**UNDERSTANDING PYTHON SYNTAX, VARIABLES, DATATYPES, STATEMENT AND STRING**

**Syntax**

Every programming language has rules and regulations which we must follow to achieve our the desired result, in other words syntax are set of instructions or rules that the tells how we should write our python code, for example if am to the display an output am going to abide by the rule of using the print() function and also we saved our python code with the extension of .py

**Variables and Datatypes**

In every program there is need for variables: WHY?, Because we will need to store some values that will be needed latter in the program to perform some operation so we need a named location to make this operation much easier, We termed variable to be a temporary memory used to define, store and perform operation on input data or values and this values are known as data types which are divided into two part :Basic and Advance Datatypes. In naming variables there are some rules which we must abide with. The Basic Datatypes are divided into 4 types as follows while we discuss about the advance datatypes as we progress:

1. Int – integers are whole numbers, eg. 12
2. Float – float are decimal numbers, eg. 12.0
3. Str – string: strings are usually passed inside quotation marks “” or ‘’
4. Booleans  - Booleans are either True or False

you can read more about variables and datatypes with the link below

<https://thepythonguru.com/datatype-varibles/>

Comment  are use to inform other programmers what are line or blocks of code is all about, we start a comment with an # tag, you can also find more about comment with the link below

<https://www.digitalocean.com/community/tutorials/how-to-write-comments-in-python-3>

Newline is used to end a line of code and as well begin a line of code in a string and it is denoted with '\n' you can find more with the below link

<https://www.freecodecamp.org/news/python-new-line-and-how-to-python-print-without-a-newline/>

Escape sequences allow you to include special characters in strings. To do this, simply add a backslash (\) before the character you want to escape.

String Concatenation and Formatting

string concatenation is the joining of two or more string be it declared or not while string formatting is a way of injecting variables into string with help of {} serving as a place holder and the format function to help place in the variables in all the place holder that is specified, read more about string concatenation and formatting with the link below

<https://www.pythonforbeginners.com/concatenation/string-concatenation-and-formatting-in-python>

String Method

This are Function that can be applied on a string, Find more details about string method with the below link

<https://www.programiz.com/python-programming/methods/string>

**ASSIGNMENT NO.1**

1. Use the print() function to display ‘MY NAME IS JAMES’
2. Declared a variable called  ‘state’ to hold the following statement ‘I’m from a well-known village with good culture in kogi state’
3. Write a program to use string.format() method to format the following three variables as per the expected output (totalMoney = 1000, quantity = 3,price = 450) expected output I have 1000 dollars so I can buy 3 football for 450.00 dollars.
4. Write a program to display a poem in upper case using the multiline string

**DATATYPE CONVERSION, OPERATORS AND THE USE OF INPUT FUNCTION IN PYTHON**

Datatype Conversion

Since there can only be joining of string and string be it assigned to a variable or not and same for int and float, in a case where we have to join to or more values of different datatypes we would have to convert it first.

There are two types of Type Conversion in Python:

1. Implicit Type Conversion
2. Explicit Type Conversion

In Implicit type conversion of data types in Python, the Python interpreter automatically converts one data type to another without any user involvement while In Explicit Type Conversion in Python, the data type is manually changed by the user as per their requirement

Note integer and float datatype can be convert to each other and as well to string but string datatype cannot be converted to float or integer except it is a number that is passed in that string. Read more about type conversion in python with the below link

<https://www.programiz.com/python-programming/type-conversion-and-casting>

Operators

Operators are special symbols that perform some operation on operands and returns the result.

Python Operators includes Arithmetic, Assignment, Comparison, Logical, Identity, Membership, Bitwise

Arithmetic Operators

Arithmetic operators perform the common mathematical operation on the numeric operands.

Assignment Operators

The assignment operators are used to assign values to variables.

Comparison Operators

The comparison operators compare two operands and return a boolean either True or False.

Logical Operators

The logical operators are used to combine two boolean expressions.

Identity Operators

The identity operators check whether the two objects have the same id value

Membership Operators

The membership test operators in and not in test whether the sequence has a given item or not.

Read more about operators with this link <https://www.tutorialsteacher.com/python/python-operators>

Input Function

we use the input function to prompt user for a value instead of assigning a static value

eg name = input('Please enter your name')

age = int(input('Please provide your age'))

**ASSIGNMENT NO.2**

1. Display number 458 In float using print()
2. Write a program to take three names as input from a user
3. write a program to find the amount that #5000 becomes if saved for 3 years at 6% per annum compound interest
4. Members of a family estimate that they will need 700000 to improve their house in 3 years time. they deposit 550000 at 5% per annum compound interest they add 25000 at the end of 1st year and 35000 at the end of 2nd year  write a program to find 1.their total savings after 3 years 2. by how much are their saving greater than or less than 700000 needed

**ITERABLE OBJECT (ADVANCE DATATYPES)**

Iterable Object (Advance Datatypes)

In the pervious lesson we learnt about the basic datatypes in python, now we will be discussing the advance datatypes in python which is also known as Iterable object which are capable of holding multiple, of the basic datatype

we will be looking at 3 of this Advance datatypes which is listed as follows:

1. Tuple
2. List
3. Dictionary

**TUPLE**

Tuple is an immutable (unchangeable) collection of elements of different data types. It is an ordered collection, so it preserves the order of elements in which they were defined.

