



INTRODUCTION TO PYTHON

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FEEDBACKS

1. Make sure your directory is correct.

Command “pwd”

2. Pay attention to brackets. Each left bracket has its right bracket.

LISTS

```
fruits = ["apple", "banana", "cherry"]
```

Index???

```
# add an element
```

```
fruits.append("orange")
```

```
# delete an element
```

```
fruits.pop(1)
```

```
fruits.remove("cherry")
```

CLASSES AND METHODS

```
class Fruit:
```

```
    def myFavorite(self, fruit):
```

```
        print("my favorite fruit: " + fruit)
```

```
fruit = Fruit()
```

```
fruit.myFavorite("apple")
```

LOOPS

Python has two primitive loop commands:

while loops

for loops

WHILE LOOPS

```
i = 1  
while i < 6:  
    print(i)  
    i += 1
```

FOR LOOPS

```
fruits = ["apple", "banana", "cherry"]  
for x in fruits:  
    print(x)
```



BUBBLE SORT

Compare each pair of adjacent items and swap them if they are in the wrong order.

BUBBLE SORT

Given a list [6, 4, 3, 7, 2, 5, 1], then sort it.

Zeroth iteration:

[6, 4, 3, 7, 2, 5, 1] → [4, 6, 3, 7, 2, 5, 1]

[4, 6, 3, 7, 2, 5, 1] → [4, 3, 6, 7, 2, 5, 1]

[4, 3, 6, 7, 2, 5, 1] → [4, 3, 6, 7, 2, 5, 1]

[4, 3, 6, 7, 2, 5, 1] → [4, 3, 6, 2, 7, 5, 1]

[4, 3, 6, 2, 7, 5, 1] → [4, 3, 6, 2, 5, 7, 1]

[4, 3, 6, 2, 5, 7, 1] → [4, 3, 6, 2, 5, 1, 7]

BUBBLE SORT

First iteration:

[4, 3, 6, 2, 5, 1, 7] → [3, 4, 6, 2, 5, 1, 7]

[3, 4, 6, 2, 5, 1, 7] → [3, 4, 6, 2, 5, 1, 7]

[3, 4, 6, 2, 5, 1, 7] → [3, 4, 2, 6, 5, 1, 7]

[3, 4, 2, 6, 5, 1, 7] → [3, 4, 2, 5, 6, 1, 7]

[3, 4, 2, 5, 6, 1, 7] → [3, 4, 2, 5, 1, 6, 7]

BUBBLE SORT

Second iteration:

[3, 4, 2, 5, 1, 6, 7] → [3, 4, 2, 5, 1, 6, 7]

[3, 4, 2, 5, 1, 6, 7] → [3, 2, 4, 5, 1, 6, 7]

[3, 2, 4, 5, 1, 6, 7] → [3, 2, 4, 5, 1, 6, 7]

[3, 2, 4, 5, 1, 6, 7] → [3, 2, 4, 1, 5, 6, 7]

BUBBLE SORT

Third iteration:

[3, 2, 4, 1, 5, 6, 7] → [2, 3, 4, 1, 5, 6, 7]

[2, 3, 4, 1, 5, 6, 7] → [2, 3, 4, 1, 5, 6, 7]

[2, 3, 4, 1, 5, 6, 7] → [2, 3, 1, 4, 5, 6, 7]

BUBBLE SORT

Fourth iteration:

[2, 3, 1, 4, 5, 6, 7] → [2, 3, 1, 4, 5, 6, 7]

[2, 3, 1, 4, 5, 6, 7] → [2, 1, 3, 4, 5, 6, 7]

Fifth iteration:

[2, 1, 3, 4, 5, 6, 7] → [1, 2, 3, 4, 5, 6, 7]

Assume the list is A. We compare $A[j]$ and $A[j+1]$ each time. In the i th iteration, the j could be from 0 to $(\text{length of } A - i - 2)$.

$(\text{length of } A - 1) - i - 1$

```
A = [6, 4, 3, 7, 2, 5, 1]
```

```
for i in range(6):
```

```
    for j in range(len(A) - i - 1):
```

```
        if (A[j] > A[j + 1]):
```

```
            temp = A[j]
```

```
            A[j] = A[j + 1]
```

```
            A[j + 1] = temp
```

```
print(A)
```