Summary

Variables:

Variables are storage units for values of any datatype.

Datatypes:

- Floats are floating point numbers (decimals).
- Integers are whole numbers.
- Strings are characters or numbers or signs stored as a character. Arithmetic operations, as we know them, don’t apply to string.
- Booleans are True or False. Truthy values are everything except 0 or an empty string, while falsy values are empty strings and 0.

Type casting:

Changes the datatype of a variable if a change is applicable.There are two types of type casting:

Explicit: Uses functions to cast a variable to another datatype.Ex:

X = “2”

X = int(X)

X is an integer not string.

Implicit: Done implicitly by python interpreter in certain cases like in division, an integer is casted to a float automatically. Ex:

x = 6/2

x is 3.0 not 3 in this instance.

Input:

To get user input, function input() is called which takes an optional argument, a string. Input returns the user input as a string.

Arithmetic:

- +: addition
- -: subtraction

- a*b: a times b
- a/b: a divided b
- a//b: floor division. 1//2 returns 0 instead of 0.5
- a%b: remainder from a divided b
- a**b: a exponent b

Arithmetic is done on integers and floats. Augmented assignments are done using syntax like this a+=(integer) which is the same as a = a + (integer). Some built in functions are pow() which powers a base, the first argument, to a given power, the second argument) and returns the result, abs() returns the absolute value of a number. Math module has some useful functions like math.sqrt() and math.ceil() and constants like pi and e.

If, elif, and else:

“if” condition or bool:

    Code

If condition or boolean is true, execute some code. “Elif”, which stands for else if, statement is checked after a previous “if” or “elif” statement is false and is executed, like an if statement, if condition or boolean is true. “Else” is executed if and only if all previous “if” or “elif” conditions are false.

Logical operators:

- condition1 and condition2 : means if and only if both conditions are true the whole statement is deemed true
- condition1 or condition2: means if one condition is true the whole statement is deemed true
- not condition: is true when condition is false and vice-versa

String methods:

Some popular methods are:

- String.replace(arg1,arg2): arg1 is sequence to be replaced in string by arg2.

- String.find(arg): returns index of arg and -1 if arg is not in string.

- String.index(arg): returns index of arg and raises ValueError if argument not found.

String indexing:

String[start(inclusive): end(exclusive): step] slices the string to desired state. String indexing has default values for start: 0 , end: string length , and step: 1 which are passed if no value is passed from the coder.

String indexing can be done using negative numbers. Ex: str1 = “Marwan

str1[-1] is “n”, str1[-2] is “a” …

An easy way to reverse a string is string[::-1].

Format specifiers:

Format specifiers are a way to manipulate the display , format, of our variables within strings. A few popular format specifiers are:

- .(number)f = take that many decimal places
- :(number) = allocate that many places
- :, = comma separator

While Loops:

```
While(statement or Boolean) :
        Code
```

While a condition is true, the code will be executed that many times or until a break condition is called. A while condition will break if statement is false and end of code.

For loops:

```
For x in iterable:
        Code
```

For a value in an iterable the code will execute until no values left in iterable or a break keyword is called. Continue is another keyword that means skip remaining code, code after continue keyword.

Timer:

Time.sleep(arg): takes a number which denotes number of seconds of stoppage time. The code will stop execution for given number of seconds.