summary of some basics
From Python language

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Data types & variables

Data types ➔ to store different kinds of data. Some common data types

Like ➔ integer , float , string , Boolean

variables ➔used to store and manipulate data to deal with them

```
################## variables
# variables => int + float + bolean + string => series of char .

age = 21
print("your age",age,"years old") # not contactnation but link with other and take space by default
print("your age " + str(age) + " years old") # concatnation not process about int + concat must str + str
print(f"your age { age } years old")# Fstriig

x, y, z=1, 2, 3

a=b=c =1

print(x)

#if you want to take a two num after comma use round func => age = round(age)
age = 2.126021
age = round(age,2)
print(age)
```

Type Casting => type conversion, is the process of converting a variable from one data type

to another casting have two type (explicity , implicity) .

1. **Explicit =>** convert variables from one type to another using constructor functions like int(num) , float(num) ,str(var)

2. **Implicit =>** Python convert automatically to performs implicit type casting

```
############## Type casting
# tow type of casting    explicity + implicity
##explicity
age = 21
print (type(age))
age =float(age)
print (type(age))
print(age)

#############implicity
x=20
y=2.0
x/=y
print(x)
```

```
x = 5 # integer
y = 2.5 # float
        z = x + y # implicit conversion of
```

input and output

i/o => operations are essential in programming for interacting with users

```
name=input(“enter your name")#variables about input typicaly stored a string var
```

```
############## input
name = input("enter your name : ")   # variables about input typicly stored a string var
age = input("enter your age : ")
age = int(age)

print(f"your name : {name}")
print(f"your age : {age} years old")

length = float(input("enter length : "))
print(type (length))
```

conditions and loops

Conditions and loops => are a fundamental control code structure and instructions to do anything you want .

```
####### if statement and logical operator and, or, (not => for boolean

age = int(input("enter your age : "))

if age > 18:
    print("university student")
elif age > 15 and age<18:
    print("sacendory student")
    print("--------  ------------")
else:
    print("primary student")
```

```
############ while  loop => execute some code while some conditions remains true

name = input("enter your name : ")
while name=="":
    print(f"enter name {name}")
    name = input("enter your name : ")


############ for loop => execute a block of code iteration numper
#           you can iterate over range ,string ,sequance

#sss="123456"
for x in range(1,20):# reverced(range(1,11)) - range(1,11,2) - in sss
    if x==13:
        continue        ####### handel this and complete
    elif x== 16:
        break            ######## exit from loop
    else:
        print(x)
```

strings

String => Strings are sequences of characters, and Python provides a rich set of operations and methods to work with strings.

```
85  ################ string
86
87  name = input("enter your name : ")
88
89  #result = len(name)
90  #result = name.find("o")
91  #result = name.rfind("o")
92  #result = name.capitalize()
93  #result = name.upper()
94  #result = name.lower()
95  #result = name.isdigit()#=> num
96  result = name.isalpha() #=> char
97
98  #result = name.count("-")#=> count this character
99
100 #name=name.replace("-"," ")
101 print(result)
102
103 ############ indexing => accessing element of a sequence using []
104 #            [start : end : step]
105
106 string="go to learn "
107 print(string[::2])
```

➔ To display element :

math library

math library ➔ provides a set of mathematical functions and constants for performing various mathematical operations. To use the **math** module, you need to import math first to use some of func :

```
58  import math
59  x=3.1452
60  y=5
61
62  #result = round(x,2)
63  #result = abs(x)
64  #result = min(x,y)
65  #result = max(x,y)
66  #$result = pow(x,y)
67  result =math.sqrt(x) #must import math library
68  print(result)
69
```

End