22 January 2025 10:08

1. Global variable
   a. variable declared within a function has local scope
   b. to use outer variable IN A function declare as **global**
   c. variables declared in if or for or any other indented block are always GLOBAL

```
x=20

def changex():
    global x
    x=40
changex()
print(x)

y=34
if x>20 :
    y=100
    if x<=40 :
        y+=1
        print("inner if",y)
    print("outer if",y)

print("outside if",y)
```

1. Multiple assignment

```
#traditional way to assign 3 variables
a=34
b=22
c=100

#python multiple assignment syntax
a,b,c=50,60,70

print(a,b,c)

#interchange two numbers - traditional way
# temp = a
# a=b
# b=temp
# print(a,b,c)

#python mulitple assignment
a,b = b,a
print(a,b,c)

#traditional way
# p1=10
# p2=p1

#python syntax
p1=p2=10
print(p1,p2)
```

3. List comprehension

Shorthand notation to create a list

mylist = [expression for x in sequence]

```
first10 = [x for x in range(10)]
print(first10)


#create a list that consists of squares of all numbers between 11 and 20

#traditional way
# squares=[]
# for x in range(11,21):
#     squares.append(x**2)
# print(squares)

squares=[ x**2 for x in range(11,21)]
print(squares)

#create a list of all odd numbers between 1 to 30
oddnums=[x for x in range(1,30,2)]
print(oddnums)

colors=["red","green","blue","yellow"]
#create a list that has the substring of each name with first 2 letters in uppercase
twolettercolors=[ x.upper()[0:2] for x in colors]
print(twolettercolors)


#using if in list comprehension
# create a list of the those numbers in oddnums list that are divisible by 3
divby3=[ x for x in oddnums if x%3==0]
print(divby3)

#create a list of tuple such that each tuple contains the color and length from colors
tuplist = [(x,len(x)) for x in colors]
print(tuplist)


unames= ["prachi","preeti","rucha"]
#create a list of dictionaries with uname as key and length of uname as value of pass
dictlist = [{x:len(x)} for x in unames]
print(dictlist)

#nested list comprehension
somelist=[[10,20,30],[50,60,70],[80,90,100]]

newlist = [num for x in somelist for num in x]
print(newlist)


list1 = ["s1","s2","s3"]
```

```
list2 = ["s3","s4","s5"]
list3 = ["s5","s6","s7"]

#output list = [(s1,s3), (s1,s4) ,(s1,s5) ,(s2,s3),(s2,s4),(s2,s5) ,(s3,s3),(s3,s4),(s3,s5)]
#create a list of tuple of all pairs from above 2 list
outputlist = [(x,y,z) for x in list1 if x!="s3" for y in list2 if x!=y for z in list3]
print(outputlist)
```

HW --- USE List comprehension

1. Create a list of all numbers between 1 to 200 that have 7 in the number
2. Accept two lists of any size from user ---- all elements are numbers
   a. create a new list having all the common numbers in the two lists
   b. Create a new list having all the uncommon numbers in two lists

   Print the list

   L1 = [10,20,30,44,55,19]
   L2 =[10,55,100,134]

   CommonList = [10,55,]
   Uncommonlist = [20,30,44,19,100,134]

3. Accept a string from user and create a list of all the characters in the string except vowels
   Vowels = [a,e,I,o,u]

   Str = Hi how are you
   Output = [H hw r y] - list