AIBridge

Lecture 2

Lecture Outline

I/O

List Manipulation

I/O
Standard Input

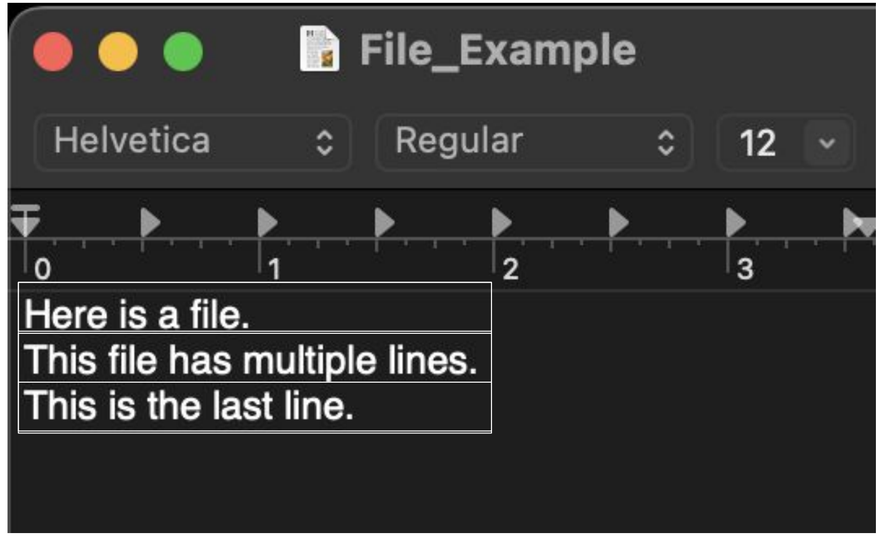
Input from console: `input('prompt')`

Open file: `file_object=open(file, mode)`

`'r'` is read and `'w'` is write for the mode

`read(), readline(), readlines()`

Always close file: `file_object.close()`




```
"""Here is a file.
This file has multiple lines.
This is the last line."""
```

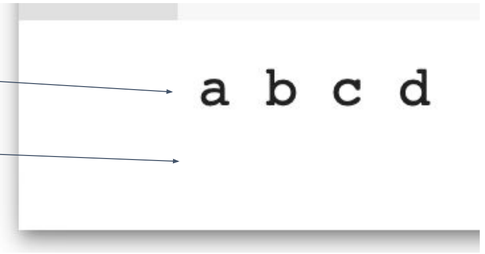
```
"Here is a file."
"This file has multiple lines."
"This is the last line."
```

```
["Here is a file.",
"This file has multiple lines.",
"This is the last line."]
```

I/O
Standard Output

Output to Console: `print(object1, object2, ...)`

```
print('a', 'b', 'c', 'd')
print('e', 'f', 'g')
```



Open file: `file_object=open(file, mode)`

`write()`

Always close file

Note: This removes any existing file with that name

Lecture Outline

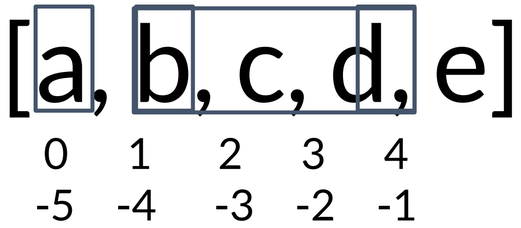
I/O

List Manipulation

List Manipulation

Indexing
List Operations
Listcomp
String/list Interop
Multidimensional Lists

List Manipulation
Indexing



Single indexing

```
list_name[0]
list_name[-2]
```

List slicing

```
list_name[1:4]
```

List Manipulation

Indexing
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List Manipulation
Indexing

```
my_list = [4, 5, 6, 101, 102, 103, 104, 105]

new_list = my_list[2:6]
print(new_list)
```

Self-Test

What does the following code output?

A. [5, 6, 101, 102, 103, 104, 105]

B. [6, 101, 102, 103, 104, 105]

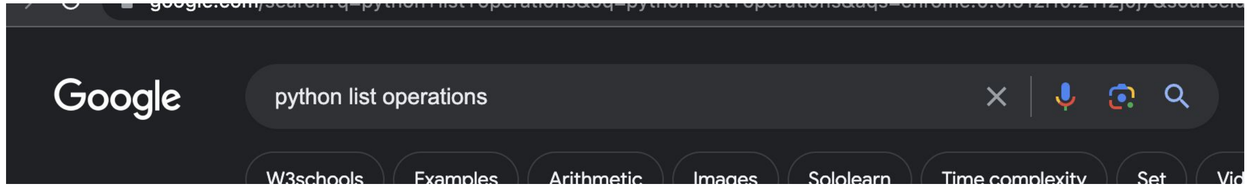
C. [6, 101, 102, 103, 104]

