cs106r.com

Class Information

Schools:
Curitiba, BR
Colegio SESC São Jose
Colegio Bom Jesus Centro
Colegio Bom Jesus Lourdes

Dates:
7 Weeks
July 30 to September 14

Teachers:
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About:
CS106R is a pioneer, introductory computer science course designed for high-schoolers with no prior computer science experience. Students will learn much of the same material as Stanford's Introductory computer science class, *CS106A*. However, we have tailored the notes, exercises and projects for those who speak English as a second language.

Week 5
Complex Objects

Notes

Complex Objects

Exercises

Caixa Eletrônico

Projects

Connect4

This week we will learn how to use objects made of objects.

Important links:
- Attendance (Week 5)
- The Python Standard Library

Learning Objectives
1.) Member Functions
2.) Attributes

Slides

Week 6

CS106R

Sabri **Eyuboglu** & Geoffrey **Angus**

Last week on **CS**106R…

Last week:

Complex Objects

Objects

`BankAccount` class

Complex Objects

name

"Geoff"

string

balance

0

int

BankAccount

account_1 = BankAccount("Geoff")

This week on **CS**106R...

This week:

Object Functions

Objects

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Object Functions
Use and modify attributes

```
bot = Bot("Geoff")

bot . go_to_store()

bot . buy_guarana()
```

Revisiting the `Bot` class

Complex Objects

CS106R

`geoff_bot` = `Bot("GeoffBot")`

Code

```
bot = Bot("Geoff")
```

bot

Attributes

name

"Geoff"

string

age

0

int

charge

100

float

guaranas

0

int

Bot

Code

bot = Bot("Geoff")

bot

bot

Attributes

name

"Geoff"

string

age

0

int

charge

100

float

guaranas

0

int

Functions

go_to_store()

has_guarana()

buy_guarana()

buy_guaranas(num)

Bot

Code

```
bot = Bot("Geoff")

bot .
```

bot

Attributes

name

"Geoff"

string

age

0

int

charge

100

float

guaranas

0

int

Functions

go_to_store()

has_guarana()

buy_guarana()

buy_guaranas(num)

Bot

Code

```
bot = Bot("Geoff")
bot . go_to_store()
```

bot

Attributes

name

"Geoff"

string

age

0

int

charge

100

float

guaranas

0

int

Functions

```
go_to_store()
```

```
has_guarana()
```

```
buy_guarana()
```

```
buy_guaranas(num)
```

Bot

Code

```
bot = Bot("Geoff")

bot . go_to_store()
```

bot

Attributes

name

"Geoff"

string

age

0

int

charge

90

float

guaranas

0

int

Functions

go_to_store()

has_guarana()

buy_guarana()

buy_guaranas(num)

Bot

Code

```
bot = Bot("Geoff")

bot . go_to_store()

if bot .
```

bot

Bot

Attributes

name

"Geoff"
string

age

0
int

charge

90
float

guaranas

0
int

Functions

go_to_store()

has_guarana()

buy_guarana()

buy_guaranas(num)

Code

```
bot = Bot("Geoff")

bot . go_to_store()

if bot . has_guarana() :
```

bot

Attributes

name

"Geoff"

string

age

0

int

charge

90

float

guaranas

0

int

Functions

go_to_store()

has_guarana()

buy_guarana()

buy_guaranas(num)

Bot

Code

```
bot = Bot("Geoff")

bot . go_to_store()

if bot . has_guarana() :
    bot .
```

bot

Attributes

name

"Geoff"

string

age

0

int

charge

90

float

guaranas

0

int

Functions

go_to_store()

has_guarana()

buy_guarana()

buy_guaranas(num)

Bot

Object Functions
Use and modify attributes

```
bot = Bot("Geoff")

bot . go_to_store()

bot . buy_guarana()
```

Next:

