PYTHON- BASICS

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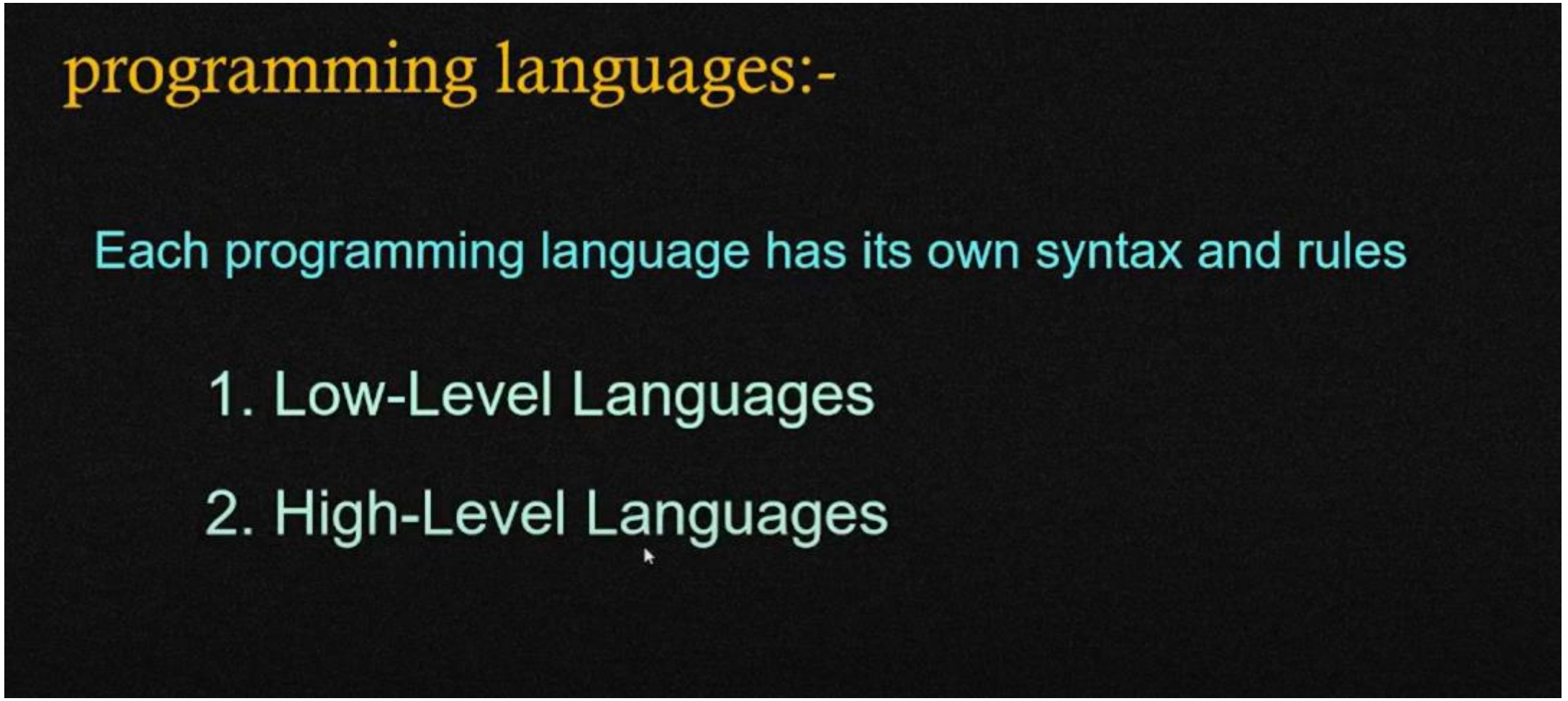
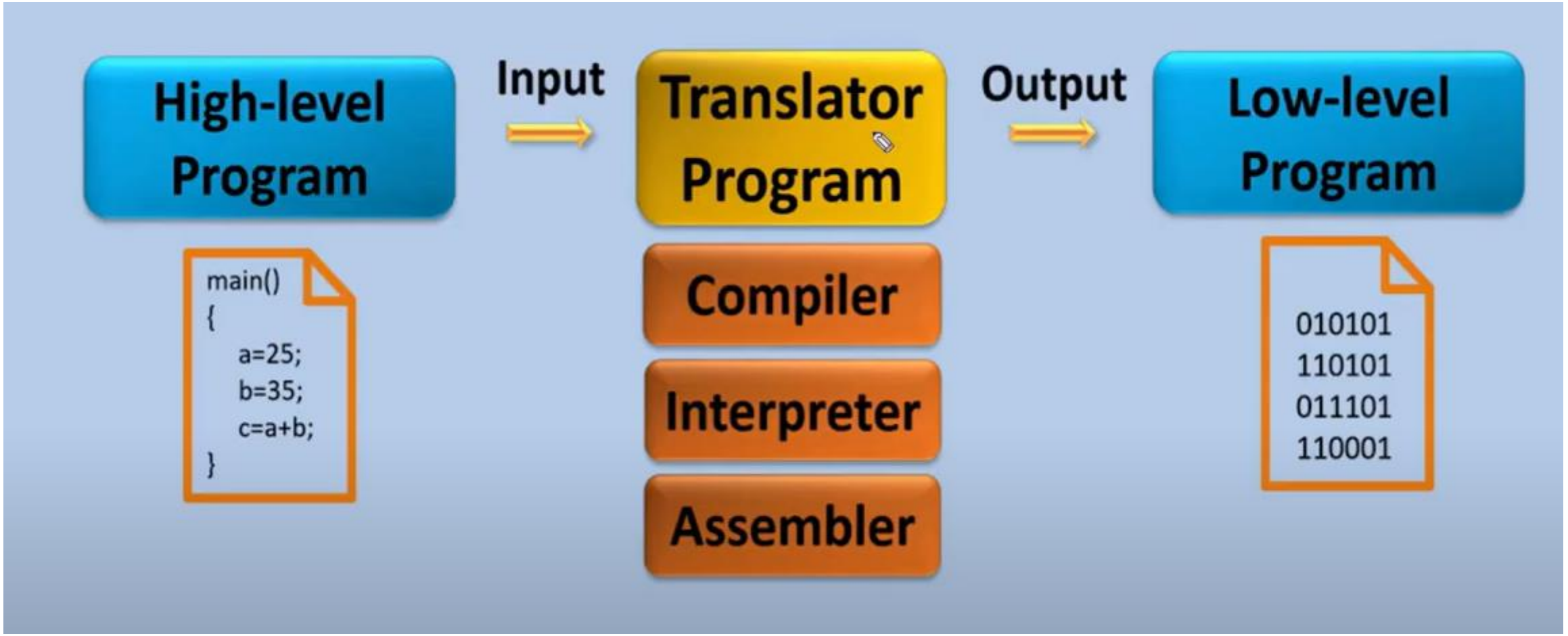
Python-Basics



Python-Basics



Python-Basics

What is Python?

Python is a high level programming language like C,C++

Python is a simple, high level, interpreted, general purpose, dynamically typed and object oriented programming language created by Guido Van Rossum in 1991.

Python-Basics

Python-Basics

Hello World

Java:

```
// Hello World in Java
class HelloWorld {
    static public void main(String args[]) {
        System.out.println("Hello World!");
}   }
```

C++:

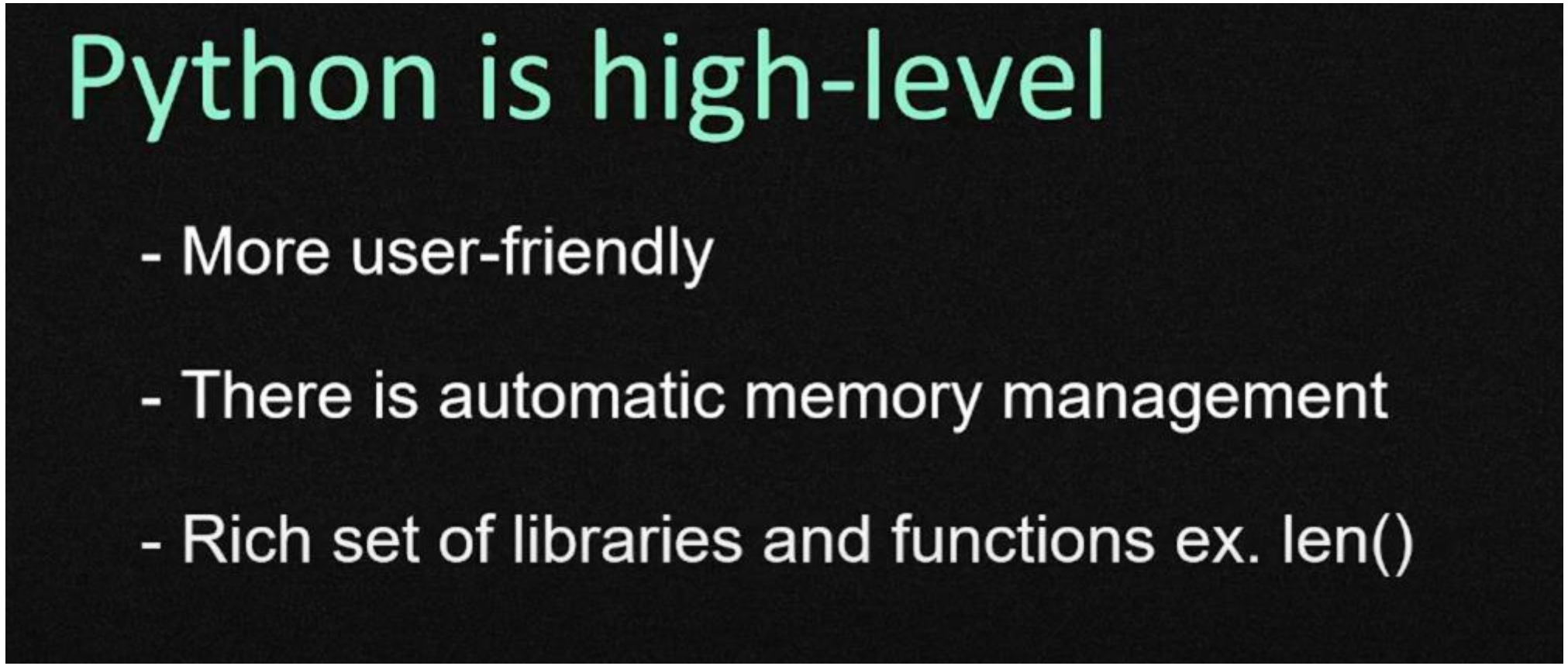
```
// Hello World in C++
#include <iostream.h>
Main() {
    cout << "Hello World!" << endl;
    return 0;
}
```

Python:

```
# Hello World in Python
print("Hello World!")
```

Python combines remarkable power with very clean, simple, and compact syntax.

Python-Basics



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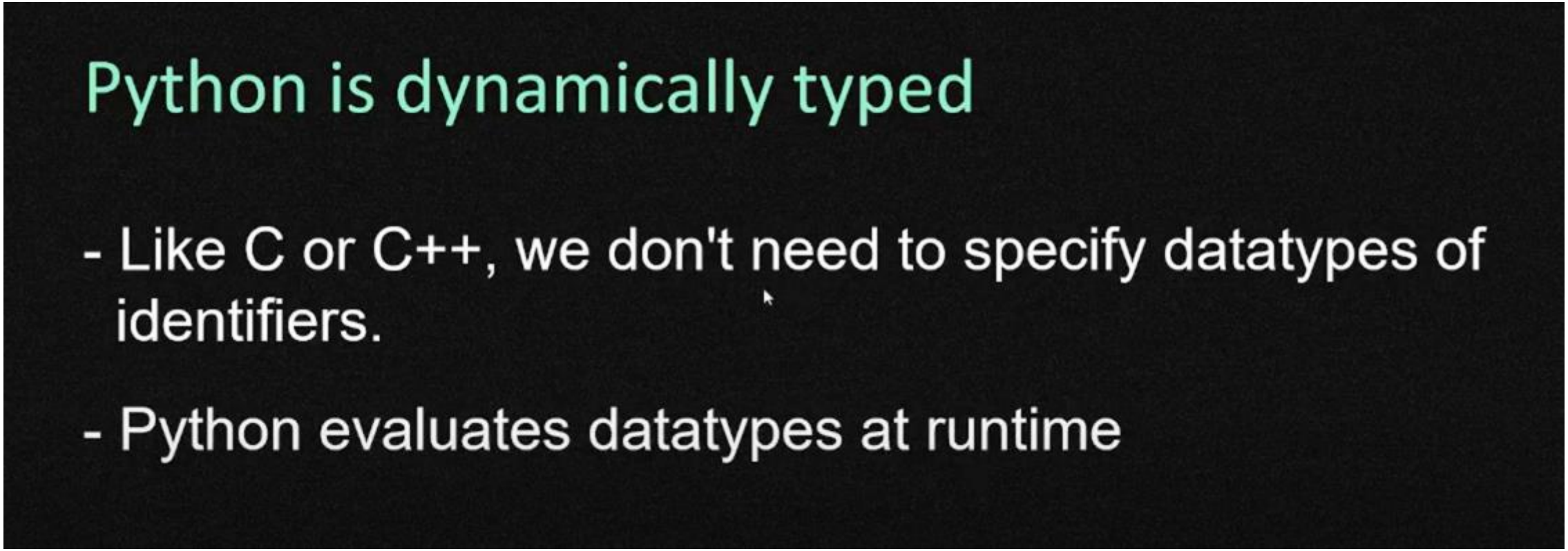

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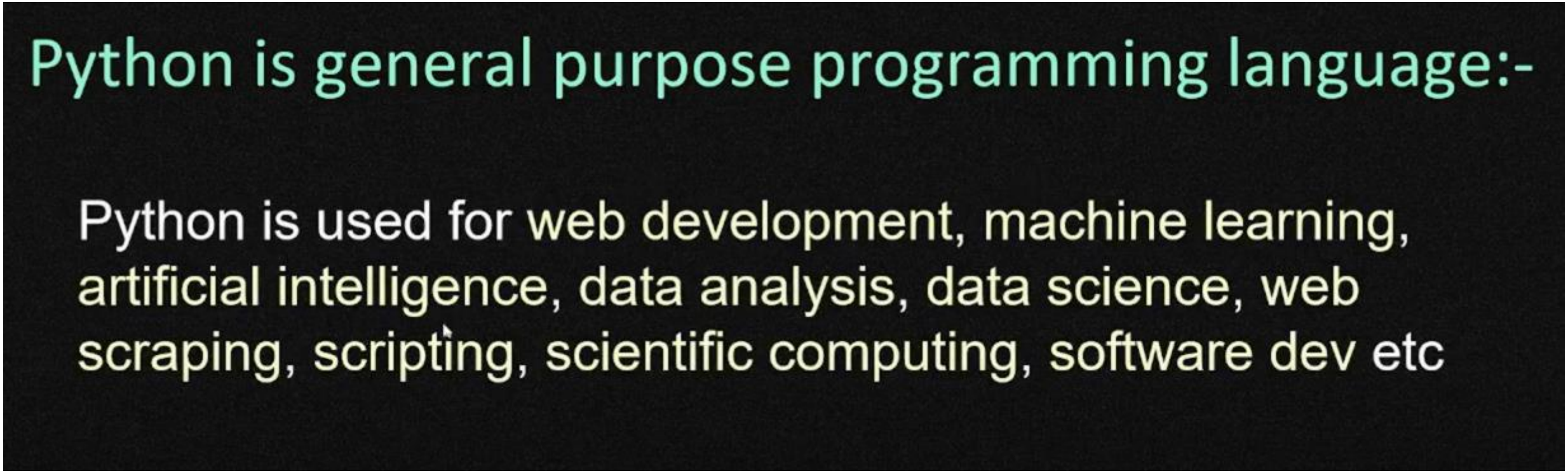

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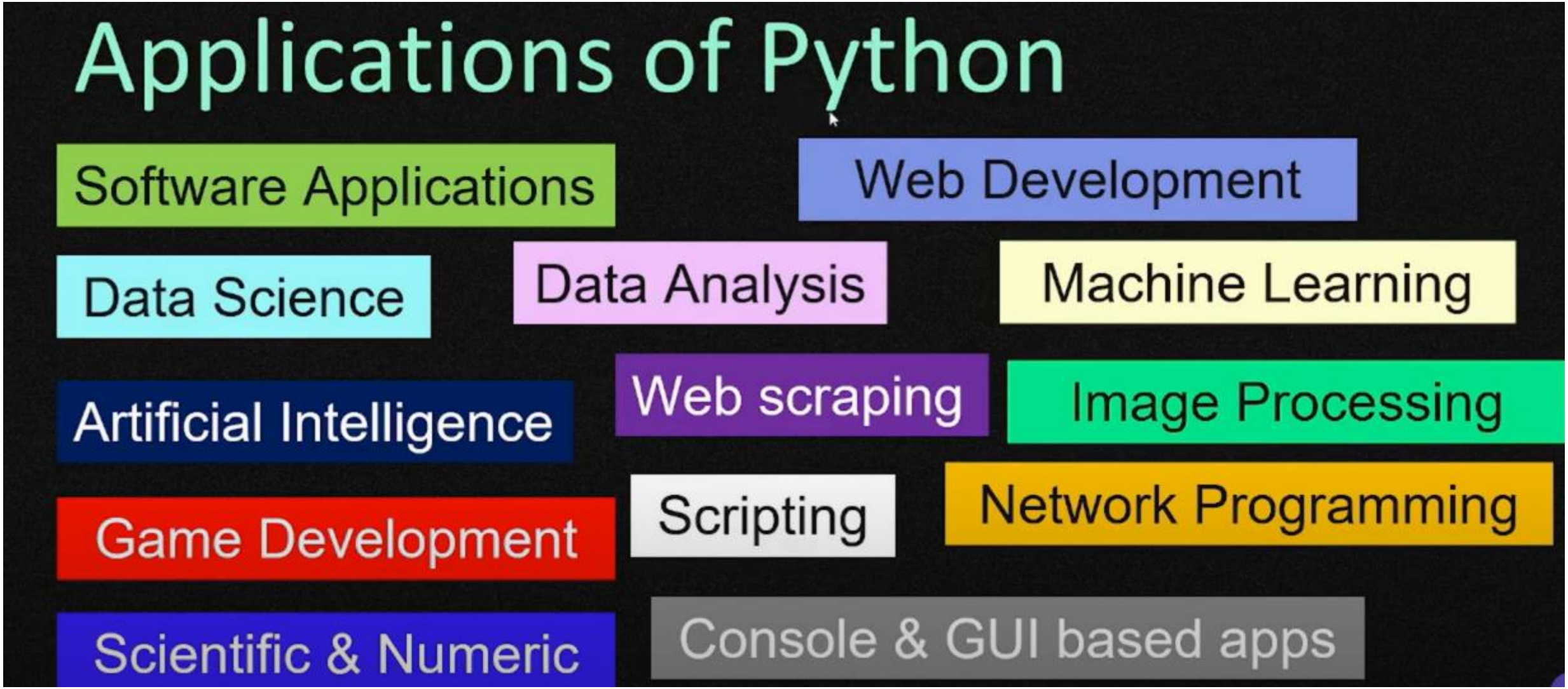
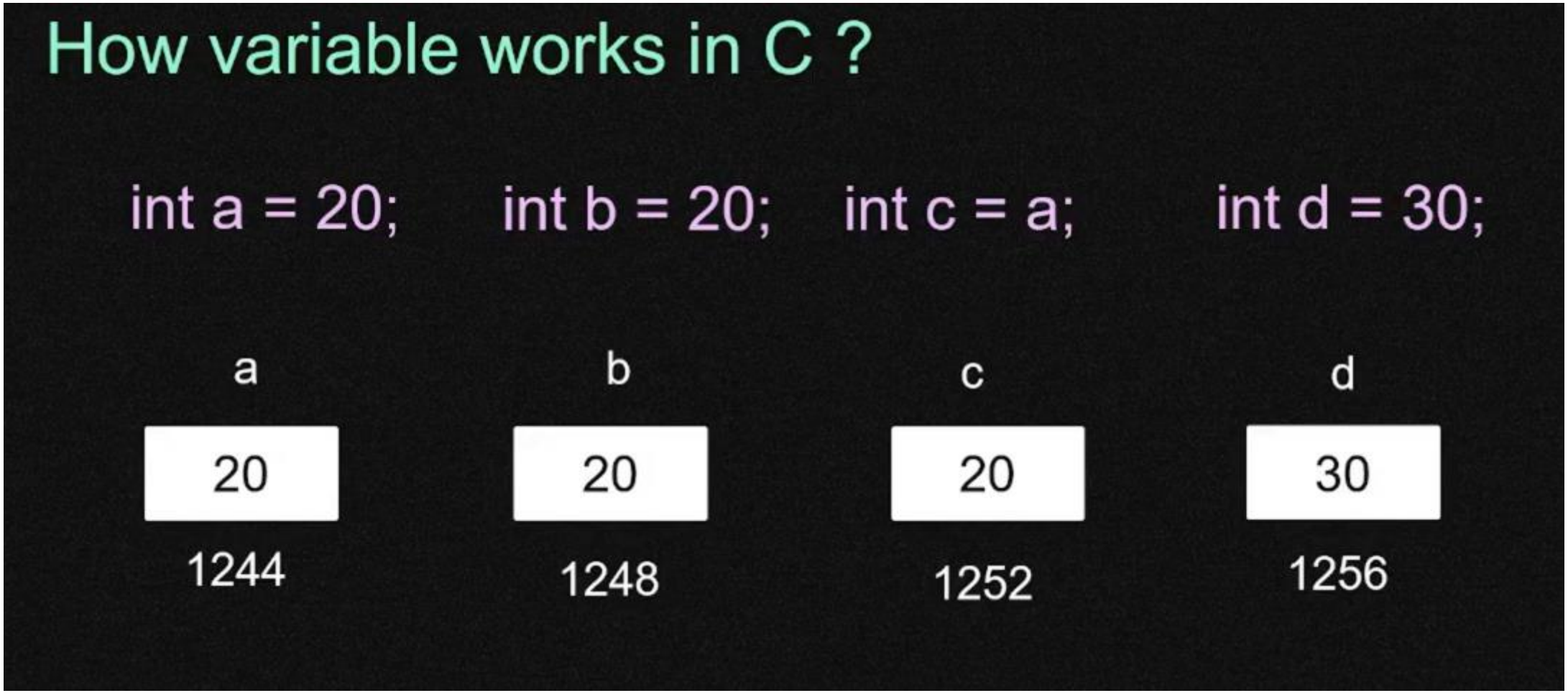


