PYTHON - 3 - Assignment

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Problem 1.1 Write a Python Program to implement your own myreduce() function which works exactly like Python's built-in function reduce()

In [1]:
```
# myfilter function
def myreduce(InputFunction,lstInputRange):
    n1 = lstInputRange[0]
    n2 = lstInputRange[1]
    out = InputFunction(n1,n2)
    n1=out
    counter=0
    for i in lstInputRange:
        counter=counter+1
        if counter > 2:
            n2 = i
            out = InputFunction(n1,n2)
            n1=out
    return out

# Input Functions
def func_Add(num1,num2):
    return num1+num2

def func_Substract(num1,num2):
    return num1-num2

def func_Multiply(num1,num2):
    return num1*num2

# Call myreduce
lstInputRange=range(1,10)
print('Input Range: \n\t',lstInputRange)
print('\nAdd Reduce: \n\t', myreduce(func_Add,lstInputRange))
print('\nSubstraction Reduce: \n\t', myreduce(func_Substract,lstInputRange))
print('\nMultiply Reducee: \n\t', myreduce(func_Multiply,lstInputRange))
```

```
Input Range:
        range(1, 10)

Add Reduce:
        45

Substraction Reduce:
        -43

Multiply Reducee:
        362880
```

Problem 1.2 Write a Python program to implement your own myfilter() function which works exactly like Python's built-in function filter()

In [2]:
```
#myFilter Function
def myfilter(eventFunction,lstInputRange):
    lstOutput=[]
    for item in lstInputRange:
        if eventFunction(item)==True:
            lstOutput.append(item)
    return lstOutput

#Event Check 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
lstInputRange = range(1,50)
print('Input Range: \n\t',lstInputRange)
print('\nEven Number from Range: \n\t', myfilter(IsEven,lstInputRange))
print('\nOdd Number from Range: \n\t', myfilter(IsOdd,lstInputRange))
print('\nPerfect Square Number from Range: \n\t', myfilter(IsPerfectSquare,lstInputRange))
```

```
Input Range:
         range(1, 50)

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]

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]

Perfect Square Number from Range:
         [1, 4, 9, 16, 25, 36, 49]
```

Problem 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)]

In [3]:
```
print('\nProblem-1')
strInput = 'ACADGILD'
lstOutput=[Letter for Letter in strInput]
print(lstOutput)

print('\nProblem-2')
strInput = 'x,xx,xxx,xxxx,y,yy,yyy,yyyy,z,zz,zzz,zzzz'
lstOutput=[Letter for Letter in strInput.split(',')]
print(lstOutput)

print('\nProblem-3')
strInput = 'x,y,z,xx,yy,zz,xx,yy,zz,xxxx,yyyy,zzzz'
lstOutput=[Letter for Letter in strInput.split(',')]
print(lstOutput)

print('\nProblem-4')
strInput = '234345456'
lstOutput=[[int(Letter)] for Letter in strInput]
print(lstOutput)

print('\nProblem-5')
strInput = [list(range(2,6)),list(range(3,7)),list(range(4,8)),list(range(5,9))]
lstOutput=[Letter for Letter in strInput]
print(lstOutput)

print('\nProblem-6')
strInput = [(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]
lstOutput=[Letter for Letter in strInput]
print(lstOutput)
```

```
Problem-1
['A', 'C', 'A', 'D', 'G', 'I', 'L', 'D']

Problem-2
['x', 'xx', 'xxx', 'xxxx', 'y', 'yy', 'yyy', 'yyyy', 'z', 'zz', 'zzz', 'zzzz']

Problem-3
['x', 'y', 'z', 'xx', 'yy', 'zz', 'xx', 'yy', 'zz', 'xxxx', 'yyyy', 'zzzz']

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

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

Problem-6
[(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]
```

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

In [4]:
```
def logestWorld(lst_Word):
    longest_Word = ''
    for word in lst_Word:
        if len(longest_Word)<len(word):
            longest_Word=word
    return longest_Word

#Call the function with a list
strListofWords='Implement a function that takes a list of words and returns the longest one'
lst_Of_Words=list(strListofWords.split(' '))
print('List of words: \n',lst_Of_Words, '\n')
print('Longest word: \n',logestWorld(lst_Of_Words))
```

```
List of words:
 ['Implement', 'a', 'function', 'that', 'takes', 'a', 'list', 'of', 'words', 'and', 'returns', 'the', 'longest', 'on
e']

Longest word:
 Implement
```