D. [6, 101, 102, 103]

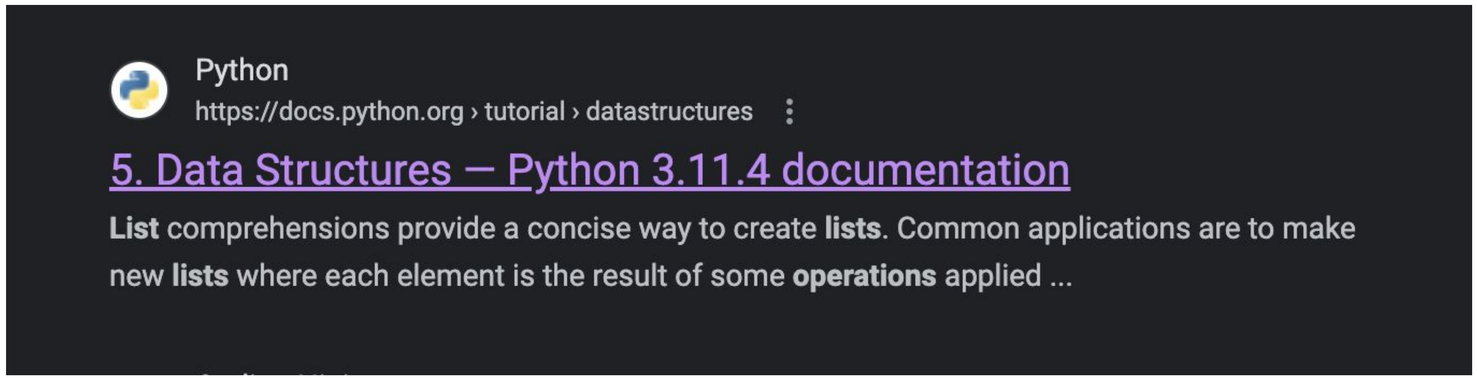
List Manipulation
List Operations

https://docs.python.org/3/tutorial/datastructures.html

1



2



List Manipulation
List Operations

```
my_list = [3, 14, 0, -2, 5]
```

List Manipulation
List Operations
append()

```
[3, 14, 0, -2, 5]
```

```
my_list.append(19)
```

List Manipulation
List Operations
append()

```
[3, 14, 0, -2, 5, 19]
```

```
my_list.append(19)
my_list.append(8)
```

List Manipulation
List Operations
append()

```
[3, 14, 0, -2, 5, 19, 8]
```

```
my_list.append(19)
my_list.append(8)
```

List Manipulation
List Operations
remove()


```
my_list.remove(-2)
```

List Manipulation
List Operations
remove()


```
my_list.remove(-2)
my_list.remove(19)
```

List Manipulation
List Operations
remove()

```
[3, 14, 0, 5, 8]
```

```
my_list.remove(-2)
my_list.remove(19)
```

List Manipulation
List Operations
insert()

```
[3, 14, 0, 5, 8]
```

```
my_list.insert(3, 14)
```

List Manipulation
List Operations
insert()

```
[3, 14, 0, 14, 5, 8]
```

```
my_list.insert(3, 14)
my_list.insert(3, 1)
```

List Manipulation
List Operations
insert()

```
[3, 14, 0, 1, 14, 5, 8]
```

```
my_list.insert(3, 14)
my_list.insert(3, 1)
```

List Manipulation
List Operations
pop()

```
[3, 14, 0, 1, 14, 5, 8]
```

```
my_list.pop(3)
```

List Manipulation
List Operations
pop()

```
[3, 14, 0, 14, 5, 8]
```

```
my_list.pop(3) → 1
my_list.pop(3)
```

List Manipulation
List Operations
pop()

```
[3, 14, 0, 5, 8]
```

```
my_list.pop(3) → 1
my_list.pop(3) → 14
```

List Manipulation
List Operations
+

```
[3, 14, 0, 5, 8]
```

```
my_list_2 = [10, 9, 8, 7]
my_list = my_list + my_list_2
```

List Manipulation
List Operations
+

```
[3, 14, 0, 5, 8, 10, 9, 8, 7]
```

```
my_list_2 = [10, 9, 8, 7]
my_list = my_list + my_list_2
```