Python-Basics

Python-Basics

- What are variables and need of variables ?
- How to create variables & working of variables ?
- Rules for creating variables (Naming conventions)
- do’s & dont’s
- Keywords in python



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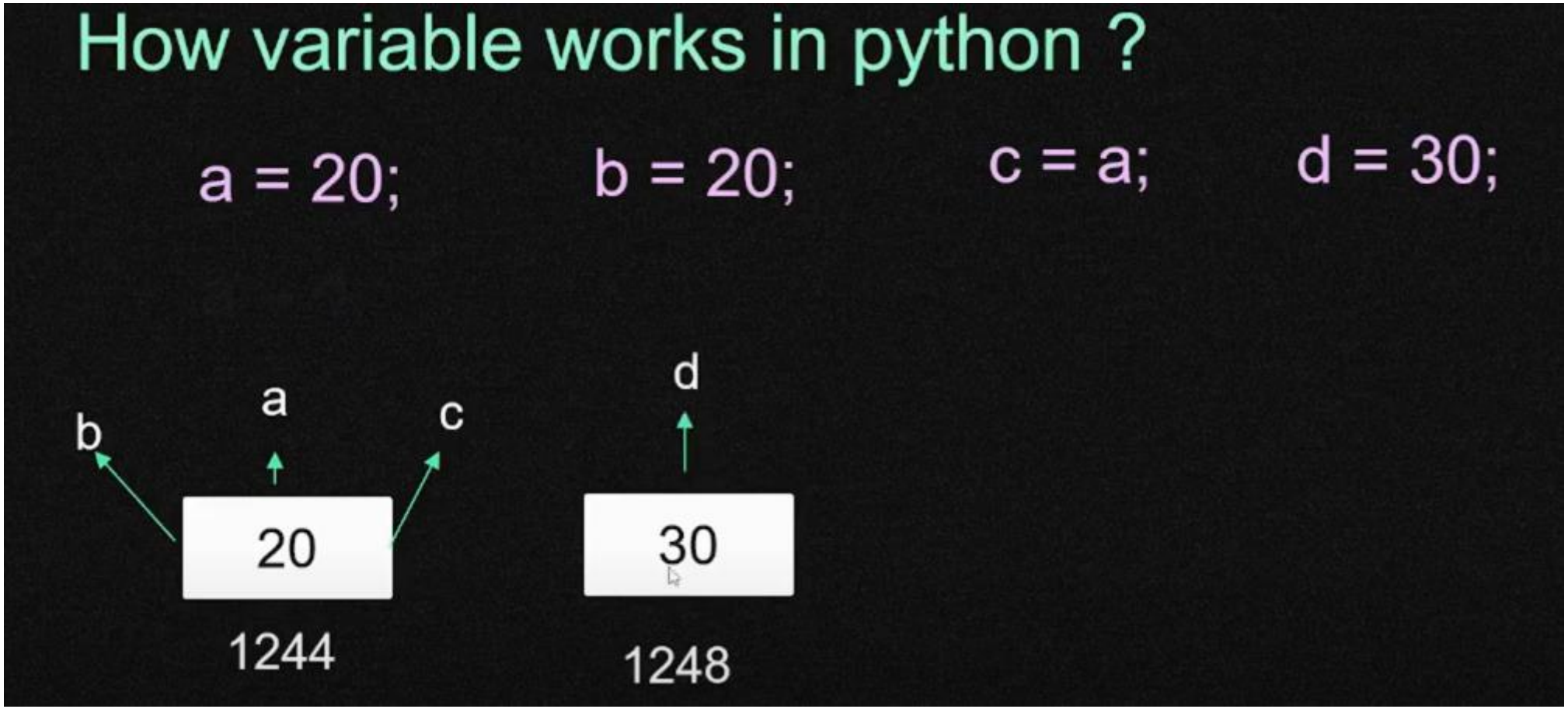

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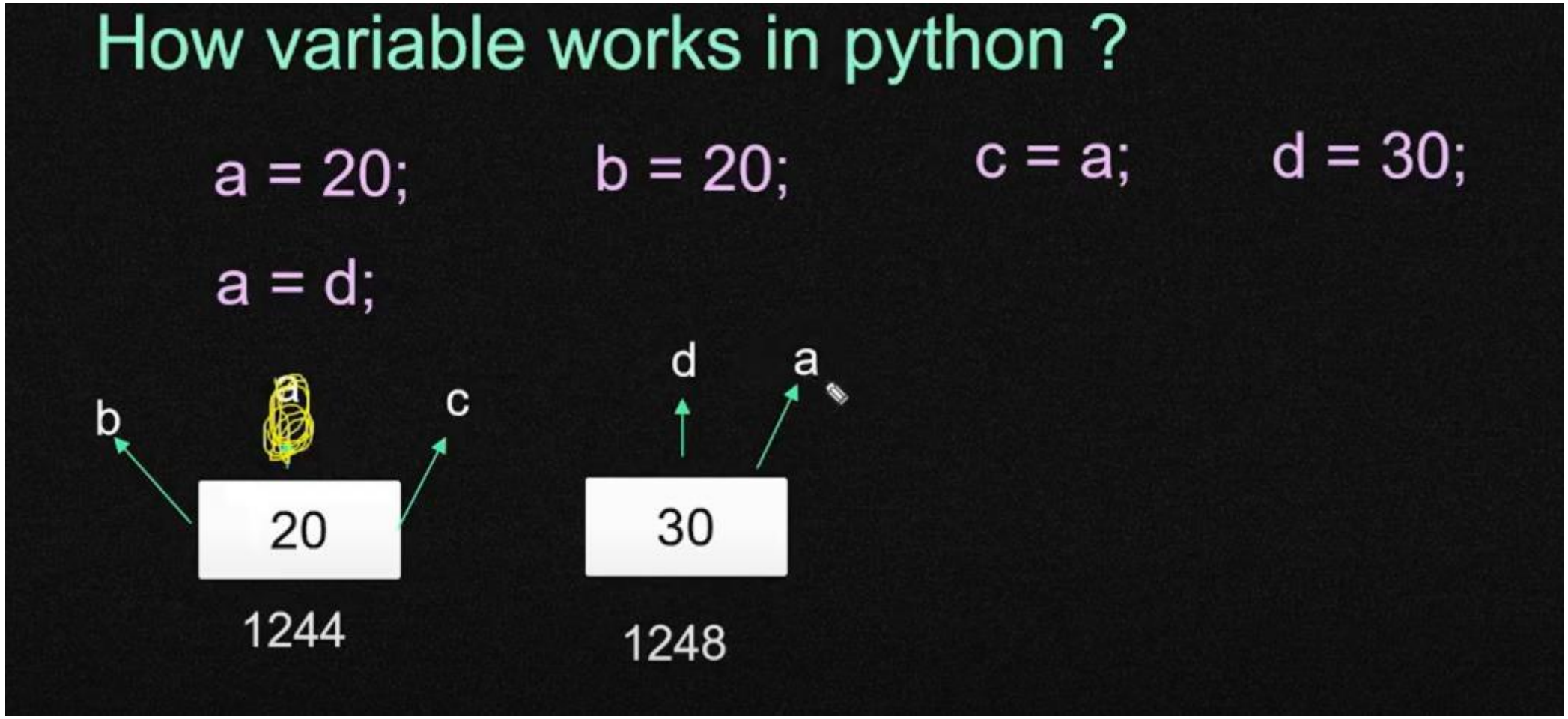

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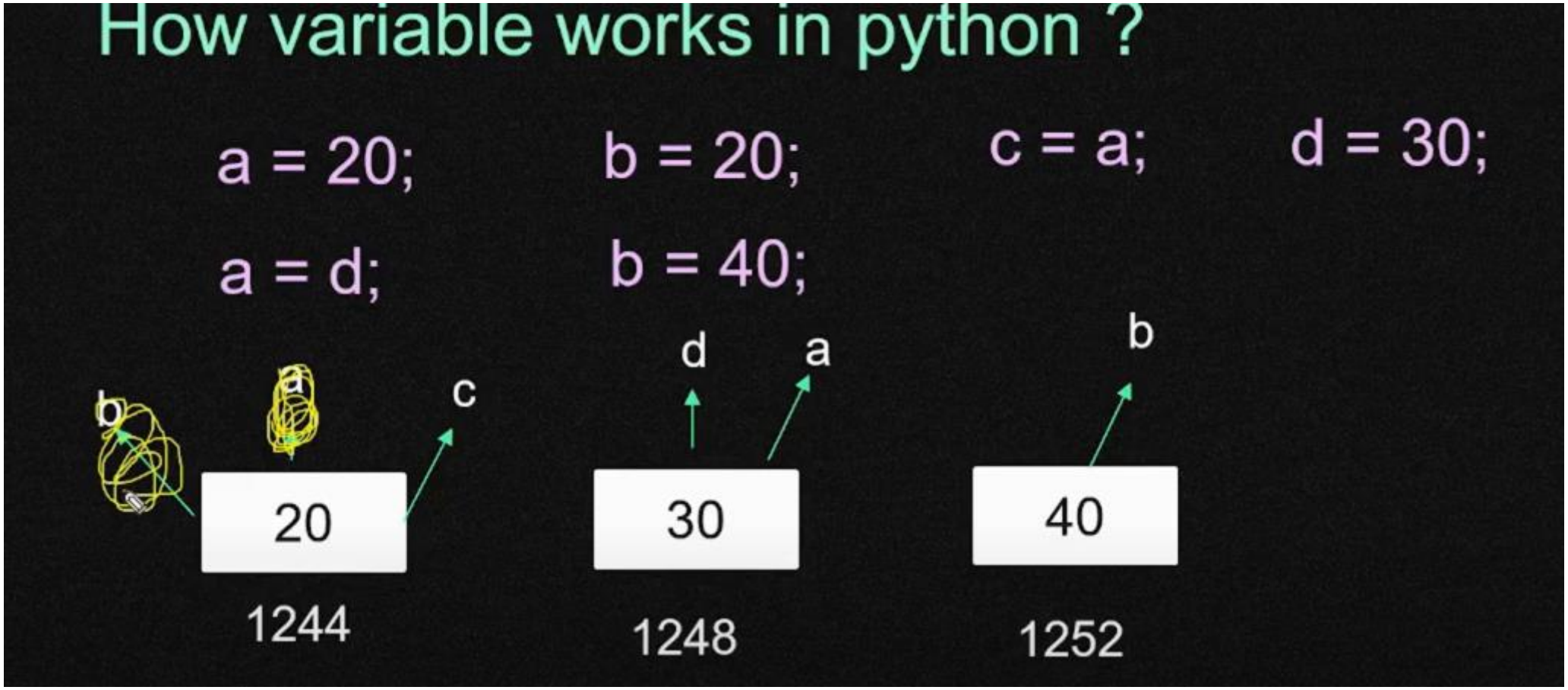

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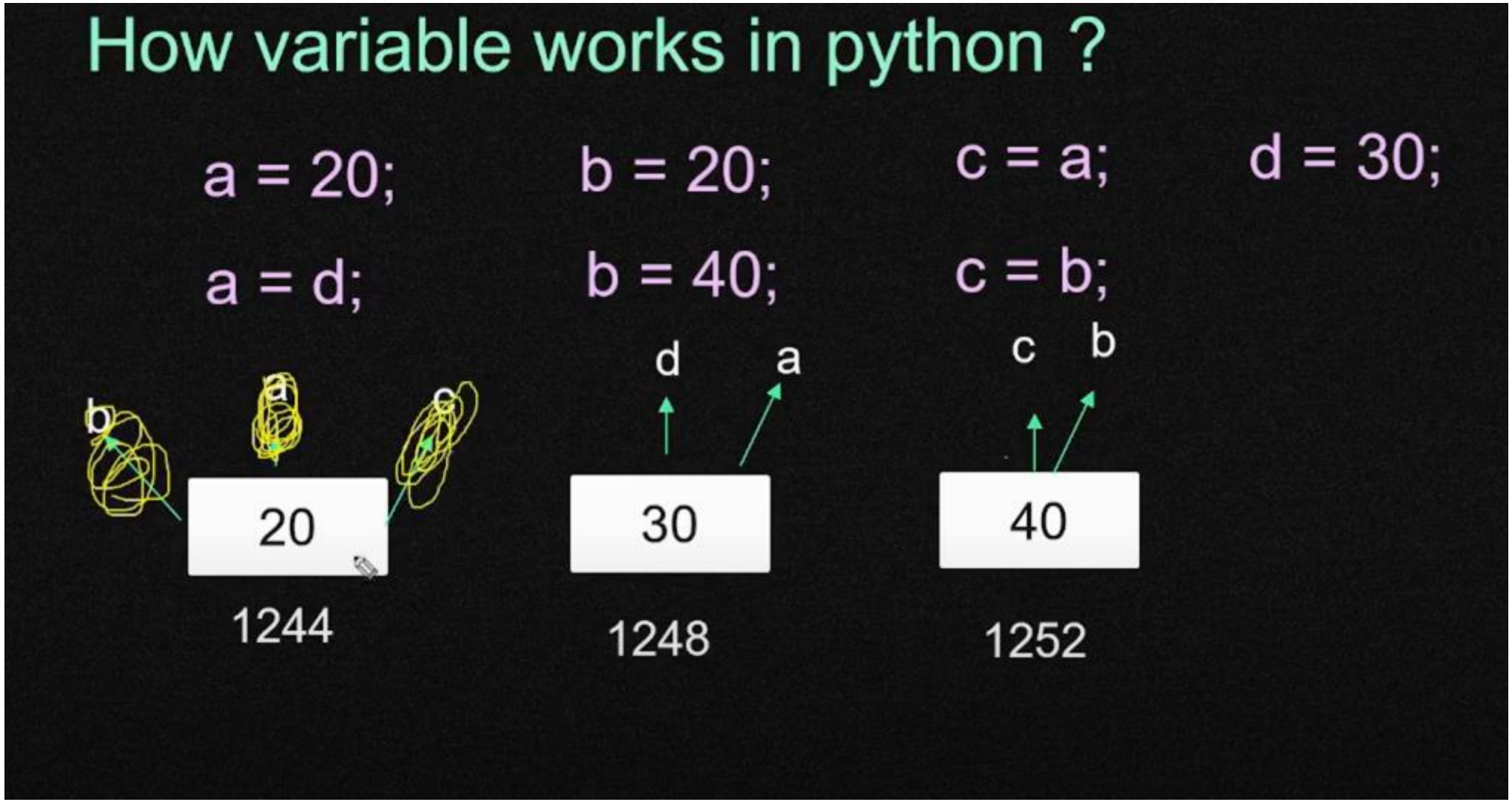

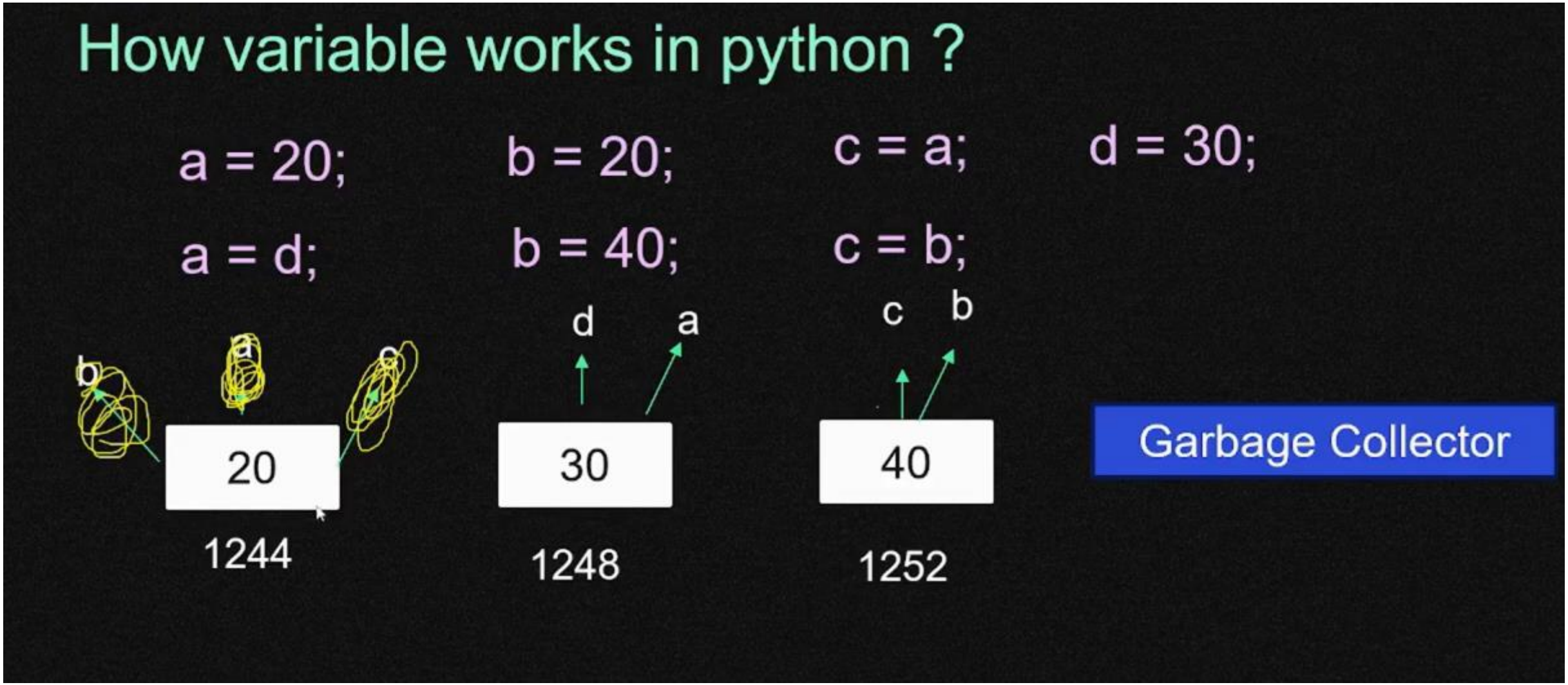

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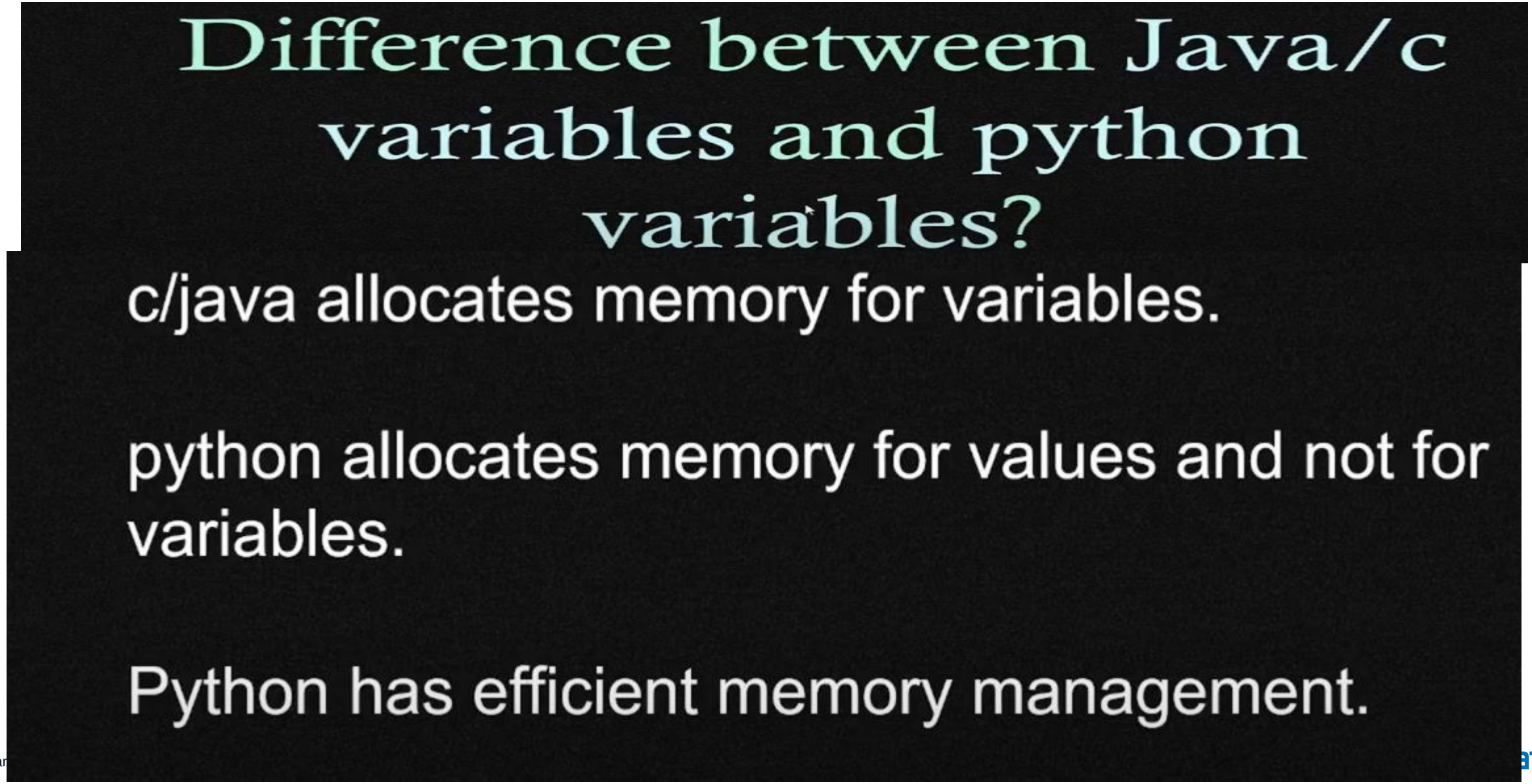

