Filter Map Reduce

These are three functions which facilitate a functional approach to programming.

To demonstrate below concept consider below list as

arr = [8,9,5,16,2,4,21,30,11]

Filter
As the name suggests, filter creates a list of elements for which a function returns true.

Syntax:
list(function_to_apply, list_of_inputs)

evenArr = list(filter(lambda no : (no%2==0), arr))

In this syntax we filter out only even elements from arr store into evenArr.

After applying filter our EveArr contains [8,16,2,4,30]

Map
Map applies a function to all the items in an input_list.

Syntax:
map(function_to_apply, list_of_inputs)

In this syntax by using Map we add 2 in each element of evenArr

ModArray = list(map(lambda no : no+2,evenArr))

After applying map our ModArray contains [10,18,4,6,32]

Reduce
Reduce is a really useful function for performing some computation on a list and returning the result.
It applies a rolling computation to sequential pairs of values in a list.

Syntax:
reduce(function_to_apply, list_of_inputs)

sum = reduce(lambda a,b : a+b,ModArray)

After applying reduce function our sum contains addition of all elements from ModArray ie 70

Consider below application which demonstrate concept of Filter, Map, Reduce

```
print("---- Marvellous Infosystems by Piyush Khairnar-----")

print("Demonstration of Filter Map Reduce")

# Demonstration of Filter, Map reduce using normal functions


def EvenChk(no):
    return (no%2 == 0)

def Increase(no):
    return no+2

def Add(a,b):
    return a+b

arr = [8,9,5,16,2,4,21,30,11]

evenArr = list(filter(EvenChk,arr))

print("Data after filter ",evenArr)

ModArray = list(map(Increase,evenArr))

print("Data after map", ModArray)

sum = reduce(Add,ModArray)

print("Addition of even numbers",sum)

# Demonstration of Filter, Map reduce using lambda functions

evenArr = list(filter(lambda no : (no%2==0), arr))

print("Data after filter using lambda",evenArr)

ModArray = list(map(lambda no : no+2,evenArr))

print("Data after map using lambda", ModArray)

sum = reduce(lambda a,b : a+b,ModArray)

print("Addition of even numbers using lambda",sum)
```

Output of above application

```
Today — -bash — 79×24
MacBook-Pro-de-MARVELLOUS:Today marvellous$ python FilterMapReduce.py
---- Marvellous Infosystems by Piyush Khairnar-----
Demonstration of Filter Map Reduce
('Data after filter ', [8, 16, 2, 4, 30])
('Data after map', [10, 18, 4, 6, 32])
('Addition of even numbers', 70)
('Data after filter using lambda', [8, 16, 2, 4, 30])
('Data after map using lambda', [10, 18, 4, 6, 32])
('Addition of even numbers using lambda', 70)
MacBook-Pro-de-MARVELLOUS:Today marvellous$
```