

Lists I

What is a list?

- Lists are strings on steroids.
- A string stores an ordered sequence of single characters.
- A list stores an ordered sequence of *any* data type.



String "banana" ->

0	1	2	3	4	5
"b"	"a"	"n"	"a"	"n"	"a"

0	1	2
"hello"	"my"	"friend"

<- Lists of strings

0	1	2
"ahoy"	"me"	"matey"

List of ints ->

0	1	2	3	4	5
98	85	90	100	75	88

Strings

```
string_var = "abc123"
```

```
string_var = ""
```

```
len("abc123")
```

```
len(string_var)
```

```
string_var[p]
```

```
string_var[p:q]
```

```
str3 = str1 + str2
```

```
str3 = "abc" + "def"
```

```
"i" in "team" -> False
```

Lists

```
list_var = [item1, item2, ...]
```

```
list_var = [ ]
```

```
len([3, 5, 7, 9])
```

```
len(list_var)
```

```
list_var[p]
```

```
list_var[p:q]
```

```
list3 = list1 + list2
```

```
list3 = [1, 2, 3] + [4, 5, 6]
```

```
7 in [2, 4, 6, 8] -> False
```

One important difference

- Strings are *immutable*
 - You can't change a string without making a copy of it.

```
s = "abc"
```

```
s[0] = "A"           # illegal!
```

```
s = "A" + s[1:]     # legal
```

One important difference

- Lists are *mutable*
 - Can be changed "in-place" (without explicit copying)

```
L = [2, 4, 6, 8, 10]
```

```
L[0] = 15          # legal
```

```
L.append(26)      # legal
```

```
while True:  
    num = int(input("Enter number: "))  
    if num == -1:  
        break  
    print("Your number is", num)
```

```
lst = []
```

```
while True:
```

```
    num = int(input("Enter number: "))
```

```
    if num == -1:
```

```
        break
```

```
    lst.append(num)
```


- Make a text file with some integers in it, one per line.
- Write a program to read all the numbers and store them in a list.
- After all the numbers are read in, use a for loop to print out sums of adjacent pairs of numbers in the list.
 - Hint: You don't need the sliding window technique; instead, use math with list indices.

- Copy the file `pirate-dictionary.txt` from my public folder.
- Edit your pirate translator to read in the words from the dictionary (instead of having the words be literal lists in your code).
- Edit your pirate translator to let the user type in a sentence from the keyboard and it will be translated into Pirate.
 - Challenge: Make the translator work with words in upper or lowercase.
 - Challenge: Translate Pirate to English.