Collection Classes
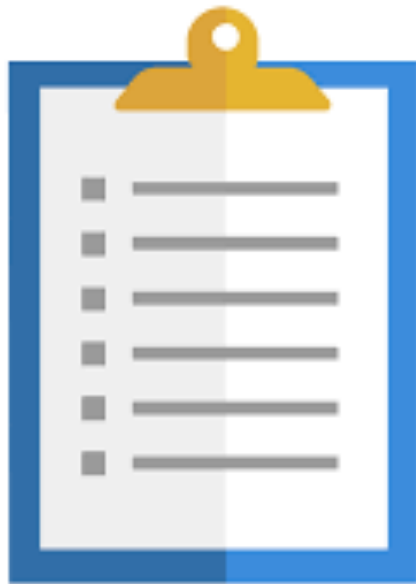
List

Dict
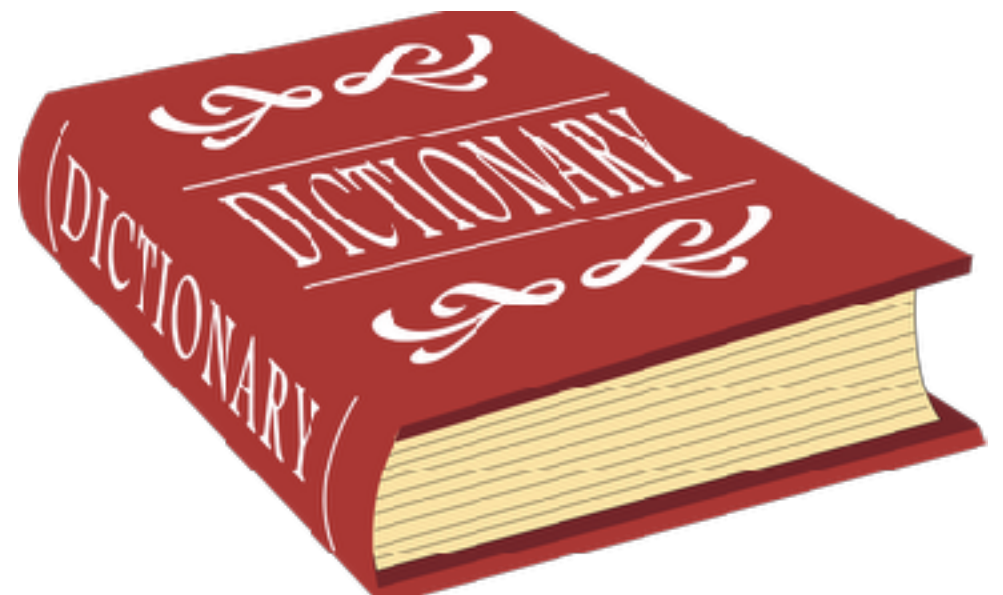
List

Dict
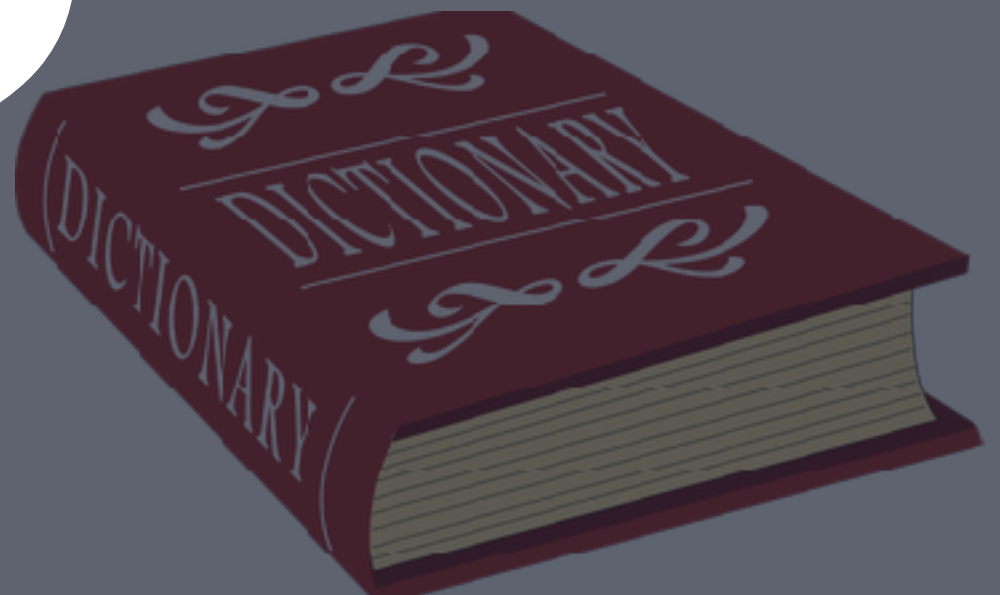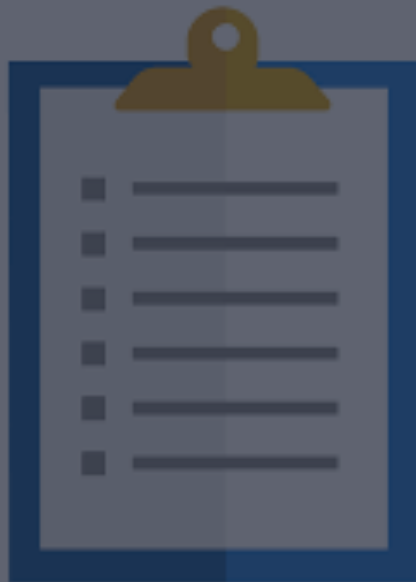
?