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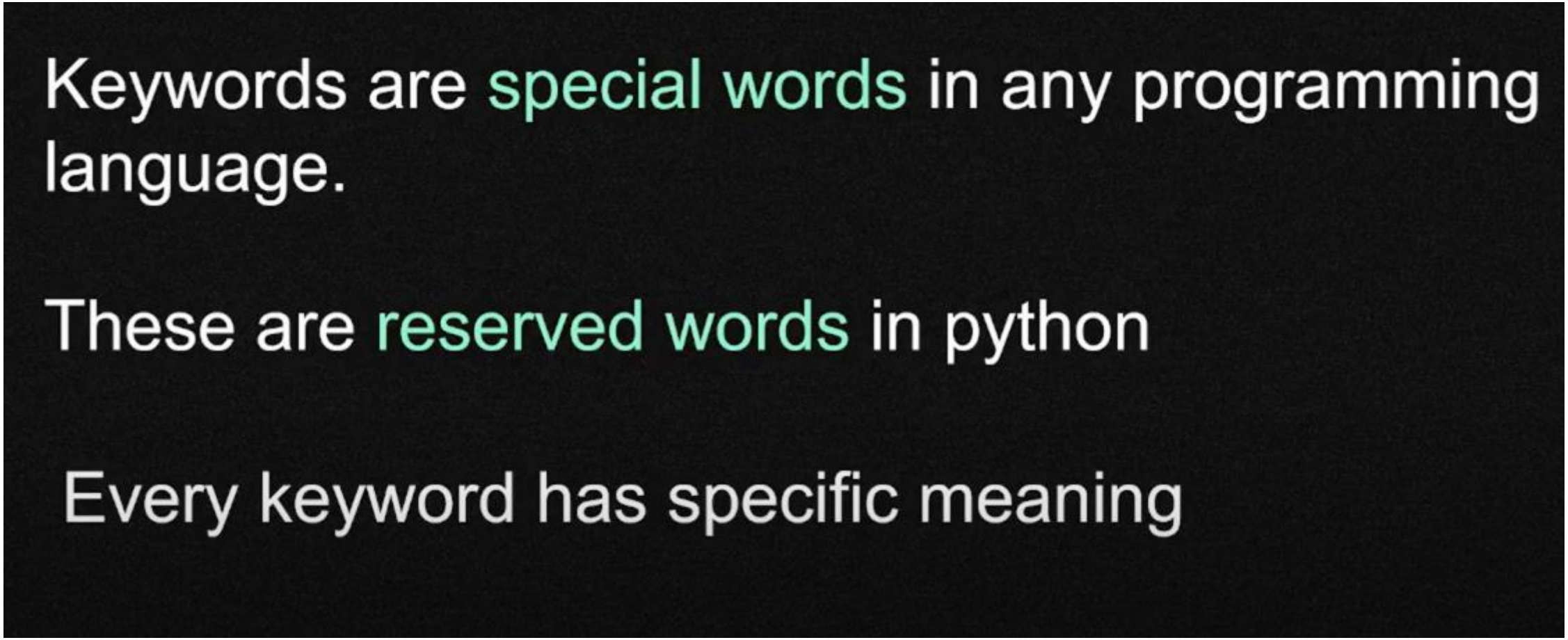

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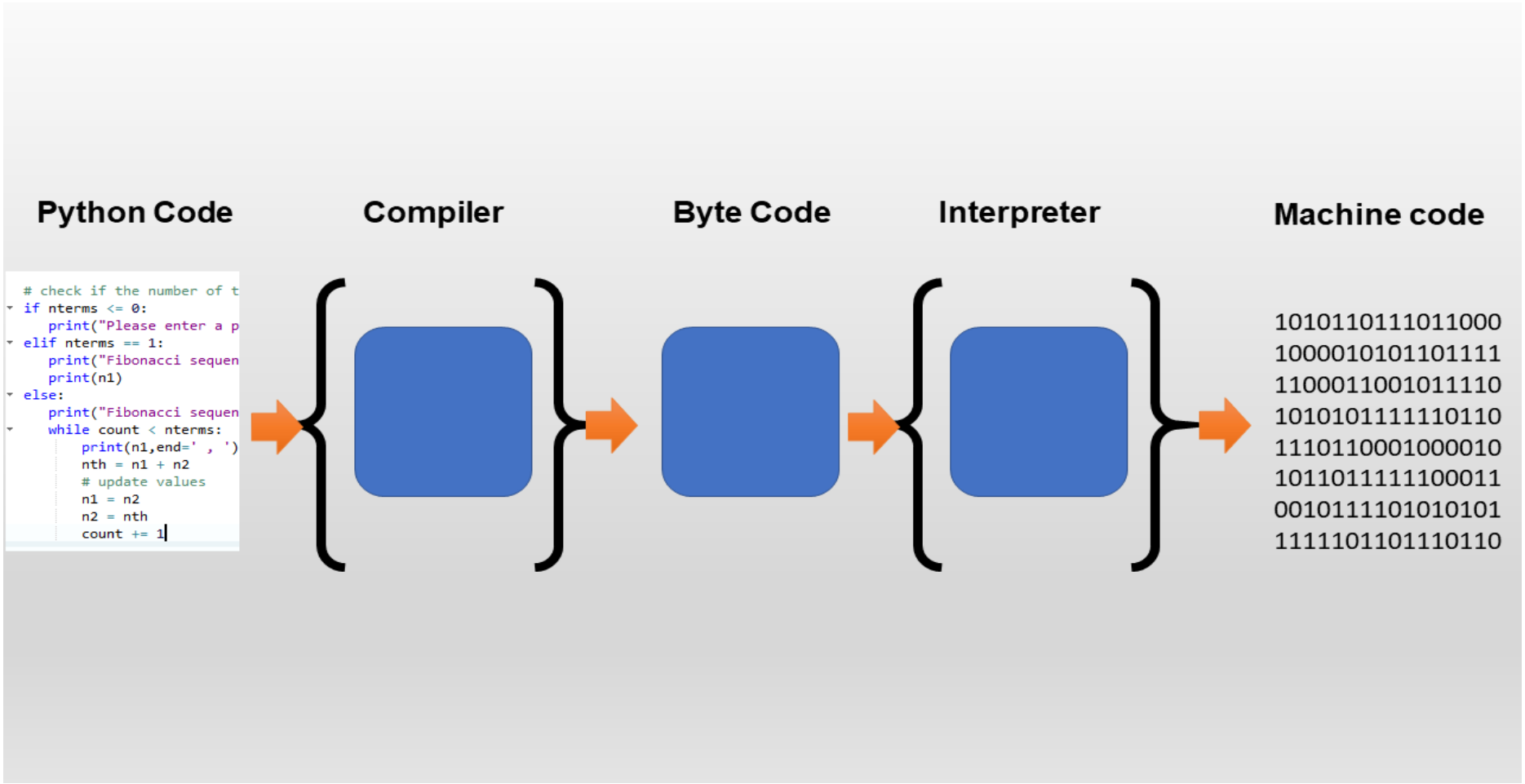

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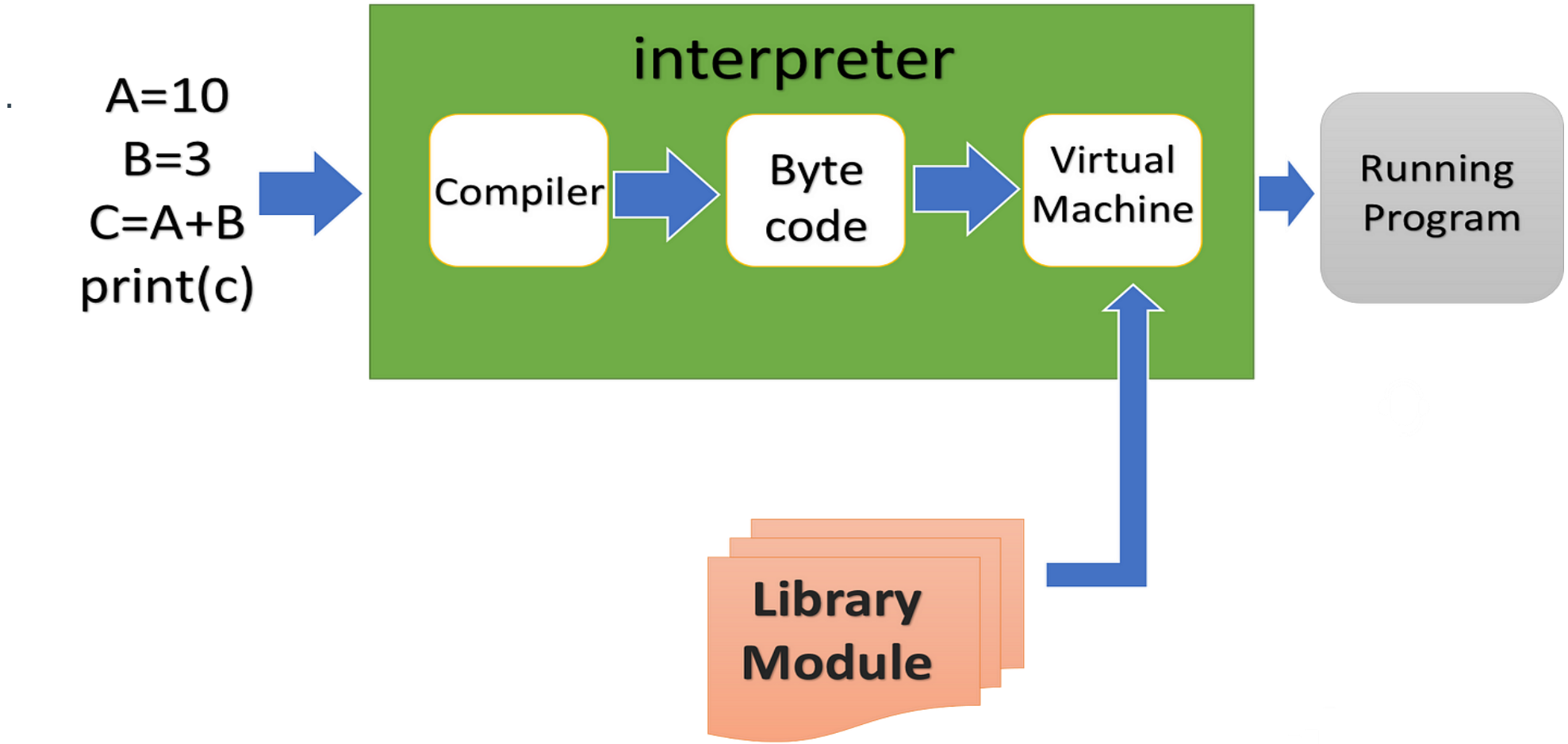


Python-Basics

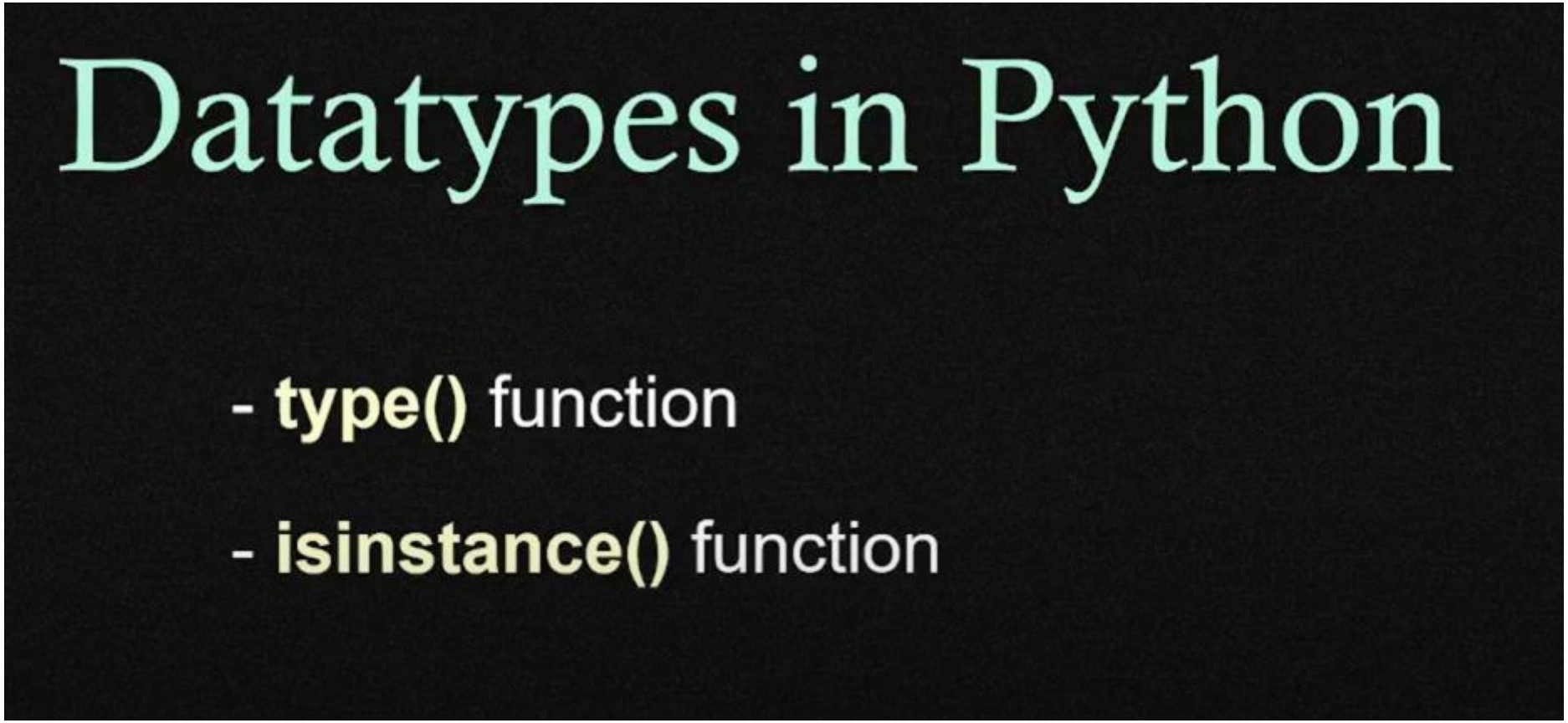
Python-Basics

Need of comments

helps you and others to understand later on the intention of your code.

This allows you to more easily find errors, to fix them, to improve the code later on, and to reuse it in other applications as well.

Python-Basics



Python-Basics

Below are datatypes available in python:-

- Numeric types:- int, float, complex (special type)
- Sequence types:- str, list, tuple
- Mapping types:- dict
- Set types:- set, frozenset
- Boolean Type:- Bool
- Binary Types:- bytes, bytearray
- None type:- NoneType

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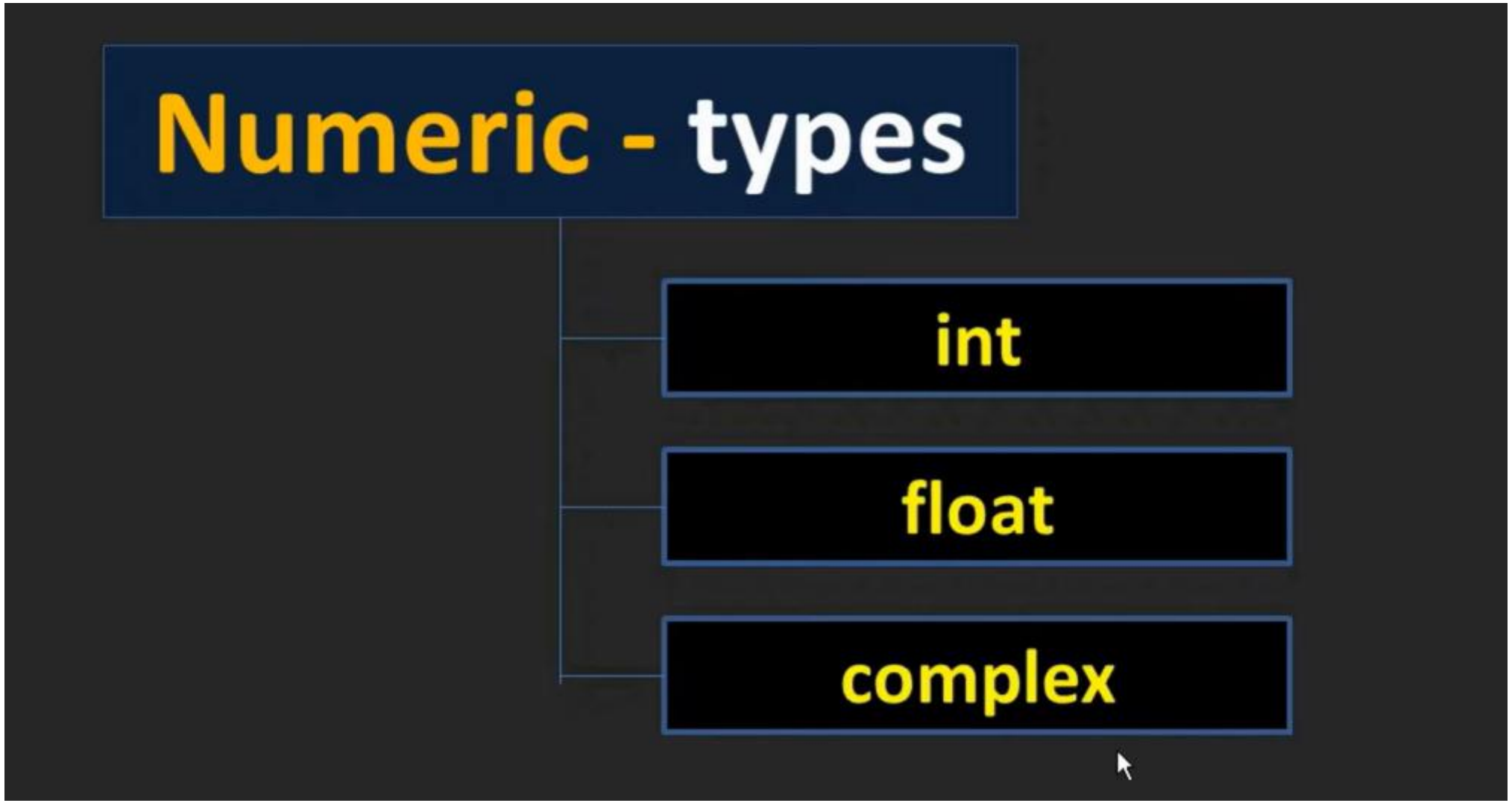

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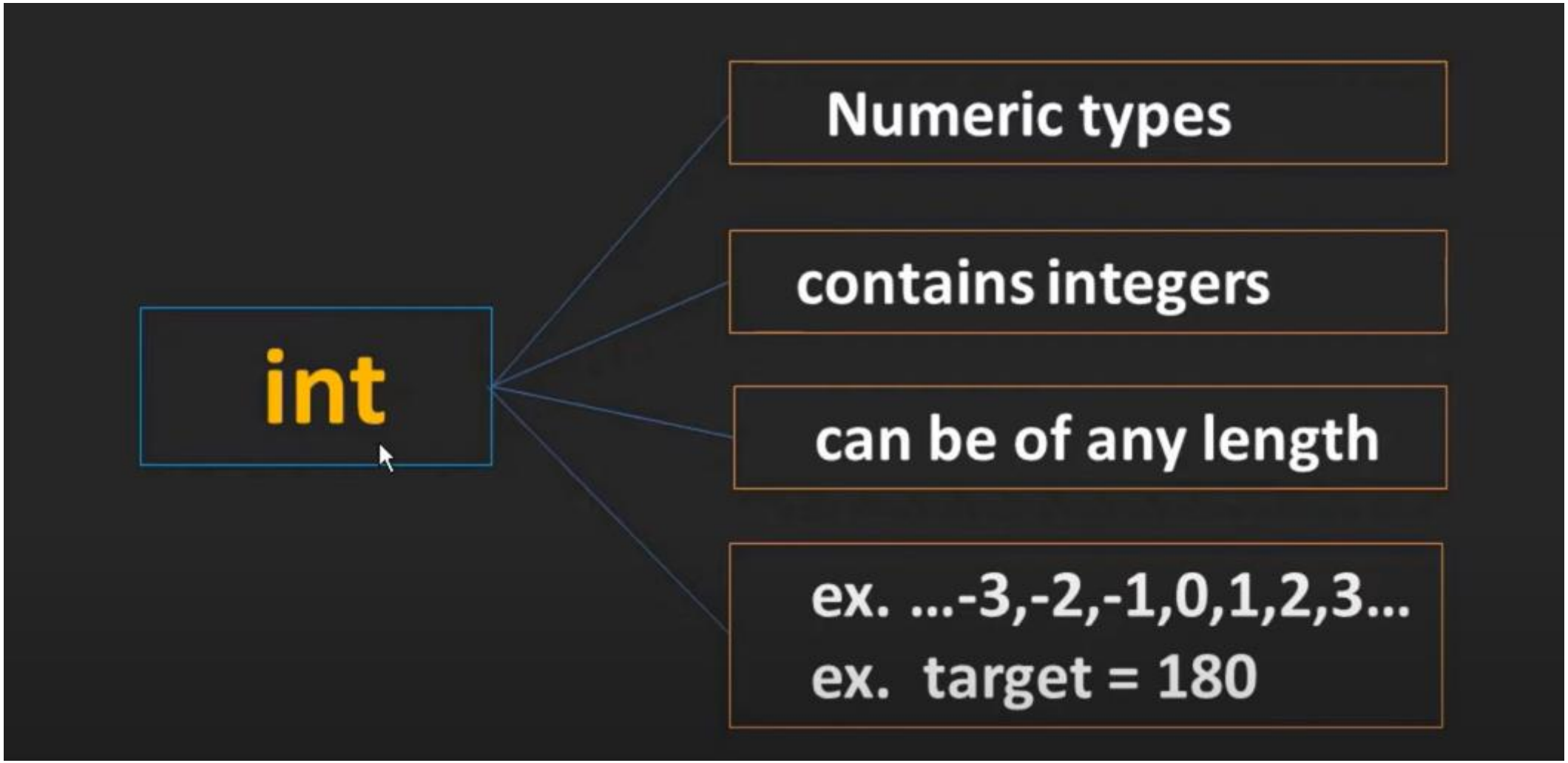

