

Python Assignment 2

Problem 1

```
In [1]: def add(a,b):
        return a + b
```

```
In [2]: add(5,2)
```

```
Out[2]: 7
```

```
In [4]: from functools import reduce
        reduce(add, [1,2,3,4])
```

```
Out[4]: 10
```

```
In [15]: def my_reduce(func,seq):
          result = seq[0]
          for i in seq[1:]:
              result = func(result,i)
          else:
              return result
```

```
In [16]: my_reduce(add,[1,2,3,4])
```

```
Out[16]: 10
```

Problem 2 (Own filter function)

```
In [17]: def is_even(a):
          if a % 2 == 0:
              return True
          else:
              return False
```

```
In [20]: for i in filter(is_even, [2,4,5,6]):
          print(i)
```

```
2
4
6
```

```
In [25]: def my_filter_func(func,seq):
          result = []
          for i in seq:
              if func(i):
                  result.append(i)
          else:
              return result
```

```
In [26]: for i in my_filter_func(is_even, [2,4,5,6]):
          print(i)
```

```
2
4
6
```

Problem 3

```
In [30]: my_list = [x for x in "ACADGILD"]
          my_list
```

```
Out[30]: ['A', 'C', 'A', 'D', 'G', 'I', 'L', 'D']
```

```
In [56]: my_list1 = [x*y for y in 'xyz' for x in range(1,5)]
```

```
Out[56]: ['x', 'xx', 'xxx', 'xxxx', 'y', 'yy', 'yyy', 'yyyy', 'z', 'zz', 'zzz', 'zzzz']
```

```
In [57]: my_list2 = [x*y for y in range(1,5) for x in 'xyz']
          my_list2
```

```
Out[57]: ['x', 'y', 'z', 'xx', 'yy', 'zz', 'xxx', 'yyy', 'zzz', 'xxxx', 'yyyy', 'zzzz']
```

```
In [78]: my_list3 = [x*y for y in range(1,5) for x in range(1,5)]
```

```
Out[78]: [[2], [3], [4], [3], [4], [5], [4], [5], [6]]
```

```
In [63]: [[x for x in range(1,10) if 2 <= x <=5], [x for x in range(1,10) if 3 <= x <=6], [x for x in range(1,10) if 4 <= x <=7], [x for x in range(1,10) if 5 <= x <=8]]
```

```
Out[63]: [[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]
```

```
In [114]: my_list4 = [x*y for y in range(1,5) for x in range(1,5)]
```

```
Out[114]: [[2, 3, 4, 5], [3, 4, 5, 6], [4, 5, 6, 7], [5, 6, 7, 8]]
```

```
In [118]:
Out[118]: [(1, 1), (2, 1), (3, 1), (1, 2), (2, 2), (3, 2), (1, 3), (2, 3), (3, 3)]
```

Problem 4

```
In [129]: def longestWord(wordlist):
          result = ""
          max_length = 0
          for word in wordlist:
              if (len(word) > max_length):
                  result = word
                  max_length = len(word)
          else:
              return result
```

```
In [130]:
Out[130]: 'Function'
```

```
In [146]: class Triangle:
          def __init__(self,s,a,b,c):
              self.s = s
              self.a = a
              self.b = b
              self.c = c

          def area(self):
              area = (self.s*(self.s-self.a)*(self.s-self.b)*(self.s-self.c)) ** 0.5
```

```
In [147]: a = Triangle(5,10,3,15)
```

```
In [148]: a.area()
```

```
Out[148]: 22.360679774997898
```

```
In [154]: class Triangle:
          def __init__(self,base,height):
              self.base = base
              self.height = height

          def area(self):
              area = (self.base * self.height) ** 0.5
```

```
In [155]: a = Triangle(5,10)
          a.area()
```

```
Out[155]: 7.0710678118654755
```

```
In [156]: def filter_long_words(words,n):
          result = []
          for word in words:
              if len(word) > n:
                  result.append(word)
          else:
              return result
```

```
In [159]:
Out[159]: ['aa', 'bbb', 'ccc', 'ddd']
```

```
In [190]:
Out[190]: [2, 3, 3]
```

```
In [195]: def isVowel(char):
          vowel = ['A','E','I','O','U']
          if char.upper() in vowel:
              return True
          else:
              return False
```

```
In [198]: isVowel('a')
```

```
Out[198]: True
```

```
In [199]: isVowel('b')
```

```
Out[199]: False
```