List

Code

```
shopping_list = List()
```

shopping_list

Attributes

length

0

int

items

Index	Items

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

shopping_list = List()

shopping_list

shopping_list

Attributes

length

0

int

items

Index	Items

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()
shopping_list .
```

shopping_list

Attributes

length

0

int

items

Index	Items

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()
shopping_list . add(obj)
```

shopping_list

Attributes

length

0

int

items

Index	Items

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()
shopping_list . add("Guarana")
```
"Guarana" string

shopping_list

Attributes

length

0

int

items

Index	Items

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()

shopping_list . add("Guarana")
```
"Guarana" *string*

shopping_list

Attributes

length

1
int

items

Index	Items
0	"Guarana" *string*

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

`shopping_list` `=` `List()`

`shopping_list` . `add(` "Guarana" `)`
string

`shopping_list` .

Attributes

length

1
int

items

Index	Items
0	"Guarana" string

list

Functions

`add(obj)`

`get(index)`

`delete(index)`

Bot

List

Code

```
shopping_list = List()
shopping_list . add("Guarana" )
                         string
shopping_list . add(obj)
```

Attributes

length

1

int

items

Index	Items
0	"Guarana" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

Collection Classes

List

Code

```
shopping_list = List()
shopping_list . add( "Guarana" string )
shopping_list . add( "Bread" string )
```

shopping_list

Attributes

length

1
int

items

Index	Items
0	"Guarana" string

list

Functions

`add(obj)`

`get(index)`

`delete(index)`

Bot

List

Code

```
shopping_list = List()
shopping_list . add( "Guarana" )
                      string
shopping_list . add( "Bread" )
                      string
```

Attributes

length

2

int

items

Index	Items
0	"Guarana" string
1	"Bread" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

shopping_list = List()

shopping_list . add("Guarana" string)

shopping_list . add("Bread" string)

shopping_list . add("Pasta" string)

shopping_list . add("Paçoca" string)

shopping_list

Attributes

length

2

int

items

Index	Items
0	"Guarana" string
1	"Bread" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()
shopping_list . add( "Guarana" )
                        string
shopping_list . add( "Bread" )
                        string
shopping_list . add( "Pasta" )
                        string
shopping_list . add( "Paçoca" )
                        string
```

shopping_list

Attributes

length

4

int

items

Index	Items
0	"Guarana" string
1	"Bread" string
2	"Pasta" string
3	"Paçoca" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

Collection Classes

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List

Code

```
shopping_list = List()

shopping_list . add( "Guarana" string )

shopping_list . add( "Bread" string )

shopping_list . add( "Pasta" string )

shopping_list . add( "Paçoca" string )

fav = shopping_list . get(2)
```

shopping_list

Attributes

length

4

int

items

Index	Items
0	"Guarana" string
1	"Bread" string
2	"Pasta" string
3	"Paçoca" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()

shopping_list.add("Guarana" string)

shopping_list.add("Bread" string)

shopping_list.add("Pasta" string)

shopping_list.add("Paçoca" string)

fav = shopping_list.get(2)

print(fav)
```

shopping_list

Attributes

length

4

int

items

Index	Items
0	"Guarana" string
1	"Bread" string
2	"Pasta" string
3	"Paçoca" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()

shopping_list.add("Guarana")
                       string

shopping_list.add("Bread")
                     string

shopping_list.add("Pasta")
                     string

shopping_list.add("Paçoca")
                      string

fav = shopping_list.get(2)

print(fav)
```

Pasta

shopping_list

Attributes

length

4

int

items

Index	Items
0	"Guarana" string
1	"Bread" string
2	"Pasta" string
3	"Paçoca" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()

shopping_list . add( "Guarana" string )

shopping_list . add( "Bread" string )

shopping_list . add( "Pasta" string )

shopping_list . add( "Paçoca" string )

for food in shopping_list :
```

shopping_list

Attributes

length

4

int

items

Index	Items
0	"Guarana" string
1	"Bread" string
2	"Pasta" string
3	"Paçoca" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