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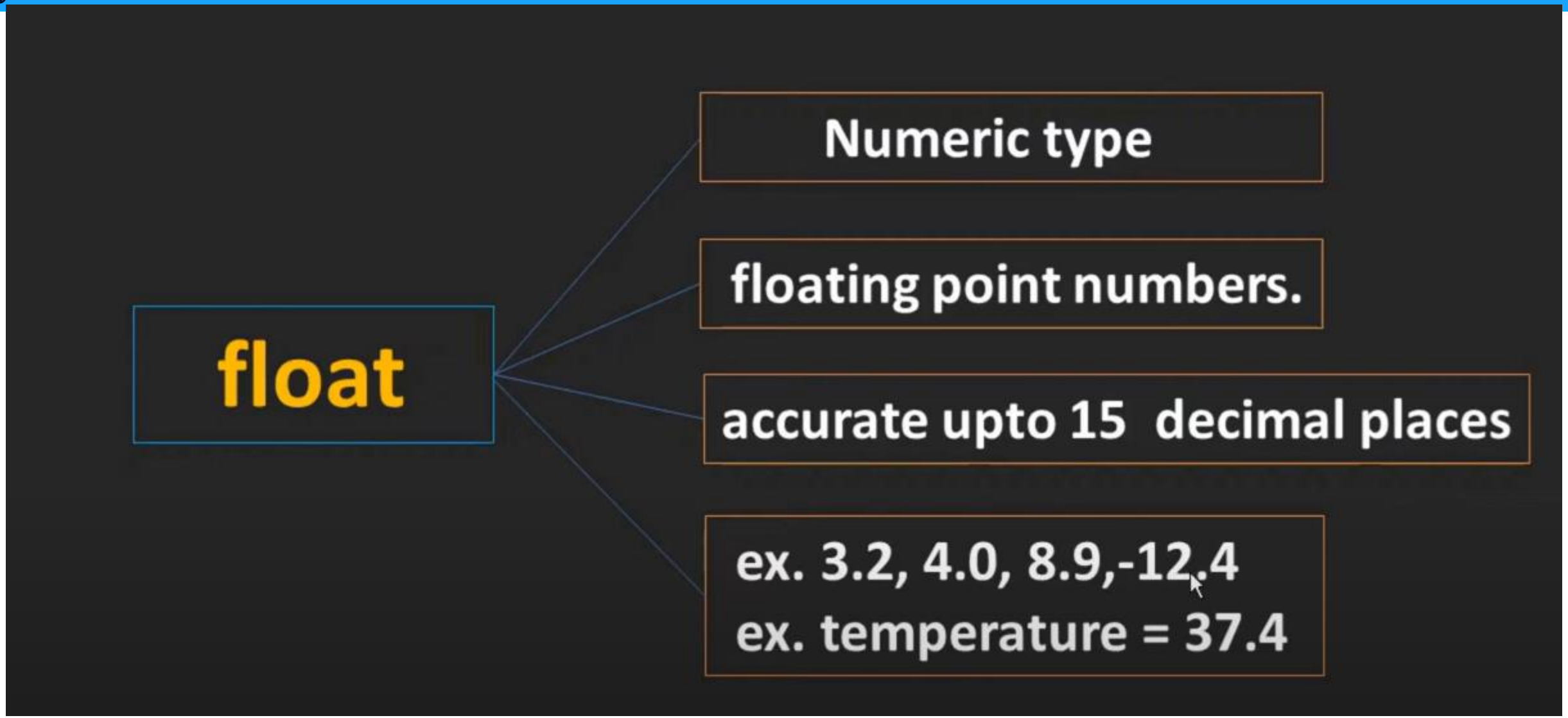

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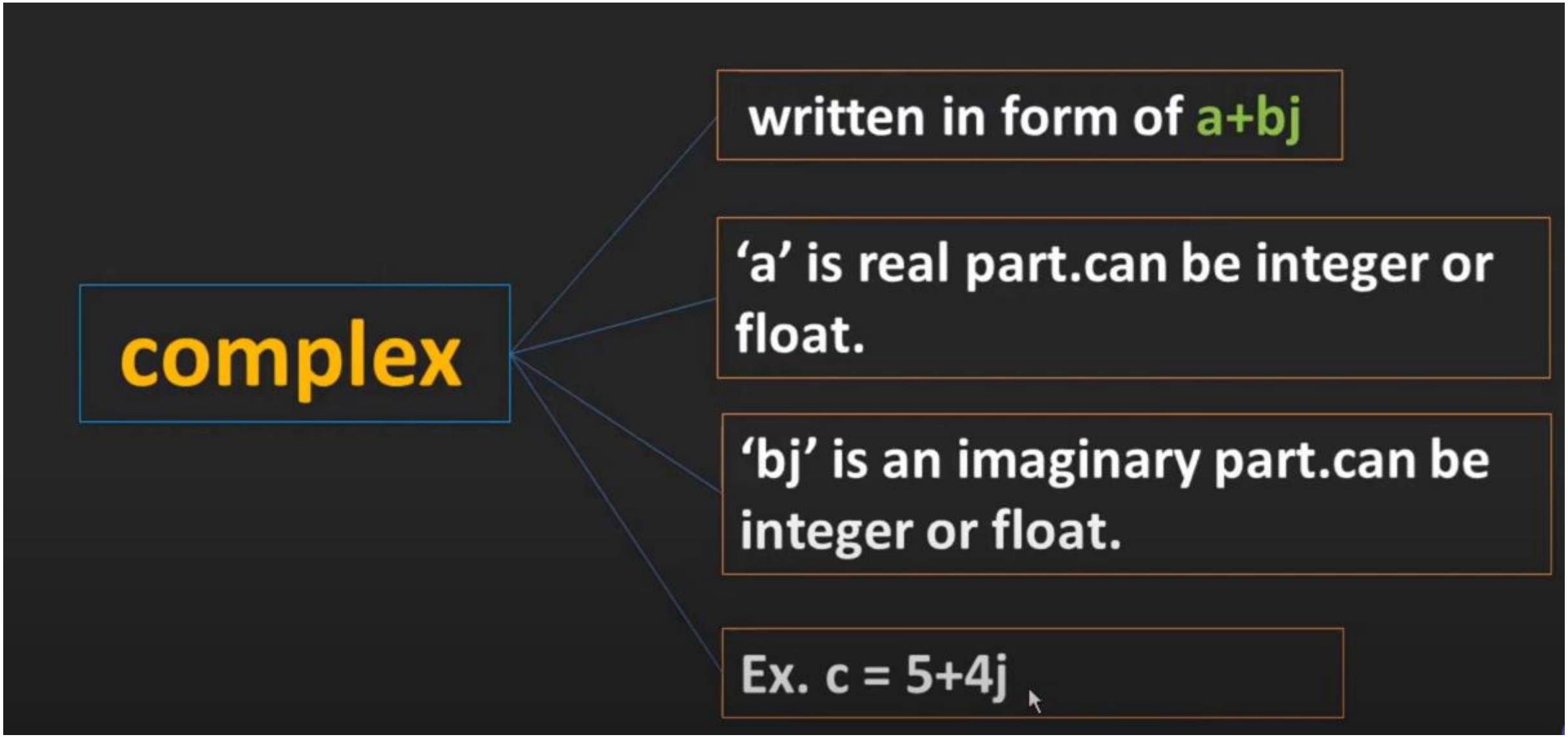

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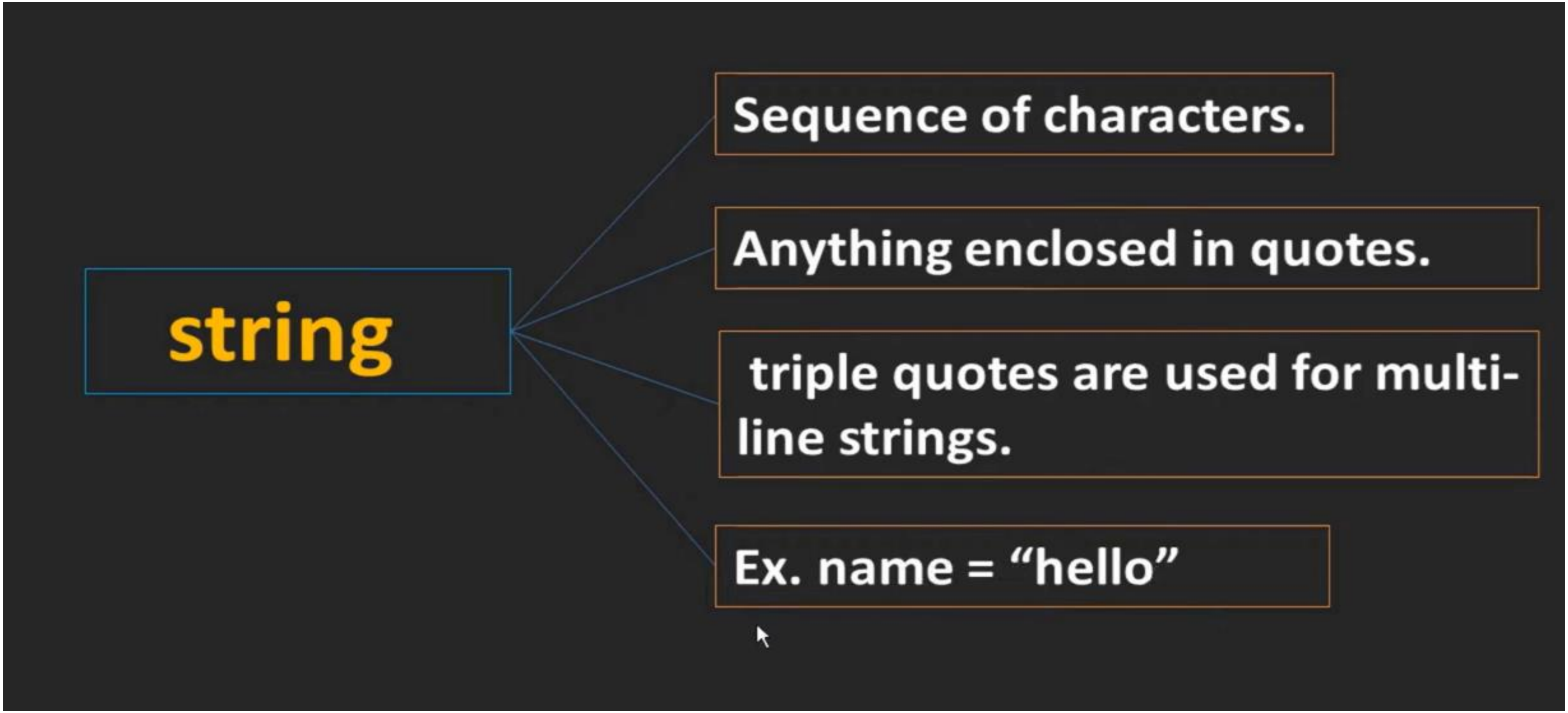

Python-Basics

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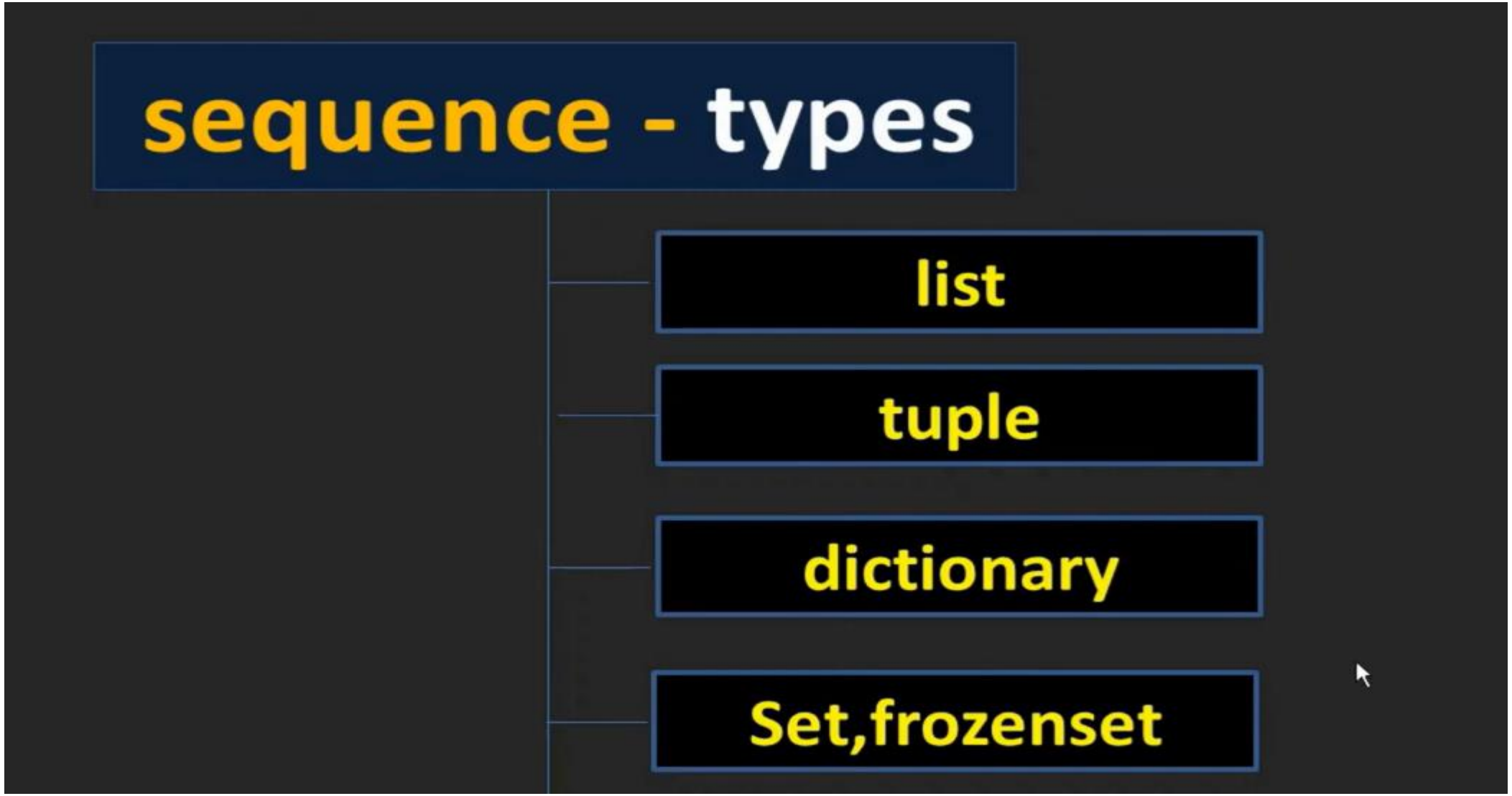

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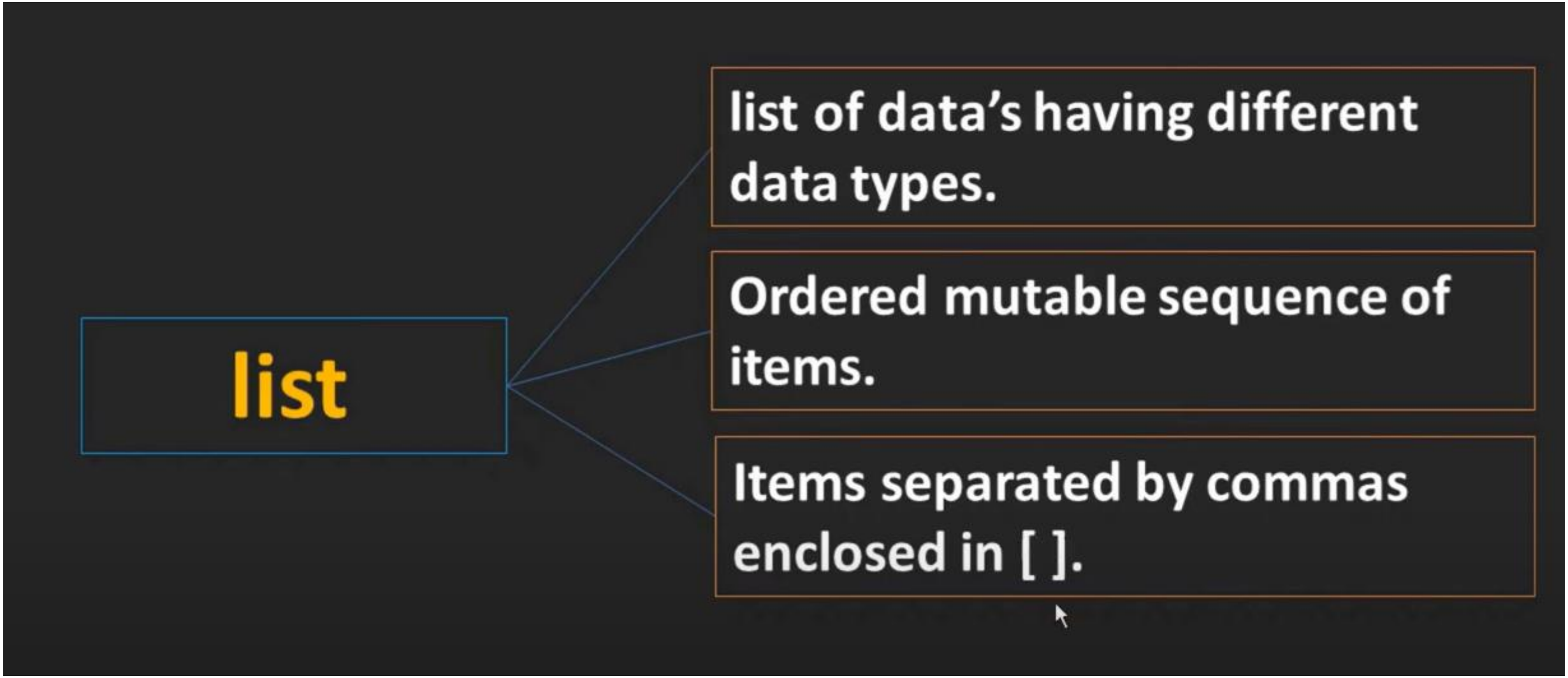

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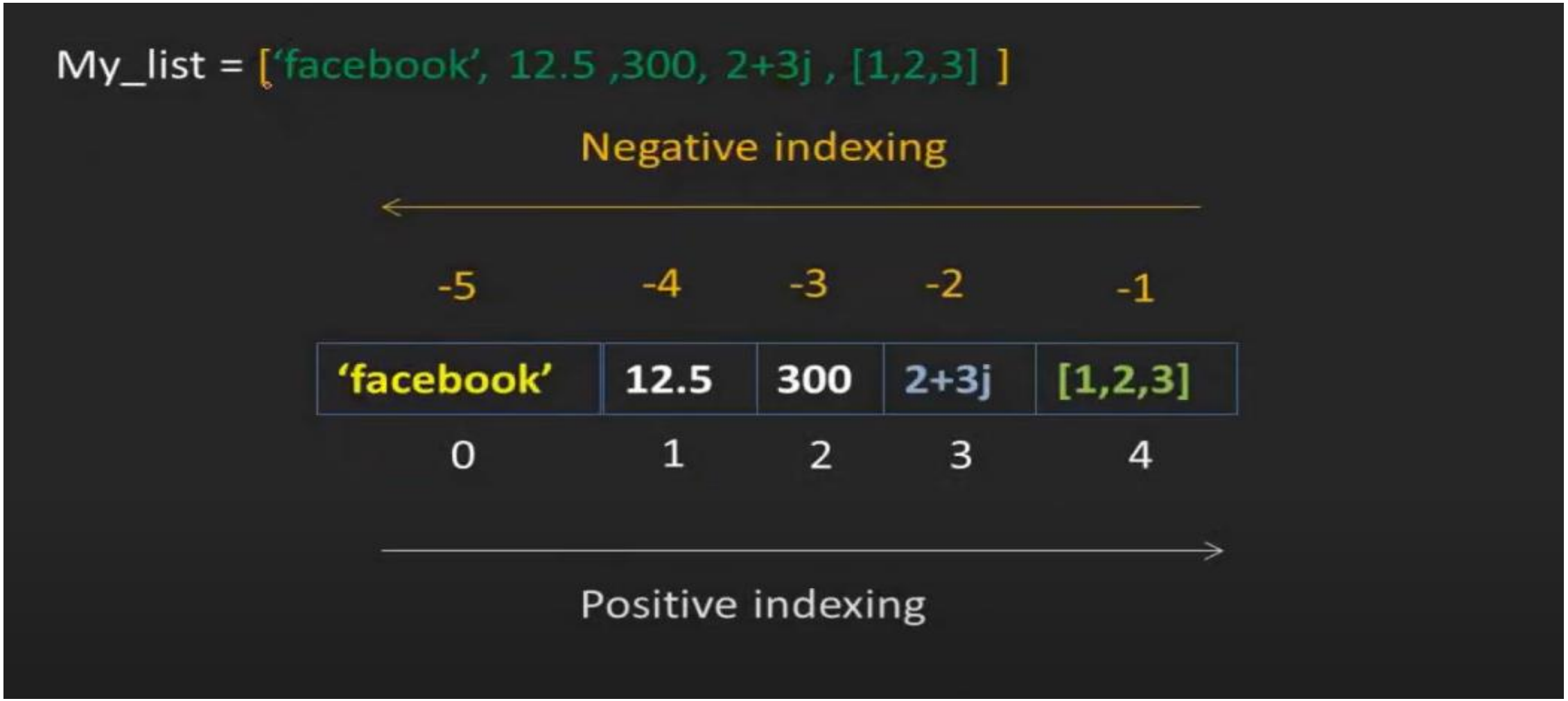

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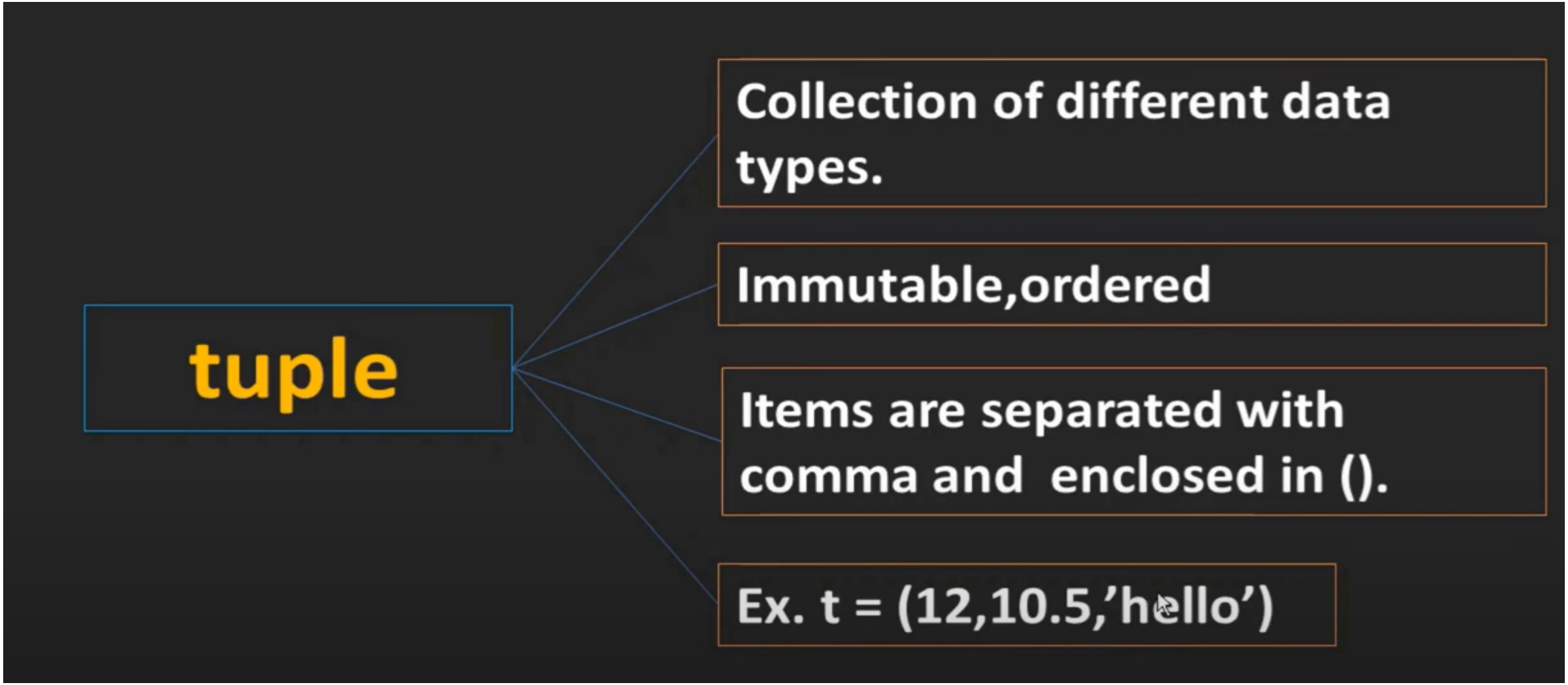

