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#\*\*Lab No.2 Introduction to Python\*\*#

##Python as a Calculator##

2+4,5-3,5/3,5\*2,5%2

# here we are using python to perform mathematical calculations such as 2+4; this chunk of code will directly print the answer to the mathematical calculations.

##Variable##

a = 4

b= 3.5

c = 'Physics'

list = [1,2,3,4]

print (a,' ,', b , ',', c , ',' ,list)

print (type(a), type(b), type(c), type(list))

# here we are using variables, placeholders to store values that we assign them. Here different data types are also used where the function type() prints the data type of the variable.

# print command outputs the the things stored in a variable

##String Operations##

s1 = "Applied"

s2 = "Physics"

s1+s2

# two variables used to hold strings here. where + sign in b/w variables is used to join both of the variables.

print(s1 + " " + s2) # for space b/w s1 and s2 and empty string is added

s1[0::+3],s2[0::+2]

# each letter in string are assigned a number when saved.

# this will print the letter at 0 and then the letter at postion 0+3. Keeps +3 in postion number and outputs the letter at there until string finishes.

s1[::-1] , s2[::-1] # -1 inverts the postions of the string

##Boolean Data Type##

s3 = 'Applied'

s1 == s2 , s1 == s3 , s2 == s3

# compares the string in s3 to strings in s1 and s2 then gives us a true if the string matches and false if it doesnt.

b1 = True

b2 = False

type(b1) , type(b2)

# tells us the data type of the data stored in variables b1 and b2

zero\_int = 0 #An int, float or complex number set to zero returns as False. An integer,

#float or complex number set to any other number, positive or negative, returns as True.

bool(zero\_int)

pos\_int = 1 #assigns 1 into the pos\_int variable

f = -0 #assigns -0 into the f variable

neg = -2.3 #assigns -2.3 into the neg variable

bool(pos\_int) , bool(s1) , bool(b1), bool(b2), bool(f), bool(neg) # outputs the boolean value for the data stored in variables, The bool() function is used to return or convert a value to a Boolean value

f = 0.0

fr = 0.22 # assigned 0.0 and 0.22 in f and fr respectively

bool(f) , bool(fr) #The bool() function is used to return or convert a value to a Boolean value

b1 or b2 , b1 and b2, not b1,b1 == b2 , b1 != b2 # processes and gives a boolean. "!=" is a not equals to sign.

name = "Anaya"

empty = "" # saves "anaya" and "" in the variables as strings

bool(name), bool(empty) # prints boolean value for the data stored in the variable,If an empty sequence is passed it like "" bool() gives false.

##Lists##

list1 = ["physics", "Chemistry", "Math", "Statistics"] # list made,indexing str at from 0 and then , 1, 2, 3

list1[0],list1[3],list1[3] # outputs data stored at postions 0, 3 and 3 in list1

list1[2:],list1[:2],list1[:],list1[-3:],list1[:-3] # This basically setting the range of output, we set the starting index before colon and ending index after colon. It only outputs the list elements in the current range.

##Lists are mutable##

list1[2]= 'Computer Science' # replaces 'math' with 'computer science' in list1 at the index number 2

list1 # prints list1

##Appending to a list using " append and extend "##

list1.append('Islamiat') # adds or appends the word 'Islamiat' at the end of list1

list1 # prints the list

list2=[1,2,3,4,5]

list1.extend(list2) # extends or combines both the lists, 1 and 2 into one list1.

list1

##Deleting from a list using " remove and pop "##

list1.remove ('Islamiat') # removes the word 'Islmiat' from the list.

list1

list1.pop(0)

list1 # pops out or deletes what is at the index number 0 in the list, in this case it was physics.

##tuples##

tuple1 = ('AP', 'PF','Eng') #tuples are pretty much like lists but they cannot be changed/edited/appended. Used () brackets instead of []

tuple1 # outputs tuple1

tuple1[2] # prints the data at the 2nd index in the tuple, in this case "Eng"