves"
int	10 0 -239
float	3.141 -1.0 6.022E+23 (6.022×10 ²³)
bool	True False
NoneType	None

Basic Input / Output

- print
 - writes content to the screen
- Input
 - accepts input from the keyboard

```
print("hello world")  
print("10")  
print(10)
```

```
x = input("Enter a number: ")  
name = input("what's your name? ")  
print("Hello", name)
```

```
z = 10.5  
x = int(x)  
print(x + z)
```


Operators

Operators allow manipulation of values...

- adding two numbers:
10 + 35
- Appending two strings:
"hello " + "Clyde"

Assignment allows assigning a value to a variable

- name = "sue"
- answer = 42
- pi = 3.141
- true = False



Activity

- Write a program that
 - Requests and reads in two numbers
 - Prints the value of both numbers
 - Prints the value of the first added to the second
 - Prints the value of the first subtracted by the second
 - Prints the value of the first multiplied by the second
 - Prints the value of the first divided by the second
 - Prints the value of the first raised to the power of the second