

## Programming Assignment Week 8:

1. (60pts) Let's assume that there are many points in 3-D space. Each point has its coordinate as (x, y, z). All x, y, z are floating point value.

Anyway, can you sort these 3-D point by an sorting order string "xyz"?

That's means x coordinate is primary, y is secondary, z is last priority?

The order string can be of any combination of "xyz", "xzy", "yxz", "yzx", "zxy", "zyx"

**Hint:** using lambda expression and Python sorted function

Sample Inputs:

[(2, 1, 2), (2, 1, 3), (1, 2, 3), (1, 2, 2), (3, 1, 2), (3, 3, 1), (2, 3, 1), (1, 3, 3), (2, 4, 1)]

**Sample output:**

**Original:** [(2, 1, 2), (2, 1, 3), (1, 2, 3), (1, 2, 2), (3, 1, 2), (3, 3, 1), (2, 3, 1), (1, 3, 3), (2, 4, 1)]

**Sorted by xyz:** [(1, 2, 2), (1, 2, 3), (1, 3, 3), (2, 1, 2), (2, 1, 3), (2, 3, 1), (2, 4, 1), (3, 1, 2), (3, 3, 1)]

**Sorted by zyx:** [(2, 3, 1), (3, 3, 1), (2, 4, 1), (2, 1, 2), (3, 1, 2), (1, 2, 2), (2, 1, 3), (1, 2, 3), (1, 3, 3)]

2. (90pts) Using inner function, function chain rules, currying, and high order function to design an add function so that the chain function calls can collect the sum at the variable z.

**Sample Output :**

```
>>z = 0
>>add(1)
>>print(z)
1
>>z = 0
>>add(1) (2) (3) (4) (5)
>>print(z)
15
>>z = 0
>>add(2) (4) (6) (8) (10)
>>print(z)
30
>>z = 0
>>add(3) (1) (5) (2) (7)
>>print(z)
18
```