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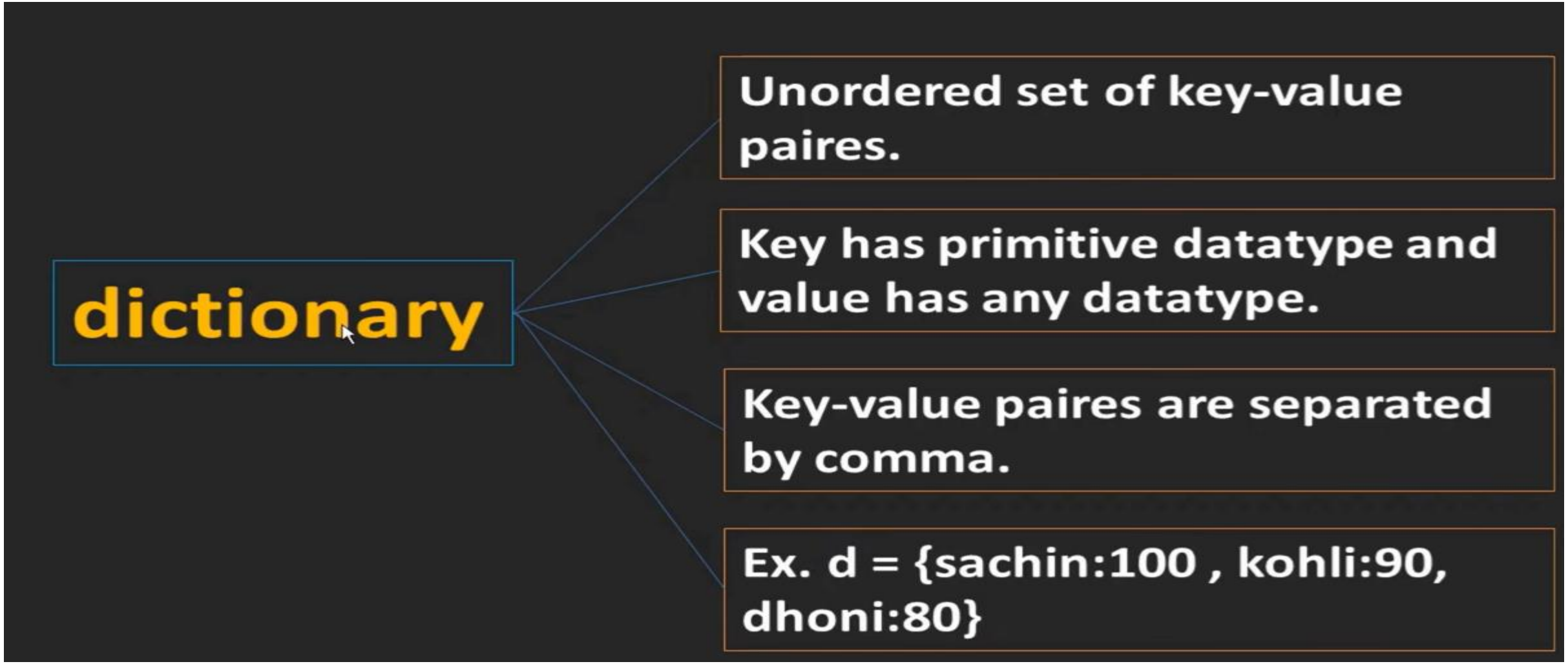

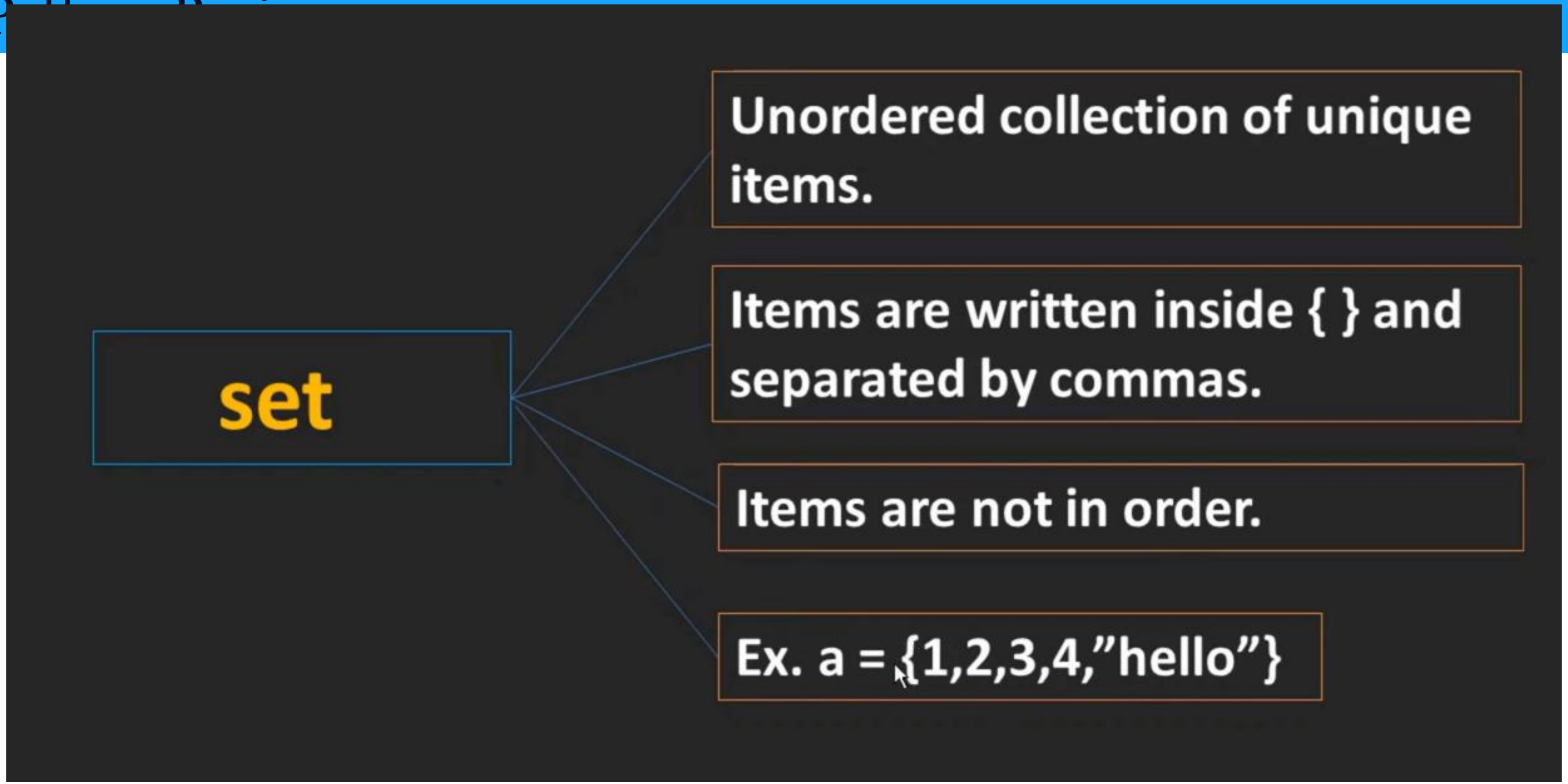

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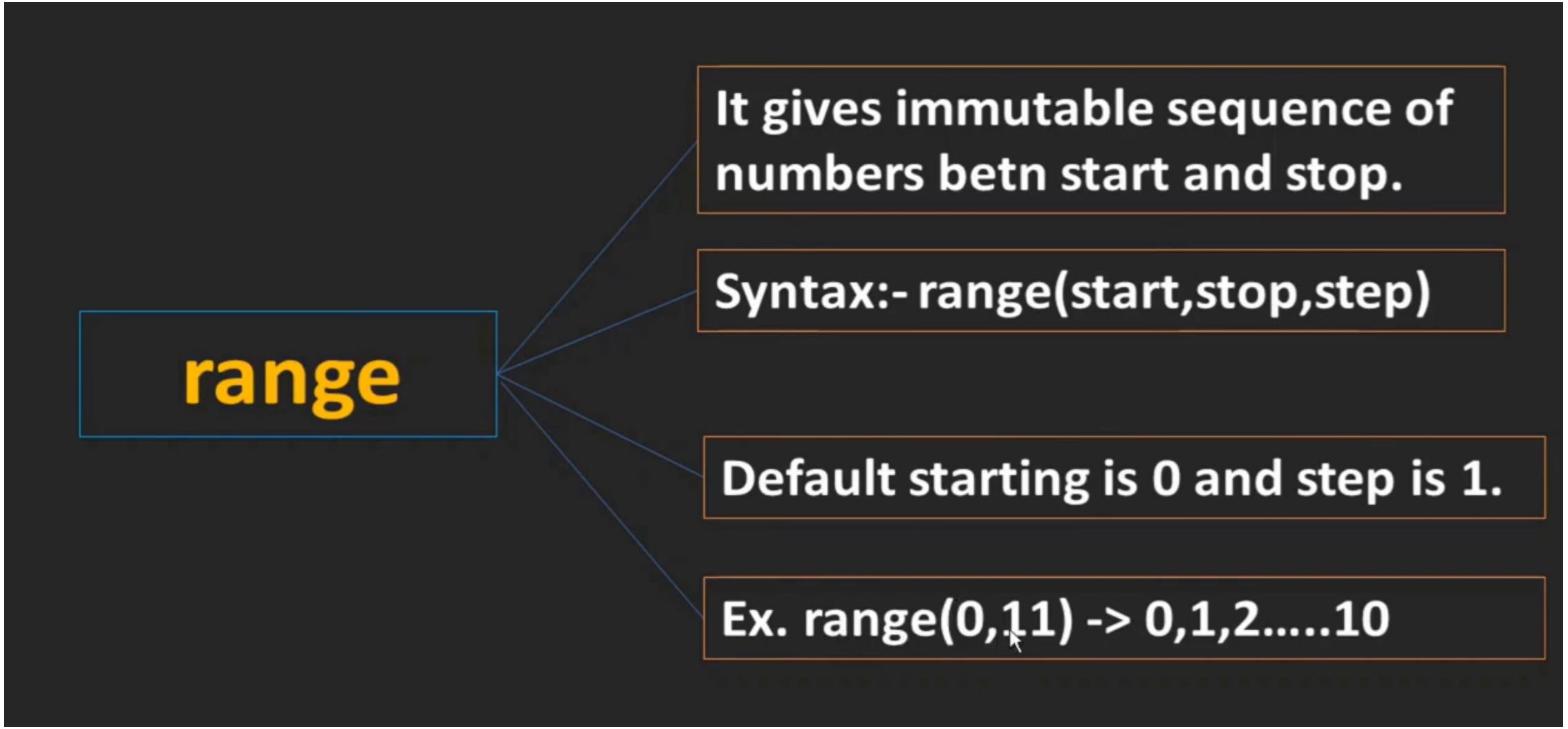

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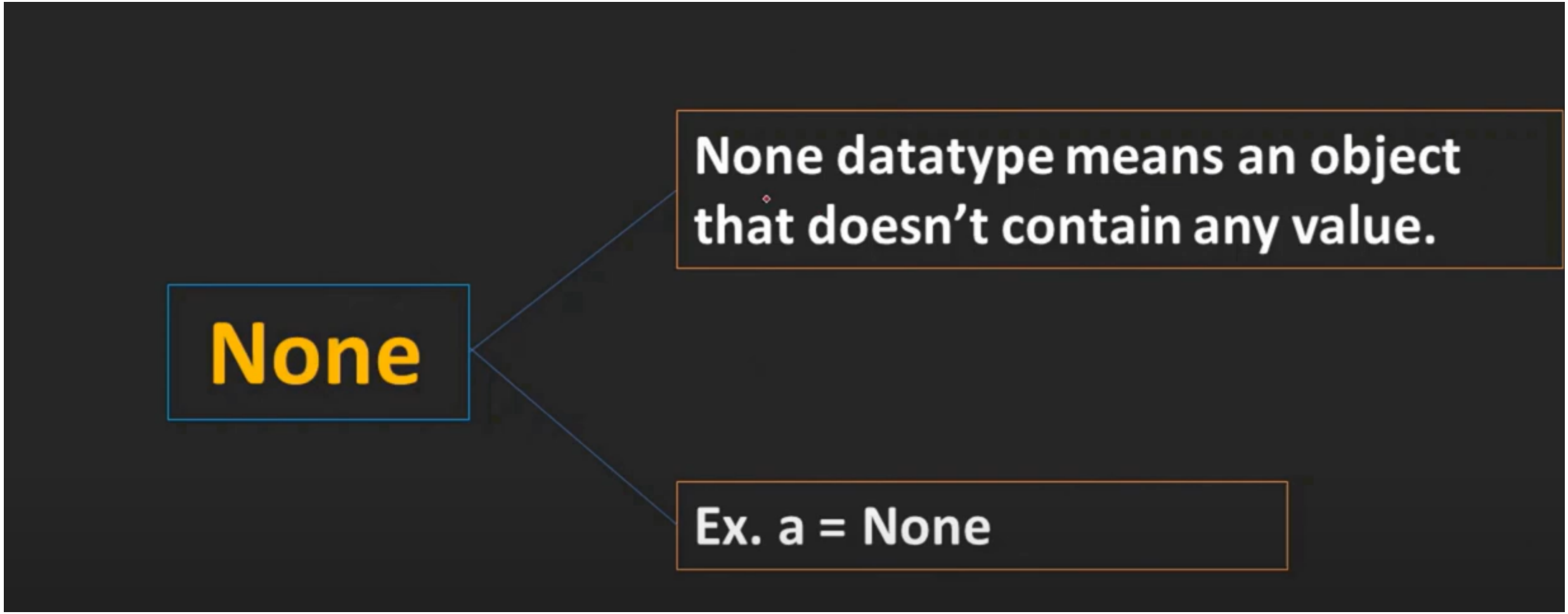
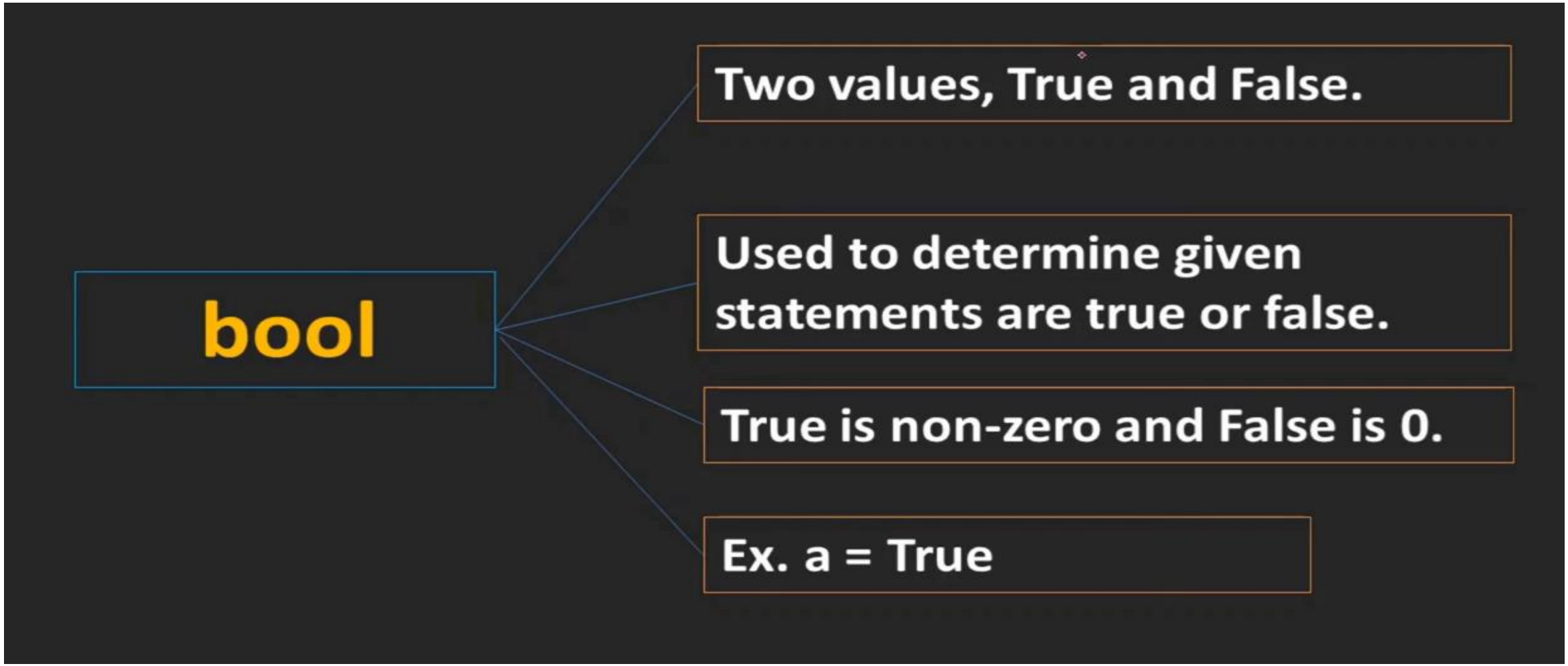
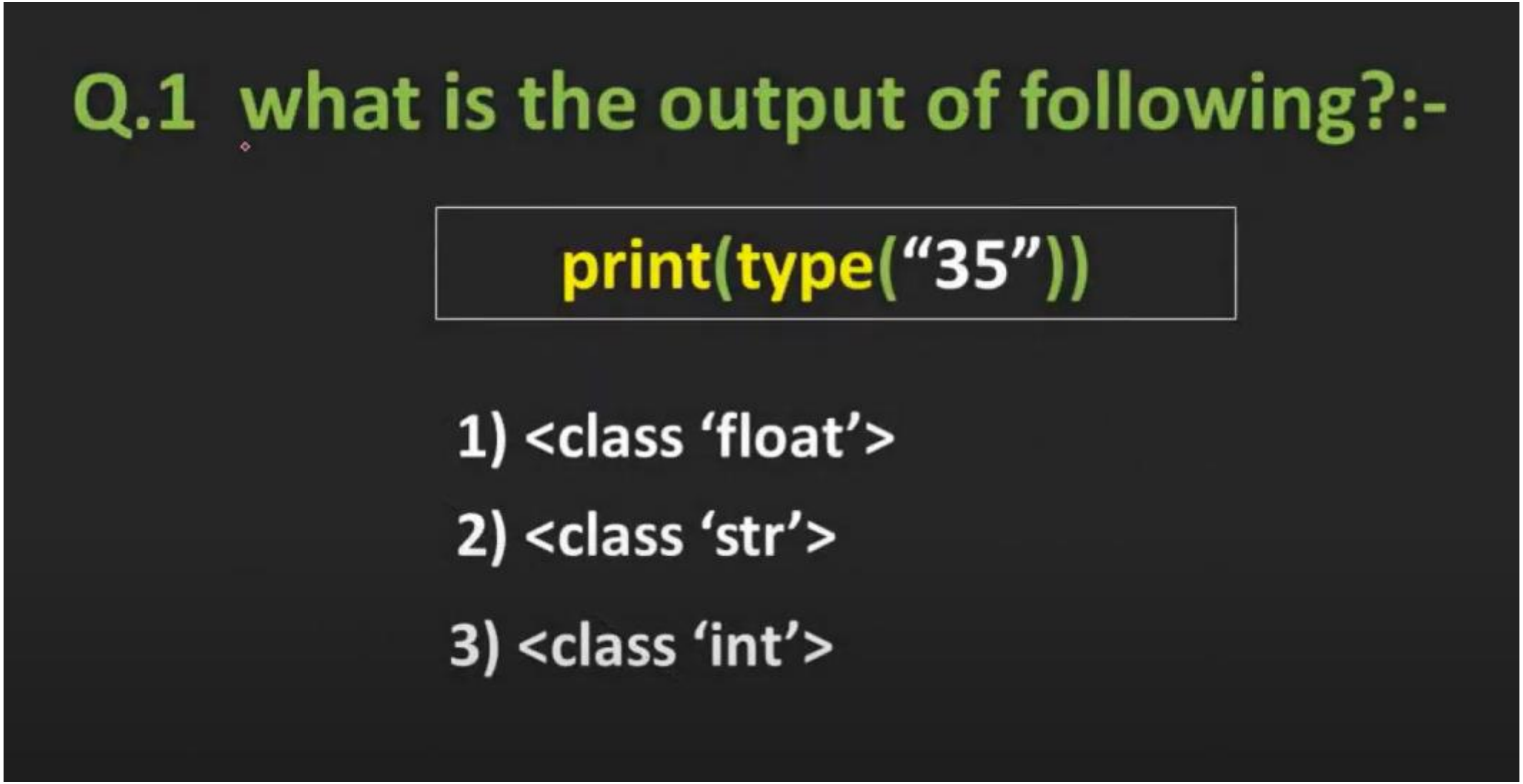
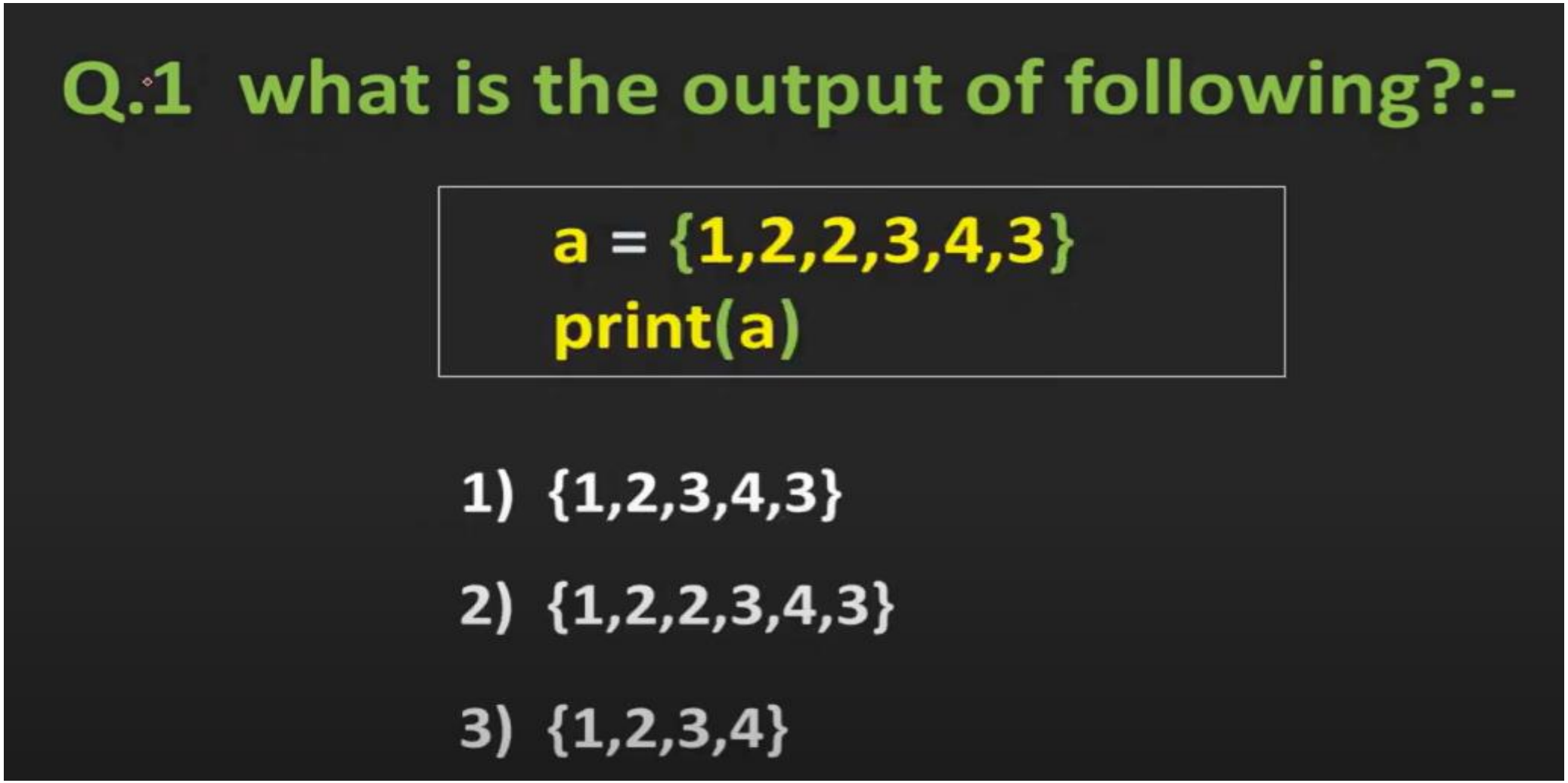
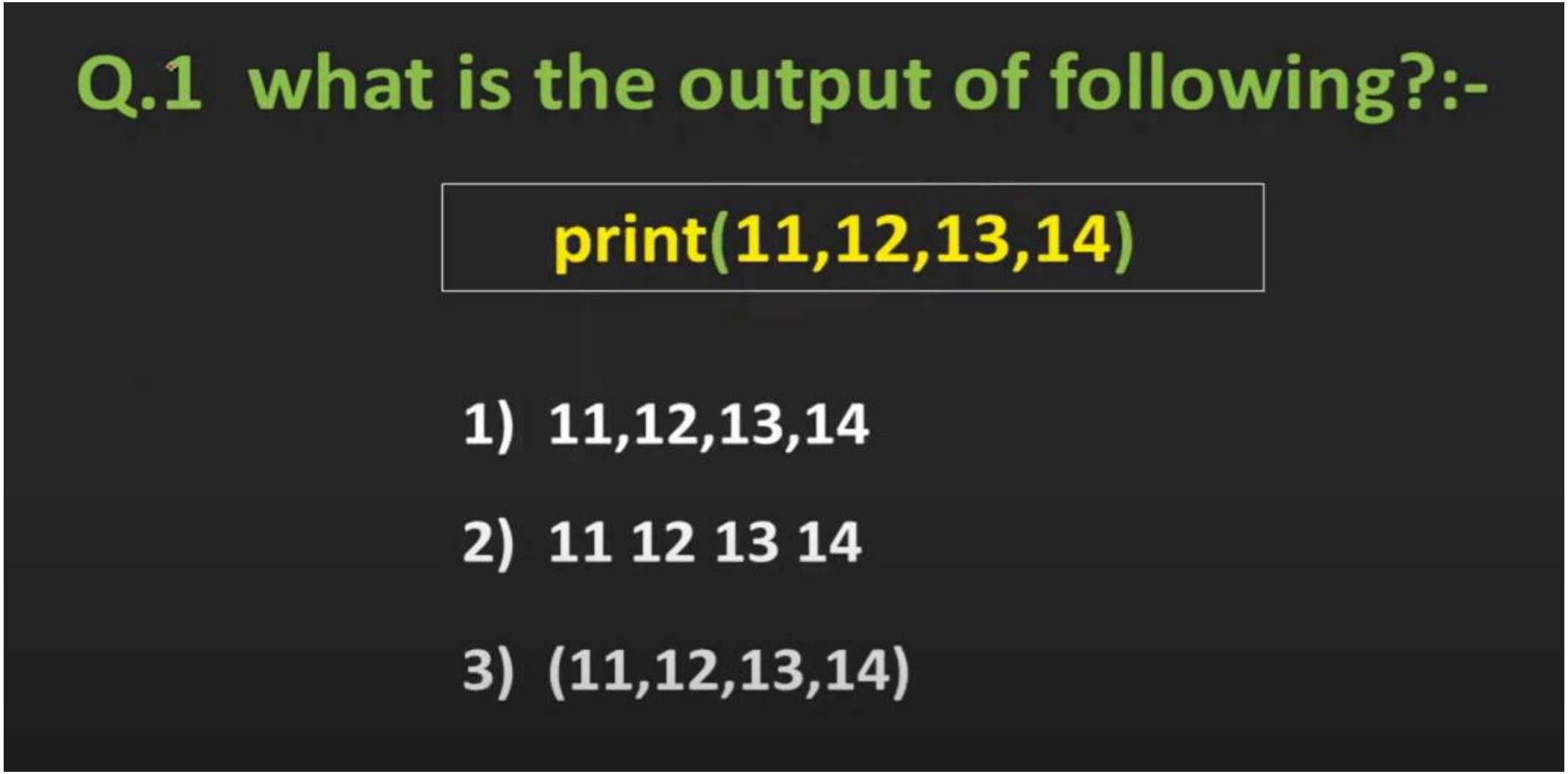


