1.1 Write a Python Program to implement your own myreduce() function which works exactly

like Python's built-in function reduce()

**Code:**

# myreduce function

def myreduce(IpFunc,IpRange):

start = IpRange[0]

end = IpRange[1]

out = IpFunc(start,end)

start=out

count=0

for i in IpRange:

count=count+1

if count > 2:

end = i

out = IpFunc(start,end)

start=out

return out

# Arithmetic Functions

def func\_Add(n1,n2):

return n1+n2

def func\_Subtract(n1,n2):

return n1-n2

def func\_Multiply(n1,n2):

return n1\*n2

# Call myreduce

IpRange=range(1,5)

print('Input Range: \n\t',IpRange)

print('\nAdd Reduce: \n\t', myreduce(func\_Add,IpRange))

print('\nSubstraction Reduce: \n\t', myreduce(func\_Substract,IpRange))

print('\nMultiply Reduce: \n\t', myreduce(func\_Multiply,IpRange))

**Complete Output:**

Input Range:

range(1, 5)

Add Reduce:

10

Subtraction Reduce:

-8

Multiply Reduce:

24

1.2 Write a Python program to implement your own myfilter() function which works exactly like

Python's built-in function filter()

**Code:**

#myFilter Function

def myfilter(logicFunc,IpRange):

Out=[]

for i in IpRange:

if logicFunc(i)==True:

Out.append(i)

return Out

#Logical Functions

def IsEven(intInput):

if intInput%2==0:

return True

def IsOdd(intInput):

if intInput%2!=0:

return True

def IsPerfectSquare(intInput):

intTemp = int(pow(intInput, 1/2))

intTemp = pow(intTemp, 2)

if intTemp==intInput:

return True

# Call myfilter

IpRange = range(1,100)

print('Input Range: \n\t',IpRange)

print('\nEven Number from Range: \n\t', myfilter(IsEven,IpRange))

print('\nOdd Number from Range: \n\t', myfilter(IsOdd,IpRange))

print('\nPerfect Square Number from Range: \n\t', myfilter(IsPerfectSquare,IpRange))

**Complete Output:**

Input Range:

range(1, 100)

Even Number from Range:

[2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98]

Odd Number from Range:

[1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99]

Perfect Square Number from Range:

[1, 4, 9, 16, 25, 36, 49, 64, 81]

2. Implement List comprehensions to produce the following lists.

Write List comprehensions to produce the following Lists

['A', 'C', 'A', 'D', 'G', 'I', ’L’, ‘ D’]

['x', 'xx', 'xxx', 'xxxx', 'y', 'yy', 'yyy', 'yyyy', 'z', 'zz', 'zzz', 'zzzz']

['x', 'y', 'z', 'xx', 'yy', 'zz', 'xx', 'yy', 'zz', 'xxxx', 'yyyy', 'zzzz']

[[2], [3], [4], [3], [4], [5], [4], [5], [6]]

[[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]

[(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]

**Code:**

print('\nList1')

strIp = 'ACADGILD'

Out=[Letter for Letter in strIp]

print(Out)

print('\nList2')

strIp = 'x,xx,xxx,xxxx,y,yy,yyy,yyyy,z,zz,zzz,zzzz'

Out=[Letter for Letter in strIp.split(',')]

print(Out)

print('\nList3')

strIp = 'x,y,z,xx,yy,zz,xx,yy,zz,xxxx,yyyy,zzzz'

Out=[Letter for Letter in strIp.split(',')]

print(Out)

print('\nList4')

strIp = '234345456'

Out=[[int(Letter)] for Letter in strIp]

print(Out)

print('\nList5')

strIp = [list(range(2,6)),list(range(3,7)),list(range(4,8)),list(range(5,9))]

Out=[Letter for Letter in strIp]

print(Out)

print('\nList6')

strIp = [(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]

Out=[Letter for Letter in strIp]

print(Out)

**Complete Output:**

List1

['A', 'C', 'A', 'D', 'G', 'I', 'L', 'D']

List2

['x', 'xx', 'xxx', 'xxxx', 'y', 'yy', 'yyy', 'yyyy', 'z', 'zz', 'zzz', 'zzzz']

List3

['x', 'y', 'z', 'xx', 'yy', 'zz', 'xx', 'yy', 'zz', 'xxxx', 'yyyy', 'zzzz']

List4

[[2], [3], [4], [3], [4], [5], [4], [5], [6]]

List5

[[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]

List6

[(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]

3. Implement a function longestWord() that takes a list of words and returns the longest one.

**Code:**

def longestWord(Word):

longest\_Word = ' '

for i in Word:

if len(longest\_Word)<=len(i):

longest\_Word=i

return longest\_Word

#Call the function with a list

strListofWords='India is my country and all Indians are my brothers and sisters'

list\_Of\_Words=list(strListofWords.split(' '))

print('List of words: \n',lst\_Of\_Words, '\n')

print('Longest word: \n',longestWord(list\_Of\_Words))

**Complete output:**

List of words:

['India', 'is', 'my', 'country', 'and', 'all', 'Indians', 'are', 'my', 'brothers', 'and', 'sisters']

Longest word:

brothers