Data Science Masters Session:Assignment3

In [4]:
```
# 1.1 Write a Python Program to implement your own myreduce() function which works exactly
# like Python's built-in function reduce()

# Solution
inputList = [47,11,42,13,7]
def myreduce():
    if len(inputList) > 2:
        placeholder_value = inputList[0]+inputList[1]
        print("-",inputList[0],"+",inputList[1],"=",inputList[0]+inputList[1])
        for i in range(2,len(inputList)):
            print("-"*i,placeholder_value," + ",inputList[i],"=",placeholder_value+inputLis
            placeholder_value = placeholder_value + inputList[i]
    elif len(inputList) == 2:
         placeholder_value = inputList[0] + inputList[1]
    else :
         placeholder_value = inputList[0]
    print("Computed total using my own myreduce method:",placeholder_value)
myreduce()
```

```
- 47 + 11 = 58
-- 58  +  42 = 100
--- 100  +  13 = 113
---- 113  +  7 = 120
Computed total using my own myreduce method: 120
```

In [29]:
```
# 1.2 Write a Python program to implement your own myfilter() function which works exactly
# Python's built-in function filter()

# Solution
def myfilter(number):   # function to return True if a number is divisble by 5
    if number % 5 == 0:
        return True
inputList = [20,12,40,5,15,30,98,18,32,10]
outputList = []
for num in inputList:
    if(myfilter(num)):
        outputList.append(num)
print("Filtered Result List:",outputList)
```

```
Filtered Result List: [20, 40, 5, 15, 30, 10]
```

In [ ]:
```
# 2. Implement List comprehensions to produce the following lists.
```

In [130]:
```
# Sample Output
# ['A', 'C', 'A', 'D', 'G', 'I', ’L’, ‘ D’]

# Solution
print("Generated Output:",[x for x in "ACADGILD"])
```

```
Generated Output: ['A', 'C', 'A', 'D', 'G', 'I', 'L', 'D']
```

In [128]:
```
# Sample Output
# ['x', 'xx', 'xxx', 'xxxx', 'y', 'yy', 'yyy', 'yyyy', 'z', 'zz', 'zzz', 'zzzz']

# Solution
print("Generated Output:",[x*i for x in ['x','y','z'] for i in range(1,5)])
```

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

In [242]:
```
# Sample Output
# ['x', 'y', 'z', 'xx', 'yy', 'zz', 'xxx', 'yyy', 'zzz', 'xxxx', 'yyyy', 'zzzz']

# Solution
print("Generated Output:",[x*i for i in range(1,5) for x in ['x','y','z']])
```

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

In [40]:
```
# Sample Output
# [[2], [3], [4], [3], [4], [5], [4], [5], [6]]

# Solution
print("Generated Output:",[[row[i]] for row in [[2,3,4],[3,4,5],[4,5,6]] for i in range(3)])
```

```
Generated Output: [[2], [3], [4], [3], [4], [5], [4], [5], [6]]
```

In [34]:
```
# Sample Output
# [[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]

# Solution
print("Generated Output:",
      [[a,b,c,d] for a in [2,3,4,5] for b in [3,4,5,6] for c in [4,5,6,7]
           for d in [5,6,7,8] if b==a+1 and c==a+2 and d==a+3])
```

```
Generated Output: [[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]
```

In [37]:
```
# Sample Output
# [(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]

# Solution
print("Generated Output:",[(y, x) for x in [1,2,3] for y in [1,2,3] if x>y or x<y or x==y])
```

```
Generated Output: [(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3,
3)]
```

In [245]:
```
# 3. Implement a function longestWord() that takes a list of words and returns the longest

# Solution
def longestWord():
    strList = ['Murali','is','a','Data Science','Student']
    maxWord = strList[0]
    for i in strList:
        if(len(i)>len(maxWord)):
            maxWord = i
    return maxWord
print("Longest Word in the given list:",longestWord())
```

```
Longest Word in the given list: Data Science
```