List Manipulation
List Operations
sort()

```
[3, 14, 0, 5, 8, 10, 9, 8, 7]
```

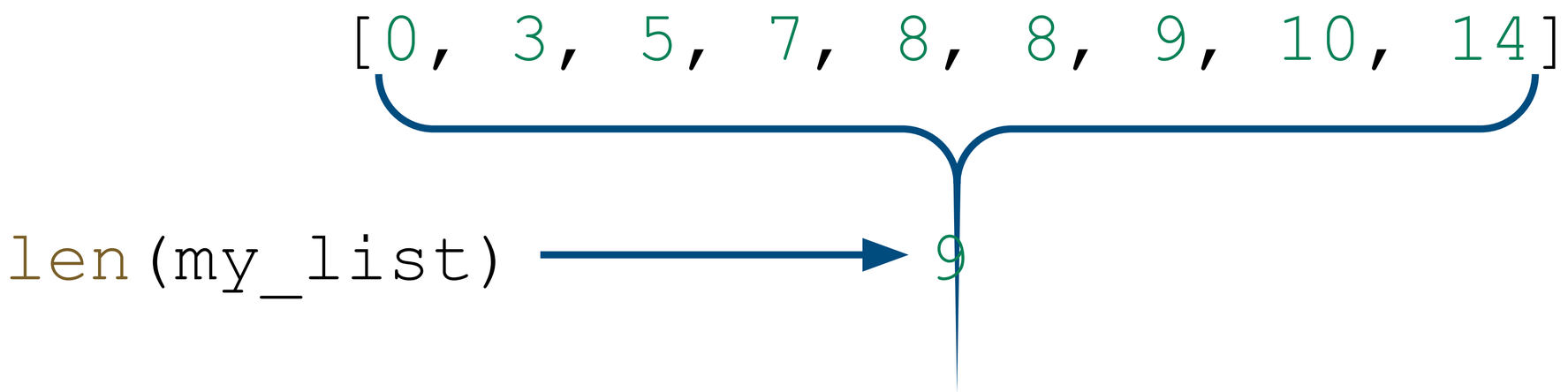
```
my_list.sort()
```

List Manipulation
List Operations
sort()

```
[0, 3, 5, 7, 8, 8, 9, 10, 14]
```

```
my_list.sort()
```

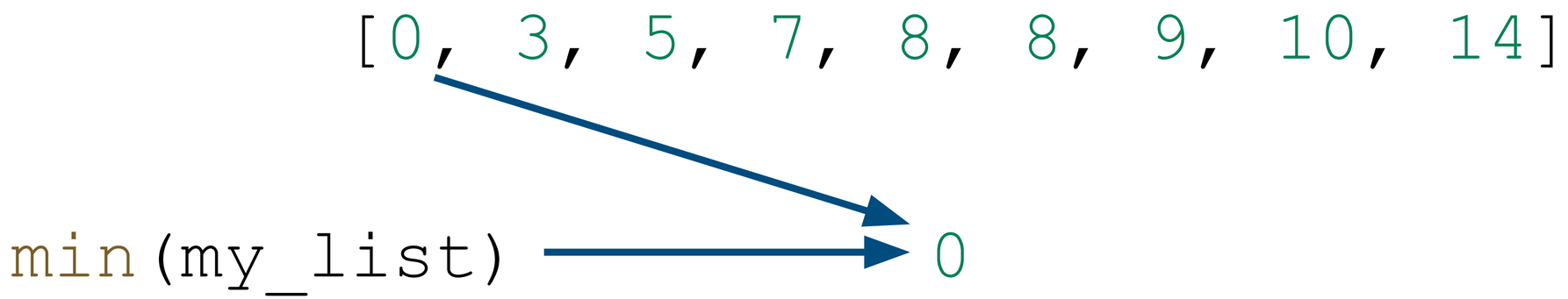
List Manipulation
List Operations
len()



List Manipulation
List Operations
max()

```
[0, 3, 5, 7, 8, 8, 9, 10, 14]
```

List Manipulation
List Operations
min()



List Manipulation

Indexing
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String/list Interop
Multidimensional Lists

List Manipulation
Listcomp

```
new_list = [(i+1)/2 for i in range(7)]
```

```
[0,    1,    2,    3,    4,    5,    6]
```


```
[0.5,  1.0,  1.5,  2.0,  2.5,  3.0,  3.5]
```

List Manipulation
Listcomp

Shorthand for “for” loops

```
new_list = [expression for object in iteration]
```

```
[obj1, obj2, obj3, obj4, obj5, obj6, obj7 ...]
```


```
[new1, new2, new3, new4, new5, new6, new7 ...]
```

List Manipulation

Indexing
List Operations
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String/list Interop
Multidimensional Lists

List Manipulation
String/list Interop
join()

List of strings

```
my_list = [str1, str2, str3]

separator.join(my_list)
```

List Manipulation
String/list Interop
join()

List of strings

```
my_list = [str1, str2, str3]

separator.join(my_list)
```

Final String

```
str1 separator str2 separator str3
```

List Manipulation
String/list Interop
join()

```
my_list = ["Hello,", "my", "name", "is", "Bob!"]

' '.join(my_list)
```

List Manipulation
String/list Interop
join()

```
my_list = ["Hello,", "my", "name", "is", "Bob!"]

' '.join(my_list)
```

"Hello," "my" "name" "is" "Bob!"

List Manipulation

Indexing
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List Manipulation
Multidimensional Lists

A list inside a list [inside a list inside …]

That was a lot!

Let’s get to the lab!

List Manipulation
Multidimensional Lists

A list inside a list [inside a list inside ...]

```
my_list[0]

my_list[0][0]
```