Python-Basics





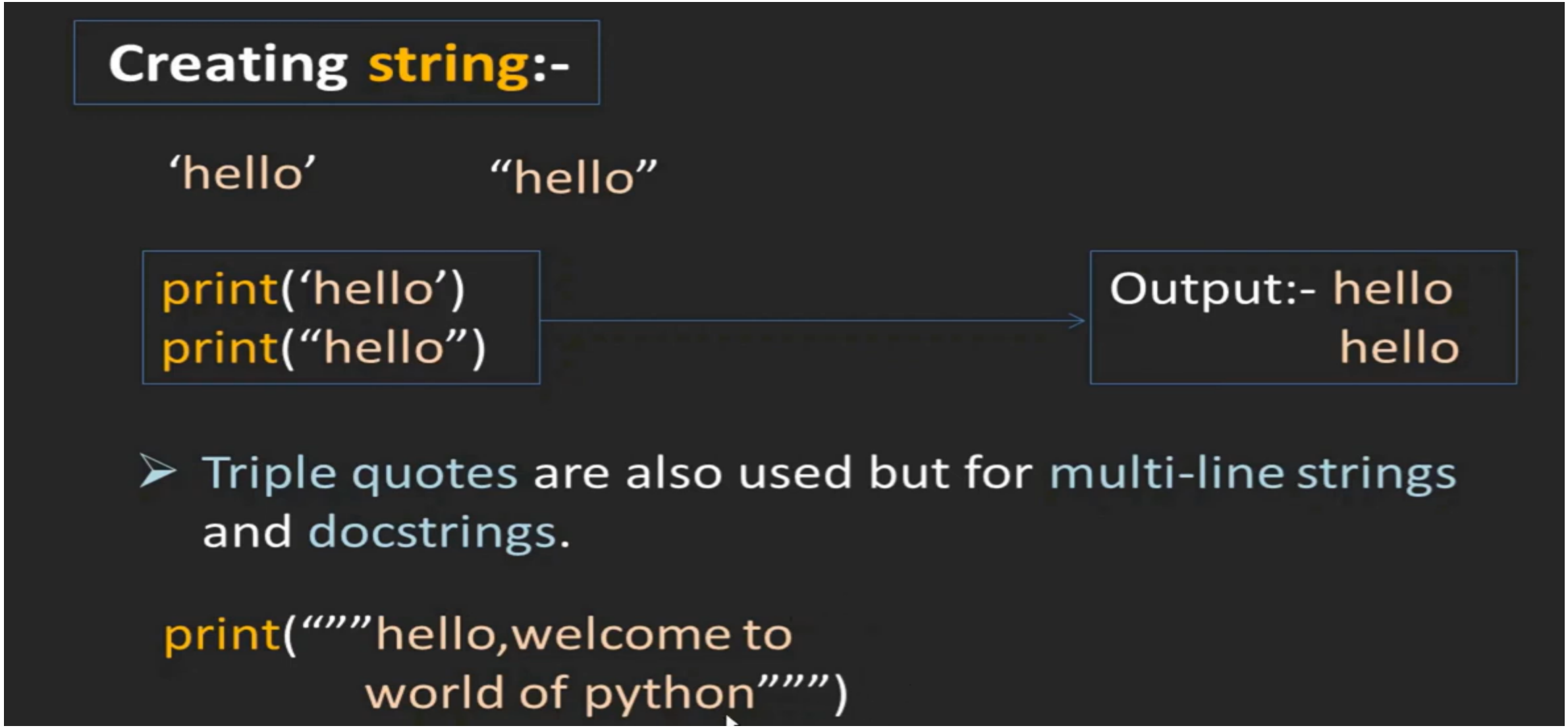




String in Python:-

- A string is a sequence of characters. Ex. “shantanu”
- Anything enclosed inside single quotes ,double quotes except escape sequences is string.
- String is a sequence of unicode characters.

Python-Basics



Accessing substring (characters) in string:-

Two ways:-

1) Indexing
2) Slicing

Indexing:- used to access individual(single) element of string.

slicing:- used to access group of elements of a string. We can access range of characaters using slicing.

Accessing substring (characters) in string:-

Two ways:-

1) Indexing
2) Slicing

Indexing:- used to access individual(single) element of string.

slicing:- used to access group of elements of a string. We can access range of characaters using slicing.

Python-Basics

Index:-

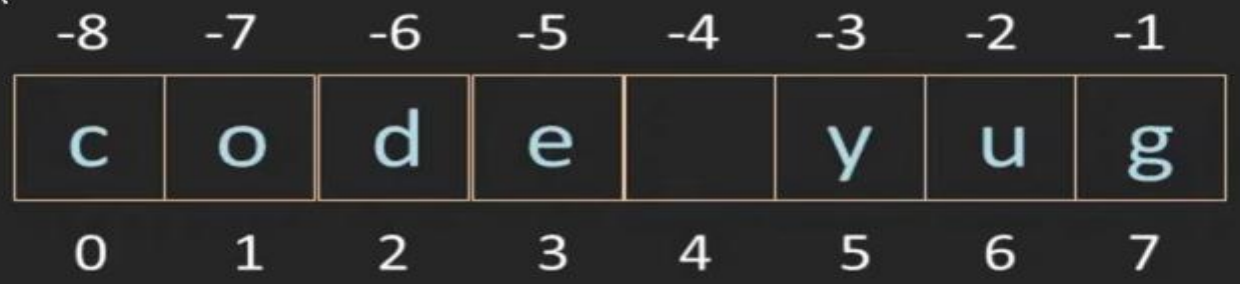
- In python,Every element is represented by index.

Name = “code yug”

Accessing Single Element:-

- To access single element,python uses indexing.

Name = “code yug”



Syntax:- **var_name[index]**

Name[0] ---> c Name[2] ---> d Name[5] ---> y

Name[-1] ---> g Name[-4] ---> Name[-8] ---> c

Python-Basics

slicing:-

- To access a range of items (sub-string),we will use 'slicing'.
- You can return range of characters using slicing.
- [:] is a slice operator.

Syntax:-

```
Var_name[start:stop:step]
```

- start :- starting point of substring.
- stop :- It indicated end of string.
- step :- difference between indexing.

Python-Basics

important:-

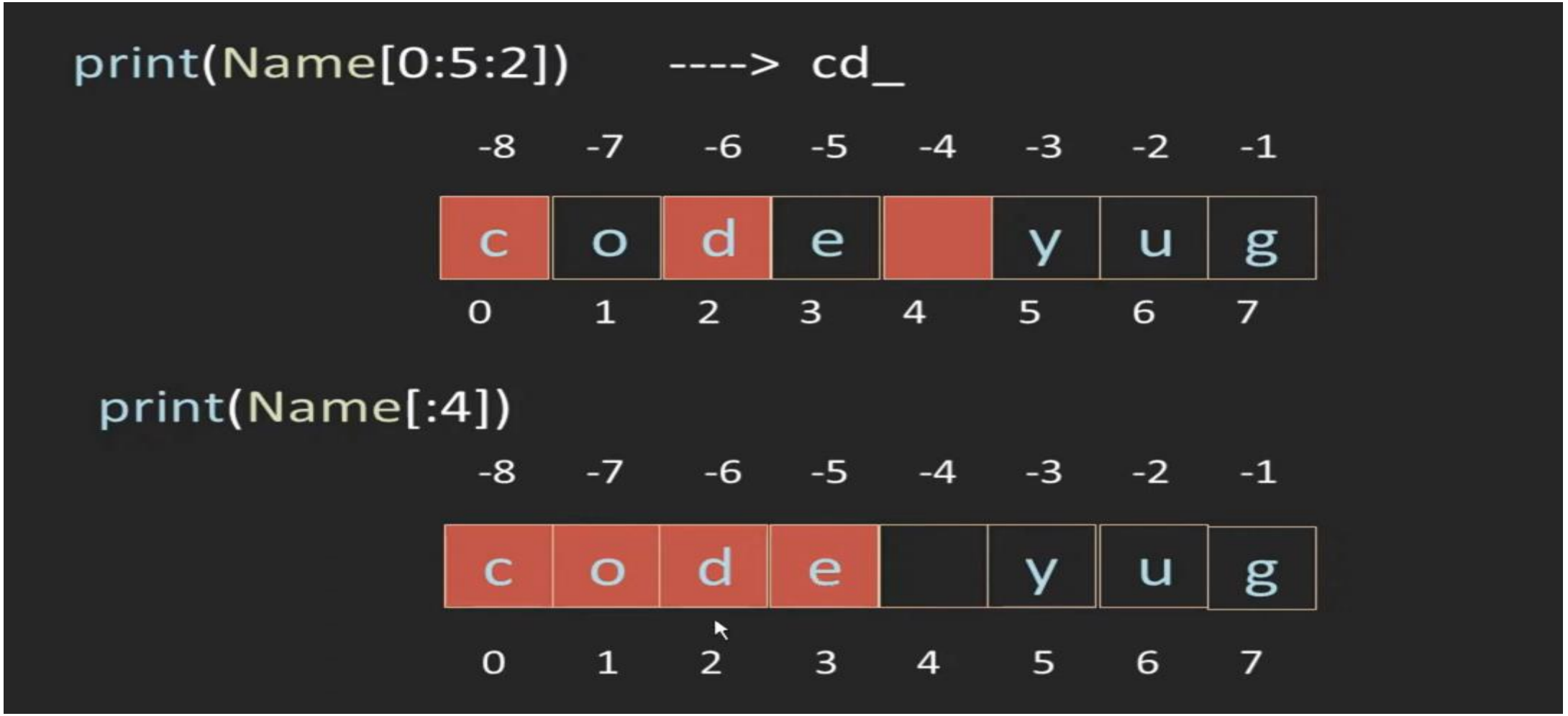
- start,stop,step are optional.
- Default start is index 0.
- Default step is 1 .
- end = stop -1
- Character at stop index is not printed.
- Positive index :- Go in forward direction
  Negative index :- Go in Negative direction
- If stop not found,nothing is returned.

Python-Basics

print(Name[0:3:1]) ----> cod

print(Name[2:4]) ----> de

Python-Basics



Python-Basics

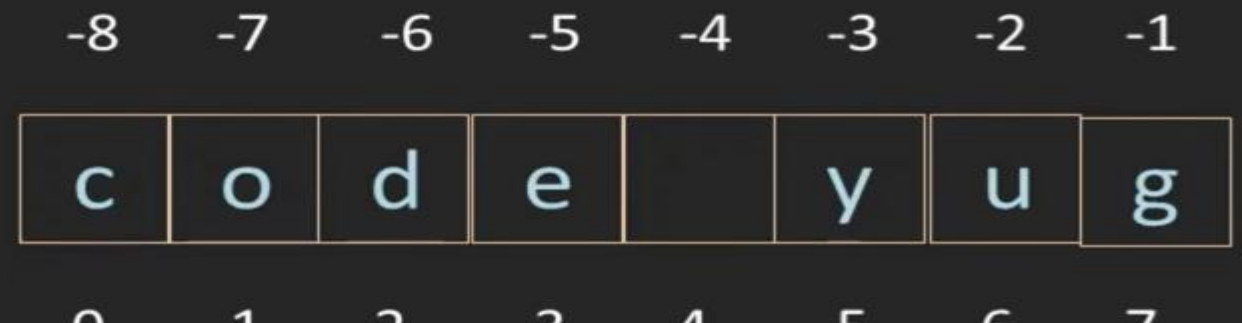
print(Name[::]) ----> code yug

print(Name[0::3]) ----> ceu

Python-Basics

print(Name[-1:-4:-1]) ----> guy

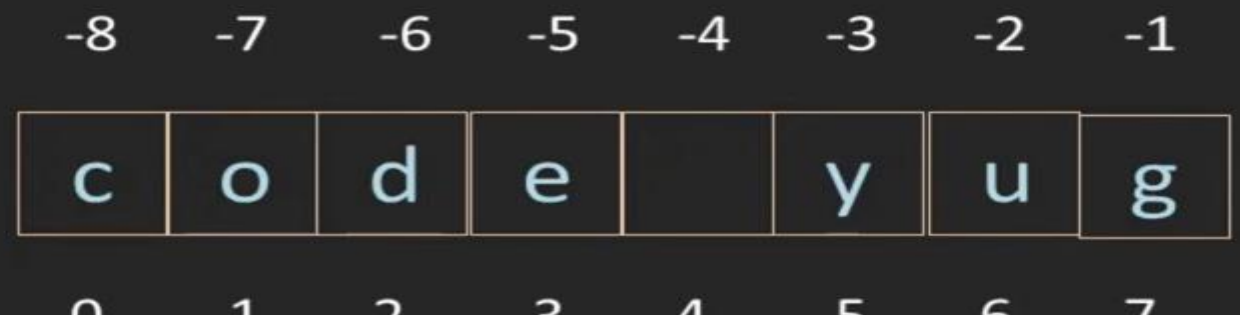
print(Name[-1:-5:-2]) ----> gy



Python-Basics

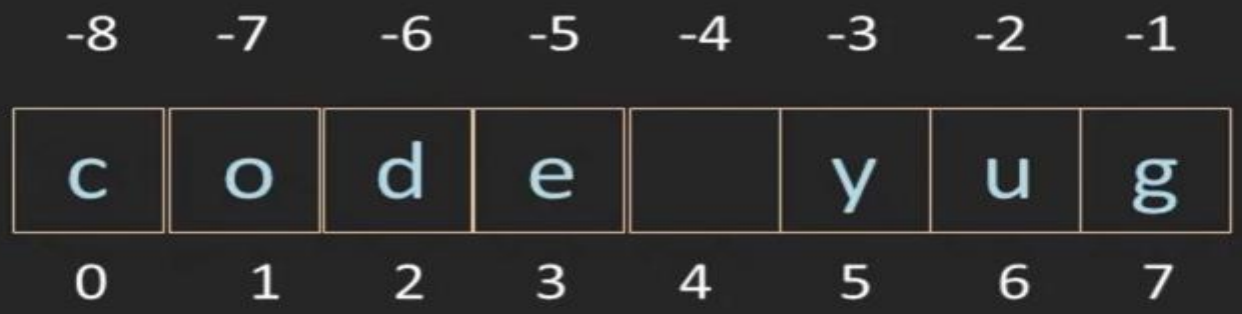
```
print(Name[-2:-6:2])
```


```
print(Name[-1: :-1])
```



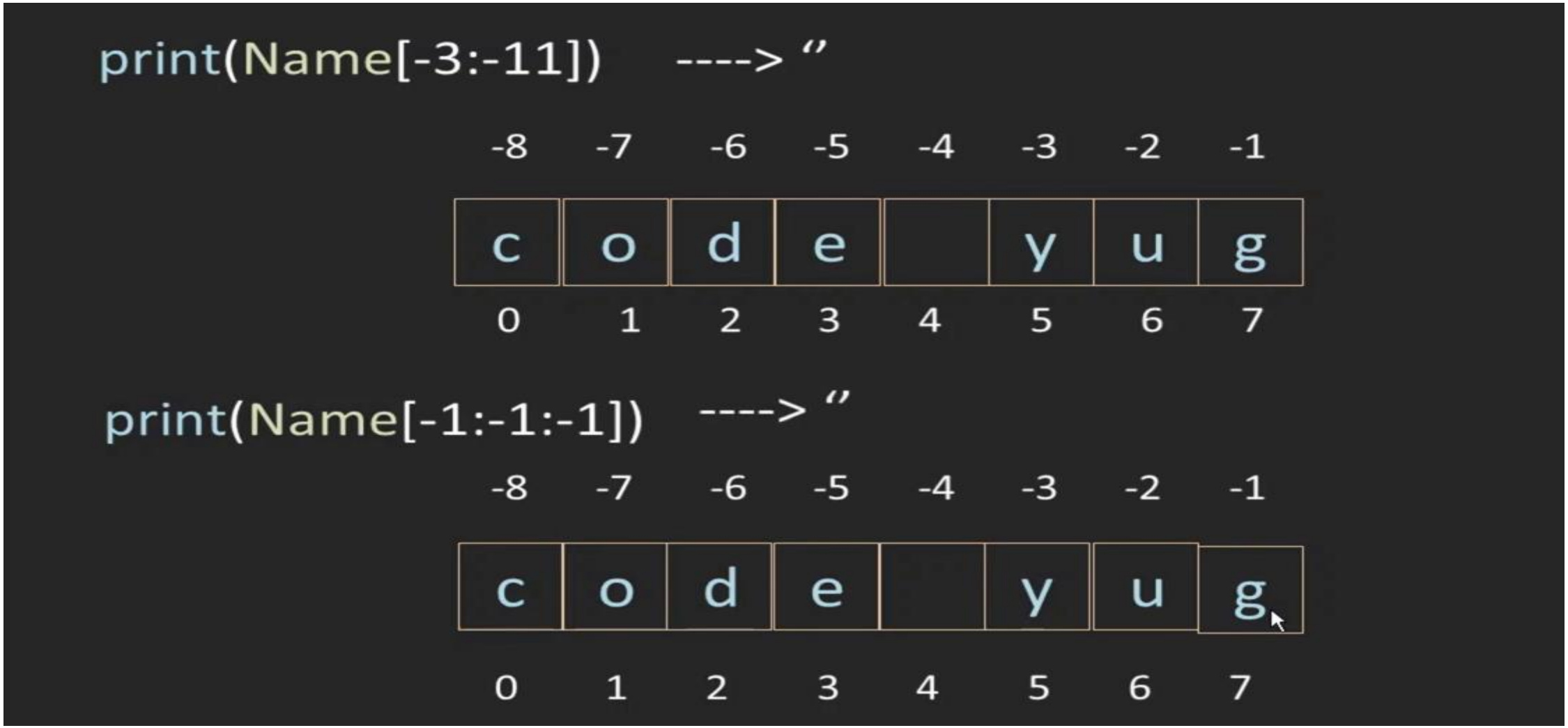
Python-Basics

print(Name[-2:-6:2]) ----> ''



print(Name[-1: :-1]) ----> guy edoc

Python-Basics



Python-Basics- Q1

```
string = "Hello, world!"
print(string[7:12])
```

a) world b) world! c) , worl d) , world

Python-Basics- Q1

```
string = "Hello, world!"
print(string[7:12])
```

a) world b) world! c) , worl d) , world

Python-Basics- Q2

```
string = "Hello, world!"
print(string[:5])
```

a) Hello b) Hello, c) , world! d) world!

