

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

```
In [1]: def my_reduce(func, list):
        retval = list[0];
        for e in list[1:]:
            retval = func(retval, e)
        return retval;

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

def mul(a, b) :
    return a*b
```

```
In [10]: l = list(range(1, 5))
print("sum of elements of list ", l, "is : ", my_reduce(add, l))
print("multiplication of elements of list ", l, "is : ", my_reduce(mul, l))
```

```
sum of elements of list [1, 2, 3, 4] is : 10
multiplication of elements of list [1, 2, 3, 4] is : 24
```

```
In [ ]:
```

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

```
In [4]: def my_filter(func_name, list):
        l = []
        for e in list:
            if(func_name(e)):
                l.append(e)
        return l;
```

```
In [5]: def is_even(num):
        if(num%2 ==0):
            return True
```

```
In [6]: def is_odd(num):
        if(num%2 != 0):
            return True
```

```
In [7]: l = range(11)
print(list(my_filter(is_even, l)))
print(list(my_filter(is_odd, l)))
```

```
[0, 2, 4, 6, 8, 10]
[1, 3, 5, 7, 9]
```

```
In [ ]:
```

2.. Implement List comprehensions to produce the following lists.

Write List comprehensions to produce the following Lists

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

```
['x', 'y', 'z', 'xx', 'yy', 'zz', 'xxx', 'yyy', 'zzz', '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 [101]: list = [i*j for i in "xyz" for j in range(1, 5)]
print(list)
```

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

```
In [ ]:
```

```
In [102]: list = [i*j for j in range(1, 5) for i in "xyz"]
print(list)
```

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

```
In [ ]:
```

```
In [19]: a = [[x+y for x in range(1, 4) for y in range(1, 4)]
b = [[x+y for x in range(1, 5) for y in range(1, 5)]

print(a, '\n', b)
```

```
[[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]]
```

```
In [ ]:
```

```
In [20]: t = [(y, x) for x in range(1, 4) for y in range(1, 4)]  
print(t)
```

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