

Concepts

| | |
|------------|------------------------------|
| Data Type | the type of the value |
| Variable | stores a value |
| Identifier | name of a variable |

Data Types

| | | |
|---------|------------------------|---------------|
| String | Sequence of characters | "Hello World" |
| Integer | Whole numbers | 101 |
| Float | Decimal numbers | 71.24 |
| Boolean | True or False | 4 > 3 |

String Concatenation

A method for combining strings

```
print( " Hel lo" + " World! ")
```

Type Casting

A method for changing the data type of a value

```
price = 2.00
```

```
print( "The apple is " + str(price) + " dollars")
```

Type Cast Functions

| | |
|---------|--------------------------------|
| str() | converts a value to a string |
| int() | converts a value to an integer |
| float() | converts a value to a float |
| bool() | converts a value to a boolean |

Basic Mathematical Operators

| | |
|---|----------------|
| + | Addition |
| - | Subtraction |
| * | Multiplication |
| / | Division |

Example of Mathematical Operations

```
num1 = 5
num2 = 3
product = num1 * num2
print( " Pro duc t:" + str(pr -
oduct))
```

Condition

an expression that uses **relation operators** and is either True or False also known as a **boolean expression**

Relational Operators

| | |
|----|--|
| == | Checks if the values are equal |
| != | Checks if the values are not equal |
| > | Checks if the left value is greater than the right value |
| < | Checks if the left value is less than the right value |
| >= | Checks if the left value is greater than or equal to the right value |
| <= | Checks if the left value is less than or equal to the right value |

If statement

used to run instructions when the condition is True

```
if grade >= 90:
    print("Letter grade: A")
```

If-else statement

used to run instructions when the condition is True and when the condition is False

```
if grade >= 90:
    print("Letter grade: A")
else:
    print("You did not get an A")
```

If-elif

used to run instructions when multiple conditions are met

```
if grade >= 90:
    print("Letter grade: A")
elif grade >= 80:
    print("Letter grade: B")
else:
    print("Letter grade: unknow n"
)
```

For Loop

used to repeat a set of instructions for a sequence of values

```
grade_list = [88,90 ,68 ,78 ,89 ,90,40]
for grade in grade_list:
    pri nt( grade)'
prints each grade in grade_list
```

range(stop)

is a function that returns a sequence of numbers starting from 0 to stop-1.

```
for x in range(6):
    pri nt(x)
prints x when x is 0, 1, 2, 3, 4 and 5
```

range(start, stop)

is a function that returns a sequence of numbers starting from start to stop-1.

```
for x in range(1, 6):
    pri nt(x)
prints x when x is 1, 2, 3, 4 and 5
```

range(start, stop, step)

is a function that returns a sequence of numbers starting from start to stop-1 while increasing by step.

```
for x in range(1, 6, 2):
    pri nt(x)
prints x when x is 1, 3 and 5
```



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Published 24th March, 2022.

Last updated 25th March, 2022.

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