Python-Basics- Q2

```
string = "Hello, world!"
print(string[:5])
```

a) Hello b) Hello, c) , world! d) world!

Python-Basics- Q3

```
string = "Hello, world!"
print(string[-6:-1])
```

a) world b) world! c) , worl d) , world

Python-Basics- Q3

```
string = "Hello, world!"
print(string[-6:-1])
```

a) world b) world! c) , worl d) , world

Python-Basics- Q4

Which of the following is the correct way to slice a string to get the last 3 characters?

a) string[-3:] b) string[3:] c) string[:-3]
b) d) string[-3:-1]

Python-Basics- Q4

Which of the following is the correct way to slice a string to get the last 3 characters?

a) string[-3:] b) string[3:] c) string[:-3]
b) d) string[-3:-1]

Python-Basics- Q5

```
string = "Hello, world!"
print(string[-5:2:-2])
```

a) ol b) ow c) ,ol d) dlro

Python-Basics- Q6

```
string = "Python is fun!"
print(string[::2][::-1])
```

Python-Basics- Q7

Which of the following slices would extract the substring "world" from the string "Hello, world!"?

a) string[7:12] b) string[-6:-1] c) string[7:-1] d) All of the above

Python-Basics- Q8

```
string = "Programming“

print(string[3:len(string) - 4])
```

Python-Basics- Q8

```
string = "Programming“

print(string[3:len(string) - 4])
```

Python-Basics- Decision Making

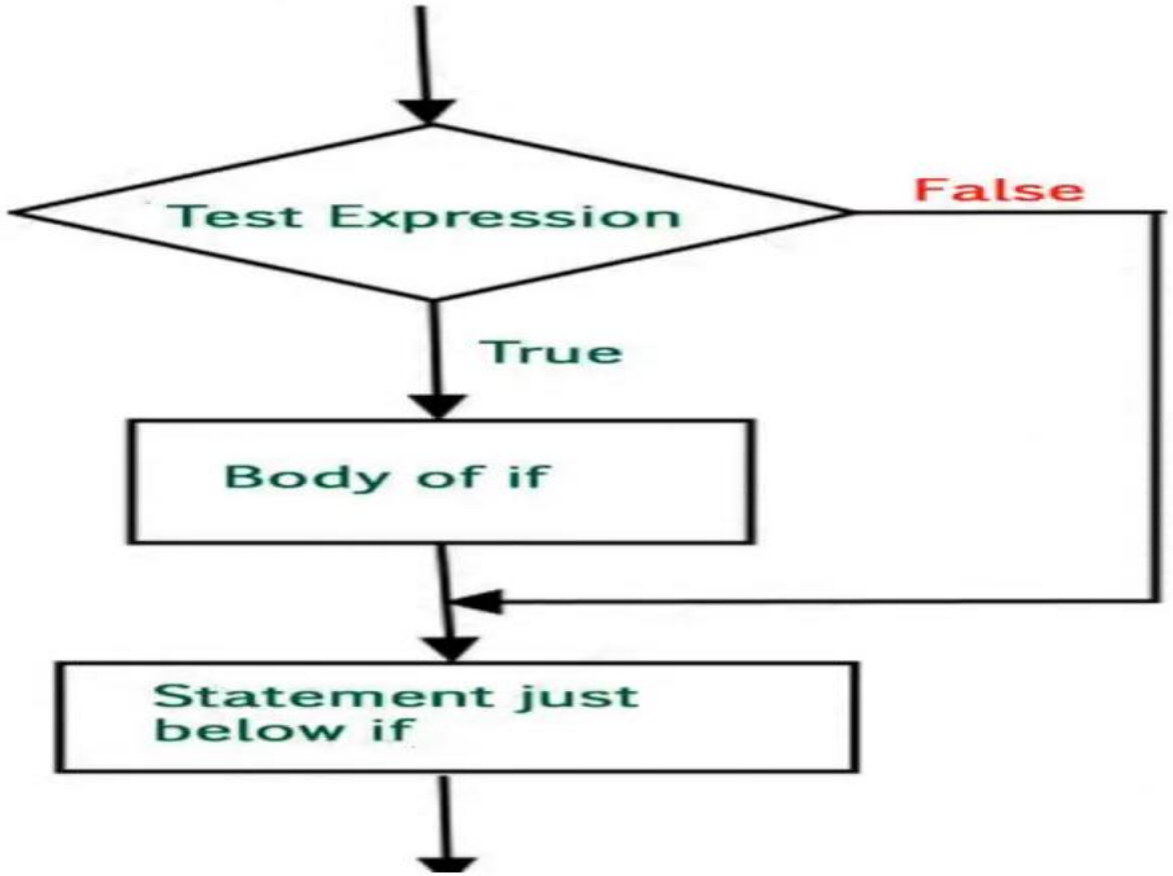
if statement:-

- If statement is used for decision making.
- In if statement,we check a condition.depending on truth value of condition,decision will be taken.
- Written using 'if' keyword.

Syntax:-

```
if condition/test_expression:
        statement 1
        statement 2
#rest of statements
```

Python-Basics- Decision Making



Python-Basics- Decision Making

if-else in python:-

- The if-else statement provides an else block combined with if block which is executed in the False case of condition.
- Syntax:-

```
if test_expression:
        body of if
else:
        body of else
```

True:- if block
False:- else block

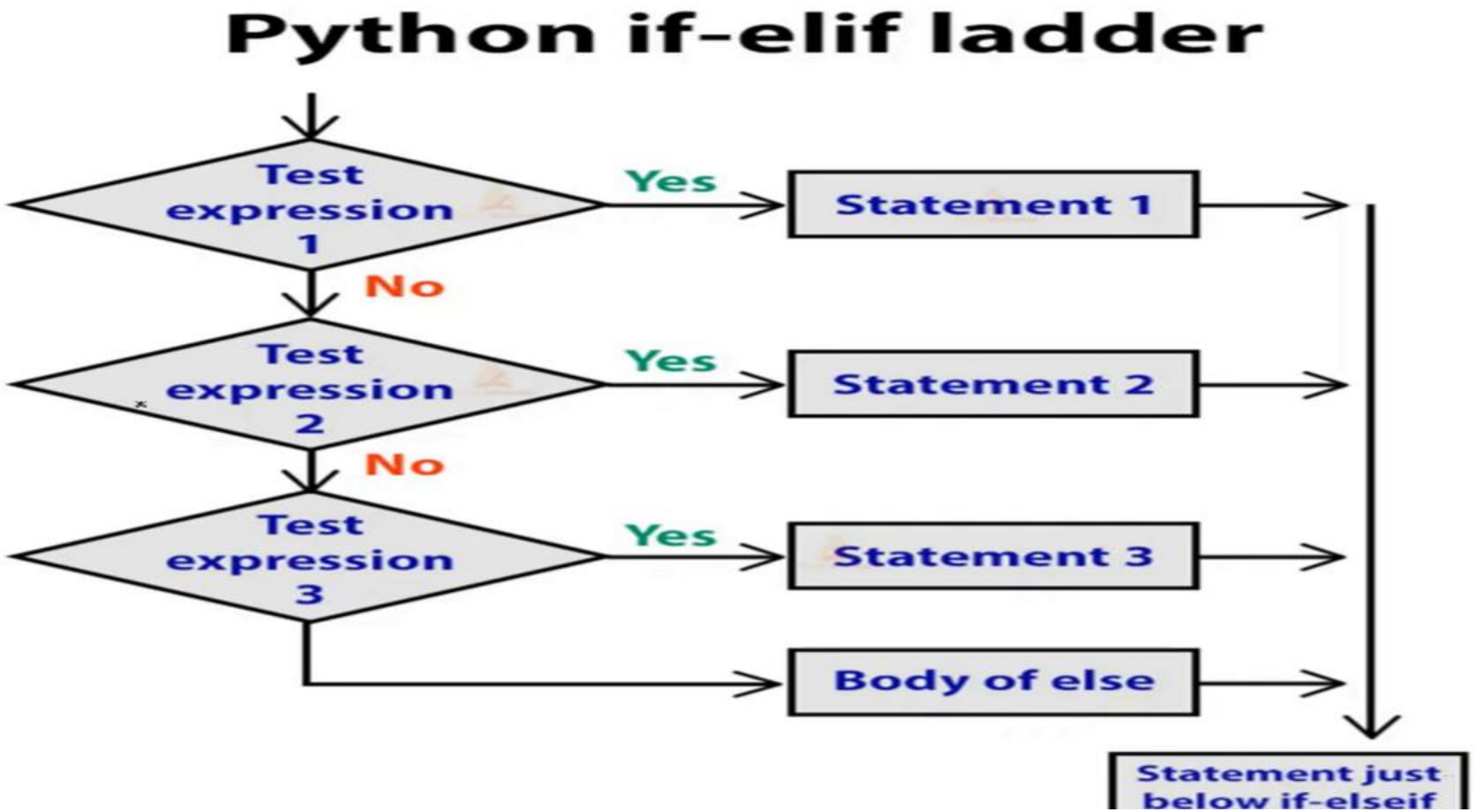
- Only one block is executed at one time.

Python-Basics- Decision Making

elif in python:-

- The elif statement enables us to check multiple conditions and execute a specific block of statements depending upon True condition among them.

Python-Basics- Decision Making



Python-Basics- Decision Making

syntax:-

```
if test_expression1:
        #block of statements
elif test_expression2:
        #block of statements
elif test_expression3:
        #block of statements
else:
        #block of statements
```

Python-Basics- Decision Making

Nested if in Python:-

- We can have a if-else statements inside another if-else statement.This is called nesting of if's.
- Any number of these statements can be nested into one another.
- Indentation is the only way to figure out the level of nesting.
- Confusing,so avoid it.

Python-Basics- Decision Making

Syntax:-

```
if condition:
        statement
        statement
        if condition:
                statement
                statement
        else:
                statement
                statement
else:
        statement
#rest of code
```

Nested if-else

Python-Basics

- Loops are used in programming to repeat a specific block of code.

- In python,we have two types of loops:-
  1) While loop
  2) For loop

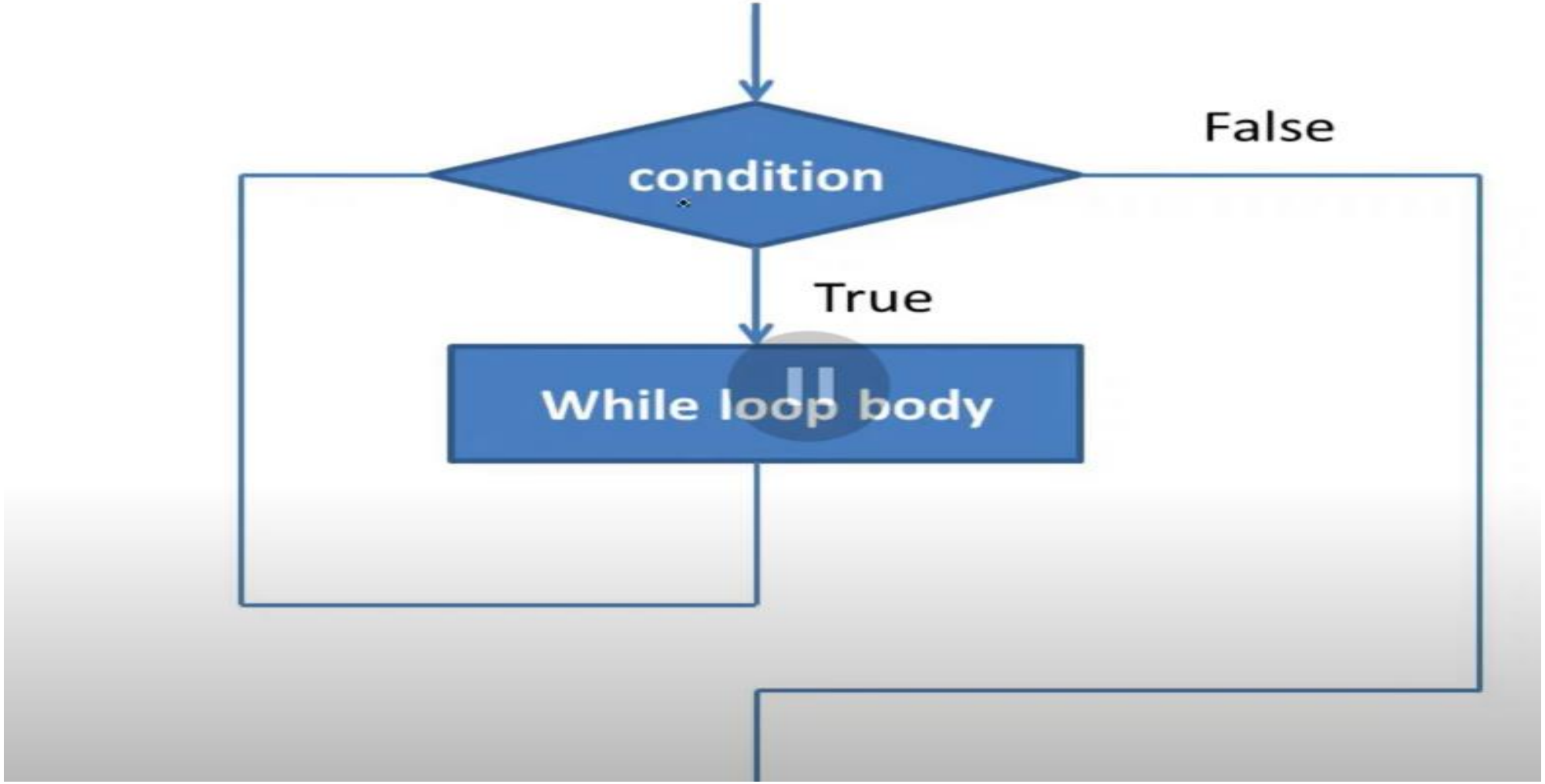
Python While loop:-

- syntax:-

```
while condition:
        block of code
```

- While loop is used to iterate over a block of code as long as condition is True.
- In the while loop,condition is checked first.If condition is True,body of while is executed.

Python-Basics



for loop:-

- for loop is used to iterate over a sequence (list,tuple,string) or other iterable objects.

syntax:-

```
for var in sequence:
        statement 1
        statement 2
        statement n
#Rest of the code
```

Python break :-

- In python,break statement used to alter the flow of program.
- When break occurs,control of program flows to statements immediately after body of loop.

syntax:-

```
for var in sequence:
    #code inside for loop
    if condition:
        break
    #code inside loop
#rest of statements
```

```
while condition:
    #code inside while loop
    if condition:
        break
    #codes inside while loop
#rest of statements
```

Python-Basics

- Concatenation of strings.
- Multiplication of string
- Deletion of string.
- Iteration through string
- Checking character/substring present in string.

Python-Basics

concatenation:-

- Joining two or more strings into a single one.
- It adds strings together.
- The '+' operator does this.
- Example:-

```
str1 = 'Python is'
str2 = 'awesome'
str3 = str1 + str2
print(str3)
```

Output:-

- Python isawesome

Python-Basics

Multiplication:-

- Repeat same string for multiple times.
- Using '*'
- Example:-

```
str1 = 'codeyug'
str2 = str1*2
print(str2)
```

Output:-

codeyugcodeyug

Python-Basics

Deletion:-

- We cannot delete characters of string.But,deleting entire string is possible using ‘del’ keyword.
  - Example:-

```
str1 = ‘codeyug’
del str1
prints (str1)
```

Python-Basics

- Iteration on string
- Finding length of string
- len() function
- String membership
- Finding number of vowels in entered string.

Python-Basics

Finding length of string:-

- Length of string is nothing but number of characters in string.
- Two ways of finding length:-
  1) By manual programming
  2) By len() function.

Python-Basics

.

Length by manual programming :-

```
str1 = input("Enter the string:")
counter=0
for char in str1:
        counter+=1
print('Length of string:',counter)
```

Python-Basics

count():-

- Inbuilt method which returns a number of times a specified substring occurs in a string

Syntax:-

```
string.count(substring,start,end)
```

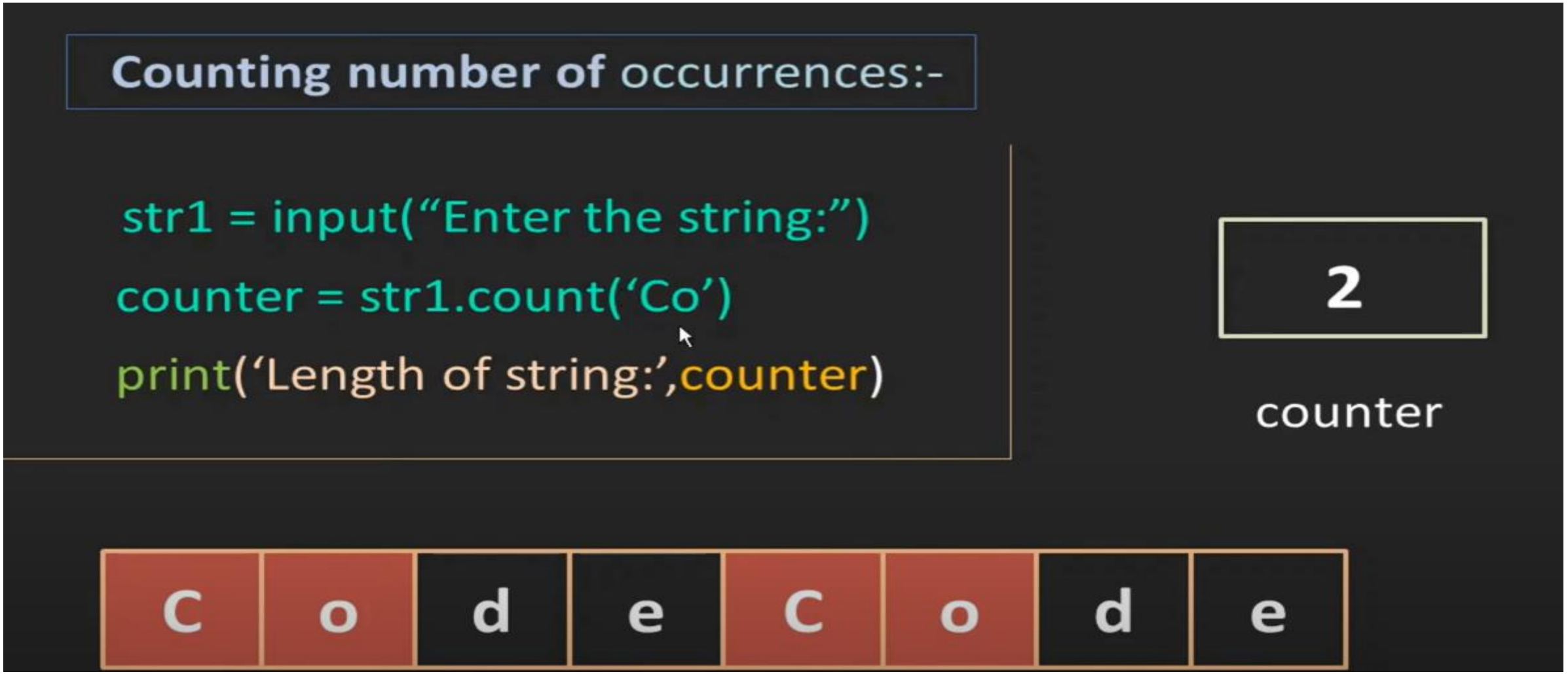
- Substring :- A string whose occurrences is to be calculated.
- start :- From where to start searching.(start index)
- end :- where to end searching.(end index)

