CPSC 231 - Lab

LISTS

List

List is a collection of values.

List is an Object

How to initialize a list

<list variable name> = [<first value>, <second value>, ...]

students = ["Ethan", "Michael", "Kate"]

list = [1, "Hello", 3.14, False]

grades = ["A"] * 20

How to access elements?

Using index

students = ["Ethan", "Michael", "Kate"]

0 1 2,-1

students[1]

>> "Micheal"

Students[2] = "Sepehr"

["Ethan", "Michael", "Sepehr"]

students[0:1]

>> "Ethan"

How to add an element to a list?

```
students = ["Ethan", "Michael", "Kate"]


student.append("sepehr")
>> ["Ethan", "Michael", "Kate", "Sepehr"]


students.insert(0,"sepehr")
>> ["Sepehr","Ethan", "Michael", "Kate"]
```

How check if item exists

```
students = ["Ethan", "Michael", "Kate"]

 "Sepehr" in students  #False

 "Kate" in students #True
```

How to get list length?

```
students = ["Ethan", "Michael", "Kate", "Michael"]


len(students)
>> 4
students.count("Micheal")
>> 2
```

How to remove an element?

```
students = ["Sepehr","Ethan", "Michael", "Kate", "Sepehr"]


students.remove("Sepehr")
>>  ["Ethan", "Michael", "Kate", "Sepehr"]
```

remove() just removes the first element that is equal to the given parameter

```
del students[1]
 >> ["Sepehr", "Michael", "Kate", "Sepehr"]
```

How to find an element?

students = ["Sepehr","Ethan", "Michael", "Kate", "Sepehr"]

students.find("Sepehr")

>> 1

find() just removes the first element that is equal to the given parameter

How to copy a list?

You cannot copy a list simply by typing list2 = list1, because: list2 will only be a *reference* to list1, and changes made in list1 will automatically also be made in list2.

There are ways to make a copy, one way is to use the built-in List method copy().

```
new_list = old_list.copy()
new_list = list(old_list)
```

• • •

You can sort lists

students = ["Sepehr","Ethan", "Michael", "Kate"]

student.sort()

>> ['Ethan', 'Kate', 'Michael', 'Sepehr']

student.reverse()

>> ['Kate', 'Michael', 'Ethan', 'Sepehr']

2D list

2D list is a list of lists.

```
TicTacToe = [   ["  ",  "    "  ,"O"],
                ["X", "O" , "X"]
                ["O", "    "," "]  ]
```