Tuples are defined by enclosing elements in parentheses (), separated by a comma. Read more about tuple with the below link

<https://www.tutorialsteacher.com/python/python-tuple>

**LIST**

In Python, the list is a mutable sequence type. A list object contains one or more items of different data types in the square brackets [] separated by a comma.

 Read more about List with the below link

<https://www.tutorialsteacher.com/python/python-list>

**DICTIONARY**

The dictionary is an unordered collection that contains key:value pairs separated by commas inside curly brackets. Dictionaries are optimized to retrieve values when the key is known.

 A Dictionary object contains one or more items of different data types in the square brackets {} separated by a comma.

 Read more about dictionary with the below link

<https://www.tutorialsteacher.com/python/python-dictionary>

**ASSIGNMENT NO.3**

TUPLE

1. Write a program to Reverse the given tuple (46, 53, 45, 48, 55, 45, 49, 51, 51, 58, 50, 55, 53, 57, 50, 46, 55, 55, 47, 57, 55)
2. Write a program to Access value 58 from the above tuple
3. Write a program to Counts the number of occurrences of item 55 from the above tuple
4. Write a program to return values 49 and 57 from the above tuple.

 LIST

1. Write a program to Reverse the given list [46, 53, 45, 48, 55, 45, 49, 51, 51, 58, 50, 55, 53, 57, 50, 46, 55, 55, 47, 57, 55]
2. Write a program to Access value 58 from the above list
3. Write a program to Counts the number of occurrences of item 51 from the above list
4. Write a program to return values 49 and 57 from the above list.
5. Write a program to add item 69 after 49 in the following Python List
6. Write a program to extend [89,85,36,95,45,78] to the above list

DICTIONARY

1. Write a Python program to create a new dictionary having 10 football club names as the key with each key holding the following values(location,managersname,clubcaptain,networth,clubformation)

**MODULES AND CONDITIONAL STATEMENT**

Modules

The [Python interactive shell](https://www.tutorialsteacher.com/python/python-interective-shell) has a number of built-in functions. They are loaded automatically as a shell starts and are always available, and we load them by importing them the use the dir() function to check all the function under it, use the link below to check all module in python

<https://www.tutorialsteacher.com/python/python-builtin-modules>

Conditional Statement

Every day we are faced with decisions

1. Should I drive or take the bus?
2. Should I cook at home or go out for dinner?
3. Which laptop should I buy?

we will be looking at if, if-else and if-elif-else

If statements

If statements  allow you to specify code that only executes if a specific condition is true

If-else  statements

If statements  allow you to specify code that only executes if a specific condition is true while The code in the***else***statement is only executed if the condition is NOT true

If-elif-else  statements

Sometimes there are multiple conditions that affect the outcome of a decision

•If you are in England say hello, if you are in Germany say guten tag, if you are in France say bonjour, …

•If you win the lottery and the prize is over a million dollars then retire to a life of luxury

•If it is Monday, check to see if there is fresh coffee. If there is no fresh coffee go to the nearest café

The “elif” allows you to check for different values  
Read more with this link <https://www.tutorialsteacher.com/python/python-if-elif>

|  |  |
| --- | --- |
|  | #Example of if statement |
|  | answer=input("Would you like express shipping?") |
|  | if answer == "yes" : |
|  | print("That will be an extra $10") |
|  | # for the above example you will have an output only if the condition is true |
|  |  |
|  |  |
|  |  |
|  | #Example of if-else statement |
|  | deposit=input("How much would you like to deposit? ") |
|  | if float(deposit) > 100 : |
|  | print("You get a free toaster!") |
|  | else: |
|  | print("Enjoy your mug!") |
|  | print("Have a nice day") |
|  | # for the above example you will have an output only if the condition is true |
|  | #and the code under the else block will be excuted only the condition is false |
|  |  |
|  |  |
|  | #Example of if-elif-else statement |
|  | country = input("Where are you from? " ) |
|  |  |
|  | if country == "CANADA" : |
|  | print("Hello") |
|  | elif country == "GERMANY" : |
|  | print("Guten Tag") |
|  | elif country == "FRANCE" : |
|  | print("Bonjour") |
|  | else : |
|  | print("Aloha/Ciao/G’Day") |
|  |  |
|  |  |

**ASSIGNMENT NO.4**

1. A company decided to give bonus of 5% to employee if his/her year of service is more than 5 years.

Ask user for their salary and year of service and print the net bonus amount.

2. Take two int values from user and print greatest among them.

3. Take input of age of 3 people by user and determine oldest and youngest among them.

4. A student will not be allowed to sit in exam if his/her attendence is less than 75%.

Take following input from user

Number of classes held

Number of classes attended.

And print

percentage of class attended

Is student is allowed to sit in exam or not.

5. Ask user to enter age, sex ( M or F ), marital status ( Y or N ) and then using following rules print their place of service.

if employee is female, then she will work only in urban areas.

if employee is a male and age is in between 20 to 40 then he may work in anywhere

if employee is male and age is in between 40 t0 60 then he will work in urban areas only.

And any other input of age should print