

# UW CSE 190p Section

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Dun-Yu Hsiao

# Homework/Quiz Questions?

# Before We Start

- Create and remember save every code you try today!
- If you have any question about today's material, email your report to TA.

# Outlines

- List slicing
- Set
- Sort

# List Slicing

```
test_list = ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7']
```

Start from the 3rd through the rest of the list:

```
test_list[2:]
```

From beginning through 5th element:

```
test_list[:5]
```

# List Slicing

```
test_list = ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7']
```

Get last element:

```
test_list[-1]
```

Get last four elements:

```
test_list[-4:]
```

Get everything except last three:

```
test_list[:-3]
```

# List Slicing

```
test_list = ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7']
```

Reverse the list

```
test_list[::-1]
```

Get the copy of the whole list

```
test_list[:]
```

```
new_list1 = test_list[:]
new_list2 = test_list
print new_list1      ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7']
print new_list2      ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7']
test_list.append( 'e8' )
new_list1.append( 'e9' )
new_list2.append( 'e10' )
print new_list1      ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7', 'e9']
print new_list2      ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7', 'e8', 'e10']
print test_list      ['e1', 'e2', 'e3', 'e4', 'e5', 'e6', 'e7', 'e8', 'e10']
```



# Set Operations Using Lists

```
list1 = [1, 2, 3, 4, 5]
```

```
list2 = [4, 6, 5, 7, 8]
```

Find the common elements in both list using **list**

```
out1 = [i for i in list2 if i in list1]
```

Find the all the unique elements in both list using **list**

```
out2 = list1+list2
```

```
for i in out1:
```

```
    out2.remove(i)
```

Find all the elements that are not in both lists using **list**

```
out3 = [i for i in list1+list2 if i not in out1]
```

# Set Operations Using Lists

```
list1 = [1, 2, 3, 4, 5, 6, 7, 8, 9, 1, 5, 6, 4, 3, 2, 2, 7, 1]
```

```
list2 = [2, 4, 6, 8, 10, 12, 14, 16, 18, 4, 10, 2, 6]
```

Find the common elements in both lists:

```
out1 = []
```

```
for i in list2:
```

```
    if i in list1 and i not in out1:
```

```
        out1.append(i)
```

Find all the elements in either list:

```
out2 = []
```

```
for i in list1+list2:
```

```
    if i not in out2:
```

```
        out2.append(i)
```

Find all the elements that are in one list but not the other:

```
out3 = []
```

```
for i in list1+list2:
```

```
    if i not in out1 and i not in out2:
```

```
        out3.append(i)
```

# Set Operations Using Sets

```
set1 = set([1, 2, 3, 4, 5, 6, 7, 8, 9, 1, 5, 6, 4, 3, 2, 2, 7, 1])
```

```
set2 = set([2, 4, 6, 8, 10, 12, 14, 16, 18, 4, 10, 2, 6])
```

Find the common elements in both list using **set**

```
set1 & set2
```

Find the all the unique elements in both list using **set**

```
set1 | set2
```

Find all the elements that are not in both lists using **set**

```
set1 ^ set2
```

**Much shorter, clearer, easier to write!**

# Sort

List of score of student:

```
test_list = [('Robert', 8), ('Alice', 9), ('Tina', 7)]
```

Sort the list by name

```
sorted(test_list, key=itemgetter(0) )
```

Sort the list by score

```
sorted(test_list, key=itemgetter(1) )
```

# Sort

List of score of student:

```
test_list = [('Robert', 8), ('Alice', 9), ('Tina', 10), ('James', 8)]
```

Sort the list by score then name

```
sorted(test_list, key=itemgetter(1,0) )
```

Sort the list by name in reverse manner

```
sorted(test_list, key=itemgetter(0), reverse=True )
```

# Sort Exercise

```
test_list =  
[['Robert', 'M', 8], ['Alice', 'F', 9], ['Tina', 'F', 7], ['Tony', 'M', 10],  
['Bob', 'M', 9], ['Keith', 'M', 8]]
```

Sort by score, name then gender from high to low

```
sorted(test_list, key=itemgetter(2,0,1), reverse=True )
```

What if we want the names to go alphabetically?

```
for item in test_list:
```

```
    item[2] = -item[2]
```

```
sorted_list = sorted(test_list, key=itemgetter(2,0,1) )
```

```
for item in sorted_list :
```

```
    item[2] = -item[2]
```

**Questions?**