Code

```
shopping_list = List()

shopping_list.add("Guarana")
                       string

shopping_list.add("Bread")
                      string

shopping_list.add("Pasta")
                      string

shopping_list.add("Paçoca")
                      string

for food in shopping_list:
    print(food)
```

shopping_list

Attributes

length

4

int

items

Index	Items
0	"Guarana" string
1	"Bread" string
2	"Pasta" string
3	"Paçoca" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

List

shopping_list

Code

```
shopping_list = List()

shopping_list . add("Guarana" string)

shopping_list . add("Bread" string)

shopping_list . add("Pasta" string)

shopping_list . add("Paçoca" string)

for food in shopping_list:
    print(food)
```

```
Guarana
Bread
Pasta
Paçoca
```

Attributes

length

4
int

items

Index	Items
0	"Guarana" string
1	"Bread" string
2	"Pasta" string
3	"Paçoca" string

list

Functions

add(obj)

get(index)

delete(index)

Bot

Dict

birthdays

Code

```
birthdays = Dict()
```

Attributes

length

0

int

items

Key	Value

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays . add( "Geoff" ,22 )
                  string   int
```

Attributes

length

0
int

items

Key	Value

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays . add( "Geoff" , 22 )
                   string    int
```

Attributes

length

1
int

items

Key	Value
"Geoff" string	22 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays . add( "Geoff" ,22 )
                  string    int

birthdays . add( "Sabri" ,22 )
                  string    int
```

birthdays

Attributes

length

1
int

items

Key	Value
"Geoff" string	22 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays . add( "Geoff" , 22 )
                   string    int

birthdays . add( "Sabri" , 22 )
                   string    int
```

birthdays

Attributes

length

2

int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays . add( "Geoff" string , 22 int )

birthdays . add( "Sabri" string , 22 int )

birthdays . add( "Drake" string , 31 int )
```

birthdays

Attributes

length

2
int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()
birthdays . add( "Geoff" ,22 )
                  string    int
birthdays . add( "Sabri" ,22 )
                  string    int
birthdays . add( "Drake" ,31 )
                  string    int
```

birthdays

Attributes

length

3
int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int
"Drake" string	31 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays . add( "Geoff" , 22 )
                 string    int

birthdays . add( "Sabri" , 22 )
                 string    int

birthdays . add( "Drake" , 31 )
                 string    int

print(birthdays.get( "Drake" ))
                     string
```

Attributes

length

3

int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int
"Drake" string	31 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays.add("Geoff", 22)
                string  int

birthdays.add("Sabri", 22)
                string  int

birthdays.add("Drake", 31)
                string  int

print(31)
       int
```

Attributes

length

3
int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int
"Drake" string	31 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays . add( "Geoff" ,22 )
                  string    int

birthdays . add( "Sabri" ,22 )
                  string    int

birthdays . add( "Drake" ,31 )
                  string    int

print(birthdays.get( "Drake" ))
                       string
```

Attributes

length

3

int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int
"Drake" string	31 int

dict

Functions

`add(key, value)`

`get(key)`

`delete(key)`

Dict

Dict

Code

```
birthdays = Dict()

birthdays.add("Geoff", 22)
           string    int

birthdays.add("Sabri", 22)
           string    int

birthdays.add("Drake", 31)
           string    int

print(birthdays.get("Drake"))
                    string

birthdays.delete("Drake")
                 string
```

birthdays

Attributes

length

3

int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int
"Drake" string	31 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict

Dict

Code

```
birthdays = Dict()

birthdays.add("Geoff", 22)
                string  int

birthdays.add("Sabri", 22)
                string  int

birthdays.add("Drake", 31)
                string  int

print(birthdays.get("Drake"))
                      string

birthdays.delete("Drake")
                   string
```

birthdays

Attributes

length

2
int

items

Key	Value
"Geoff" string	22 int
"Sabri" string	22 int

dict

Functions

add(key, value)

get(key)

delete(key)

Dict