Python-Basics

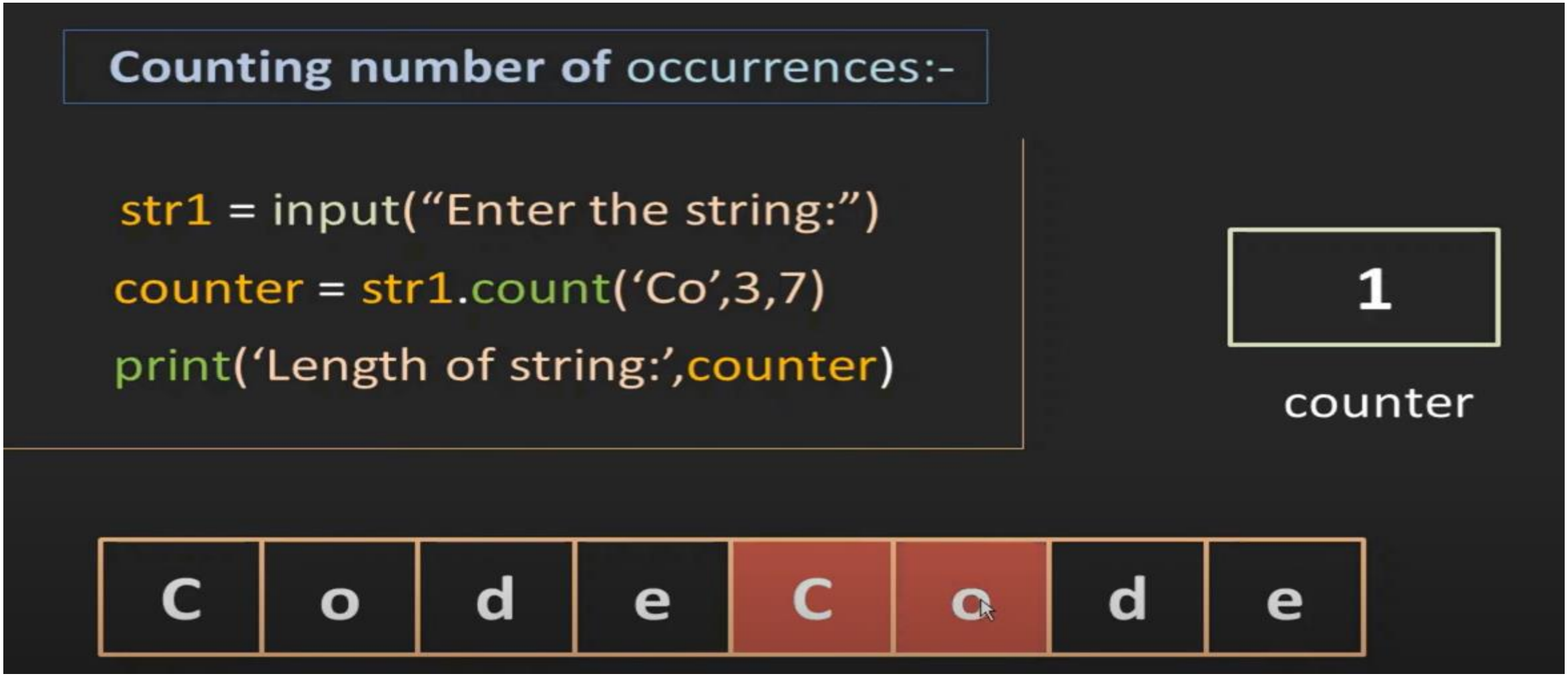
important:-

- start,end are optional.
- Substring is required argument.
- Default start is index 0.
- Default end is end of string(index length of string)

Python-Basics



Python-Basics

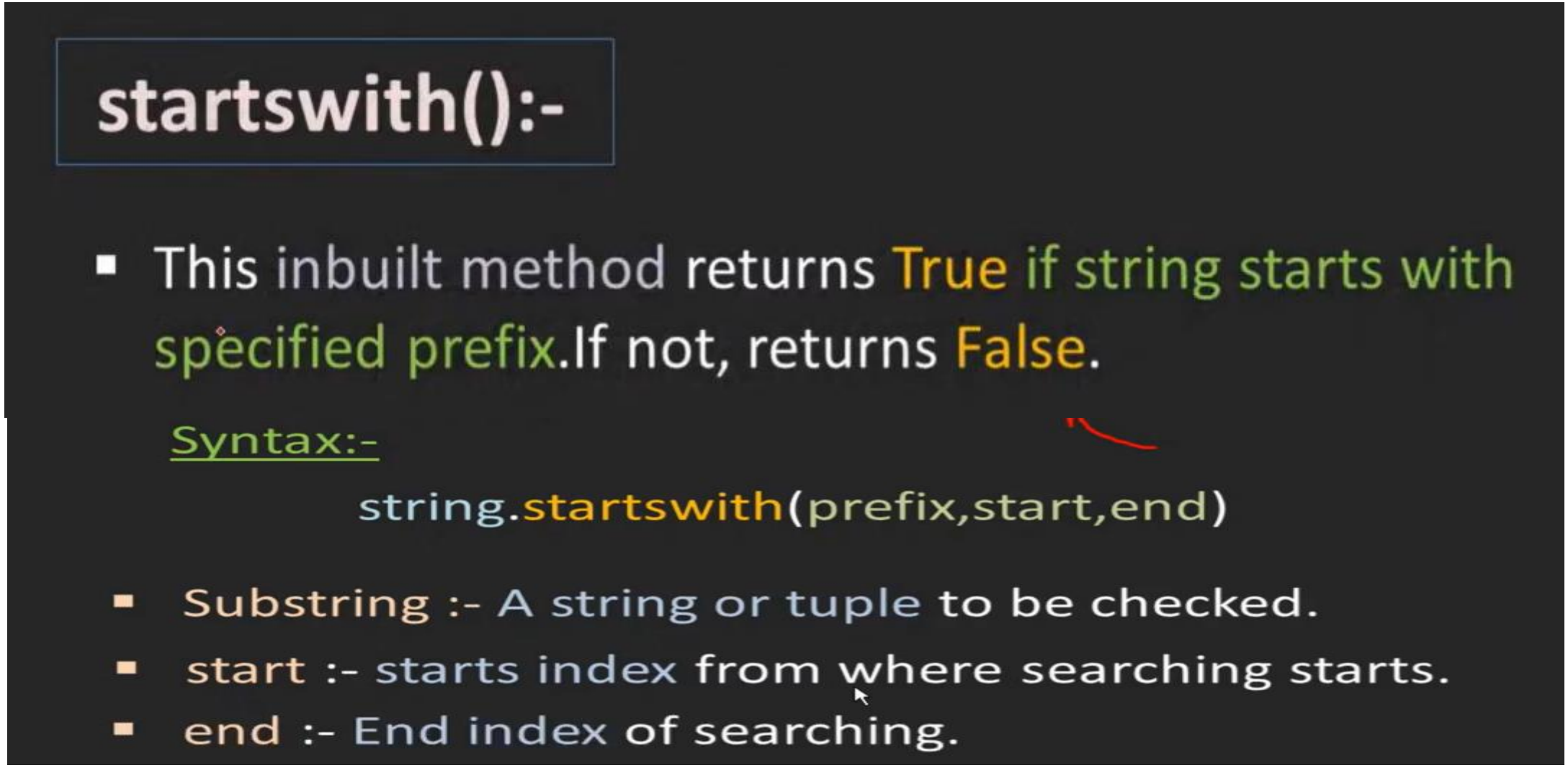


Python-Basics

.

```
1  world_cup_winners='''1975-WestIndies,1979-WestIndies,1983-India
2  1987-Australia,1992-Pakistan,1996-SriLanka,1999-Australia,
3  2003-Australia,2007-Australia,2011-India,2015-Australia,2019-Engla
4  world_cup_india=world_cup_winners.count('India')
5  print("India win time:",world_cup_india)
```

Python-Basics



Python-Basics

- Removing leading and trailing characters from given string.

- Three important inbuilt methods:
    1) lstrip()
    2) strip()
    3) rstrip()

Python-Basics

- Removing leading and trailing characters from given string.

- Three important inbuilt methods:
    1) lstrip()
    2) strip()
    3) rstrip()

Python-Basics

lstrip():-

- It removes any leading characters (space is the default leading characters to remove.)

  Syntax:-

  ```
  string.lstrip(characters)
  ```

- characters :- a set of characters to remove as leading characters . It is optional argument.
- All combinations of characters are removed from left until first mismatch.

Python-Basics

strip():-

- It removes leading and trailing characters (space is the default characters to remove.)

  Syntax:-

  ```
  string.strip(characters)
  ```

- characters :- a set of characters to remove . It is optional argument.
- All combinations of characters are removed from left until first mismatch . Then,it remove from right until first mismatch.

Python-Basics

- Python string comparison can be done using comparison operators (==,!=,>,<,>=,<=)
- The characters of both strings are compared one by one.
- When different characters are found,then their unicode values is compared.
- The character with lower unicode value is considered as lower.

Python-Basics

replace():-

- The replace() method returns a copy of string where all occurrences of a sub-string is replaced with another substring

Syntax:-

```
string.replace(old_value,new_value,count)
```

- old_value :- old substring you want to replace.
- new_value:- new substring for old one.
- count:- optional argument. Number of times you want to replace.

Python-Basics

find():-

- The find() method returns index of first occurrence of substring. If not fount, it returns -1.

  Syntax:-

  ```
  string.find(substring,start,end)
  ```

- substring:-The substring to search for.
- start:-where to start search . Default is 0.
- end:- Where to end the search . Default is end of string

rfind():-

- The rfind() method returns index of last occurrence of substring. If not fount, it returns -1.

Syntax:-

```
string.rfind(substring,start,end)
```

Python-Basics

split():-

- The split() method breaks up a string at specified separator returns a list of strings.

Syntax:-

```
string.split(separator,maxsplit)
```

- separator:- separator for splitting string. Bydefault, whitespace is a separator
- maxsplit:- how many splits to do.

Python-Basics

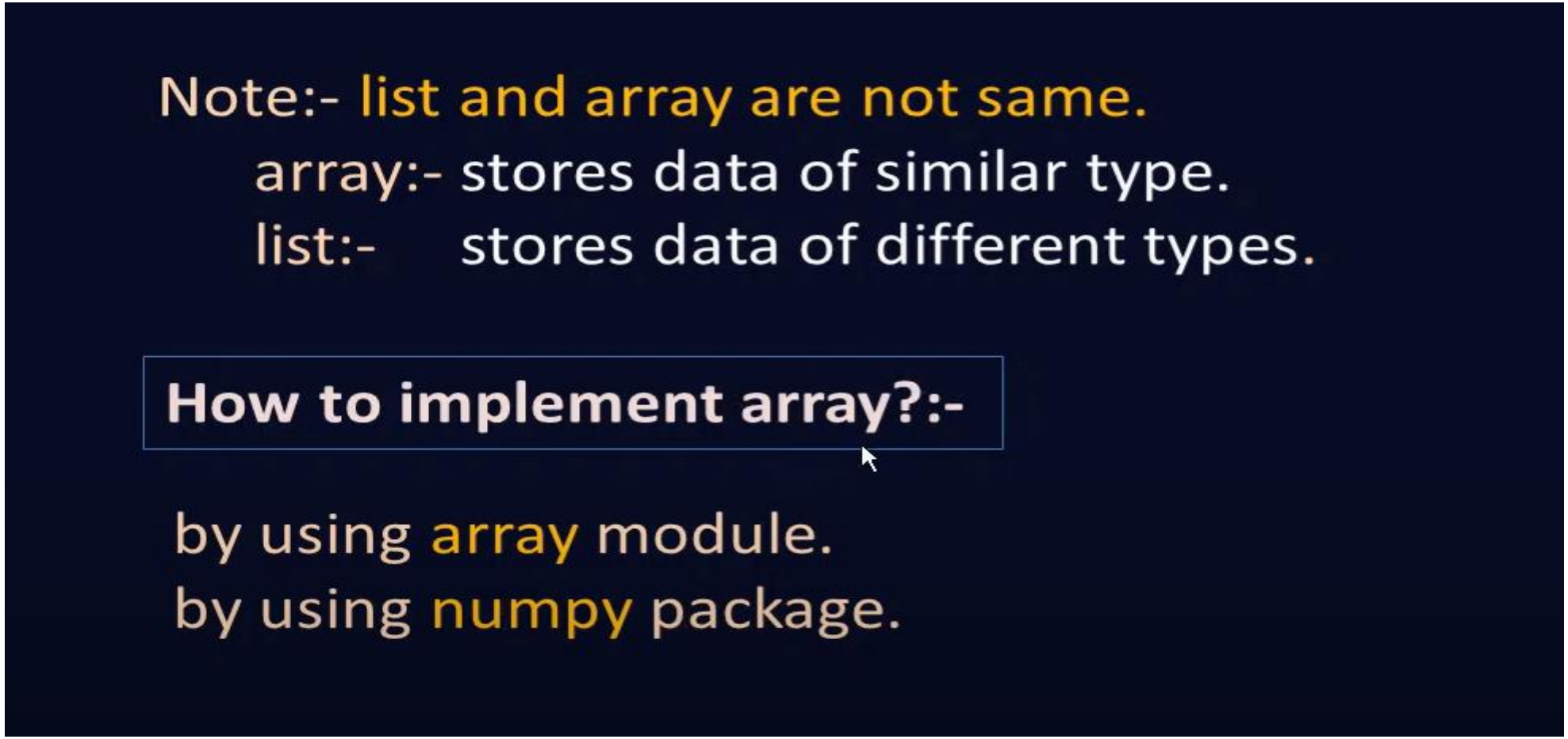
List in python:-

- A list is a collection of values or items of different types.
- It is ordered collection.

Creating list:-

- The items in list are separated by comma(,) and enclosed within square brackets [ ].
  ex. data=[20,13.4,'india',2+3j]

Python-Basics



Accessing elements in list:-

Two ways:-

1) Indexing
2) Slicing

Indexing:- used to access individual(single) element of list.

slicing:- used to access group of elements of alist. We can acces
range of elements using slicing.

Python-Basics

Index:-

- In python, Every element is represented by index.

list1 = ['yes',10,20.4,2+3j,[1,2,3]]

Python-Basics

Accessing Single Element:-

- To access single element of list, python uses indexing.

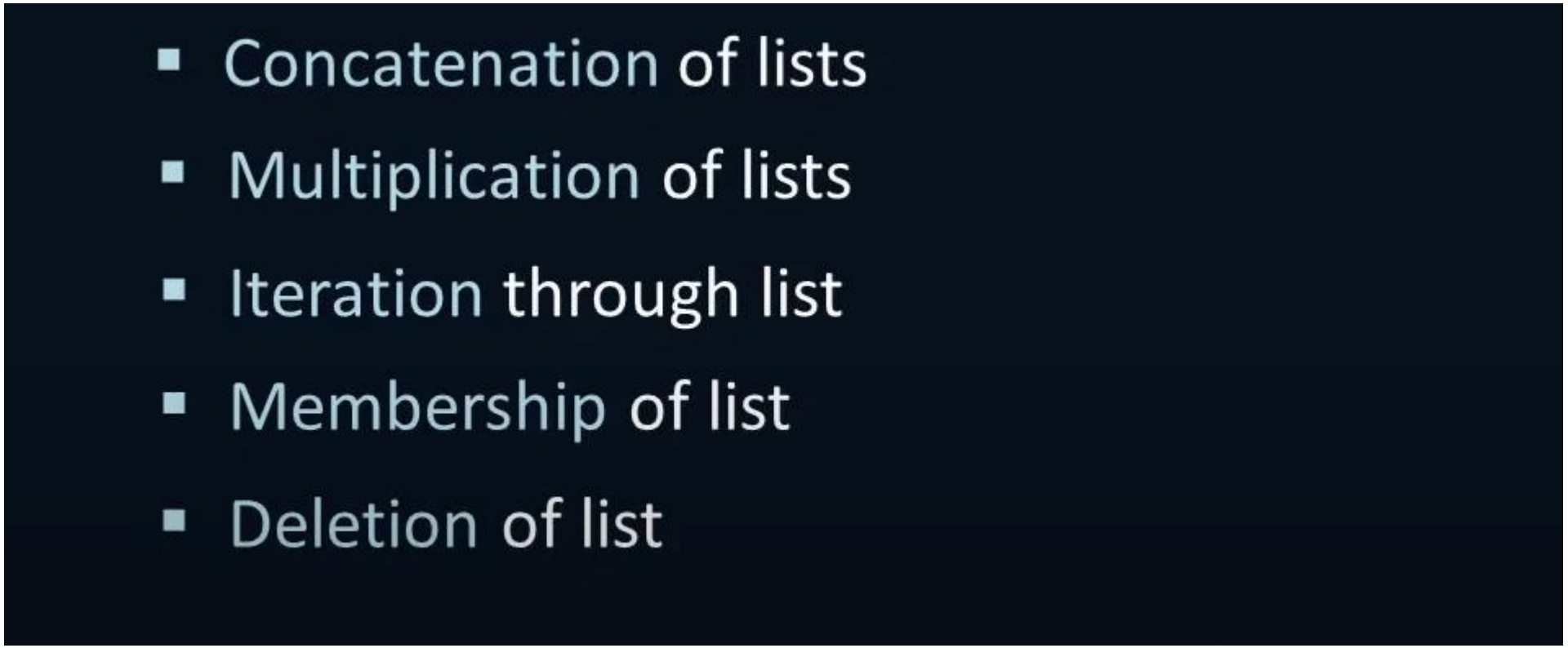
list1 = ['yes',10,20.4,2+3j,[1,2,3]]

Syntax:- **var_name[index]**

list1[0] ---> yes list1[1] --->10 list1[2] ---> 20.4

list1[-2] ---> 2+3j list1[-1] ---> [1,2,3]

Python-Basics



Python-Basics

finding maximum in list

- To find maximum in list , we use an inbuilt method of list i.e max().
- Syntax:-

```
max(iterable,key,default)
```

iterable:- an iterable such as list.

Key (optional) :- basis for comparison.

Default:- default value is given iterable is empty.

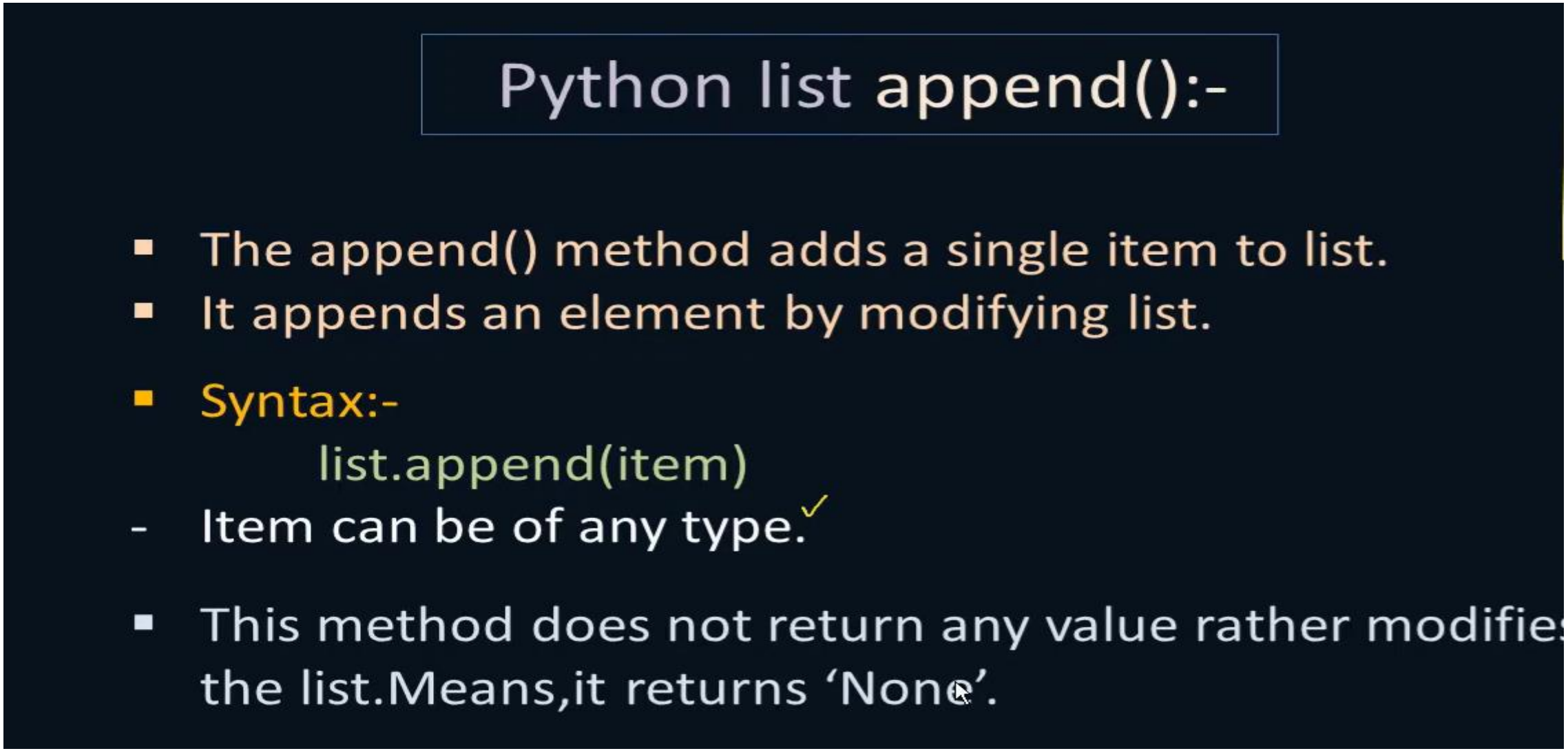
finding minimum in list

- To find minimum in list , we use an inbuilt method of list i.e min().
- Syntax:-

```
min(iterable,key,default)
```

iterable:- an iterable such as list.
Key (optional) :- basis for comparison.
Default:- default value is given iterable is empty.

Python-Basics



Python list extend():-

- The append() method extends list by appending all items from iterable. Iterable can be list,tuple.set etc
- Syntax:-

  list1.extend(iterable)
- This method does not return any value rather modifies the list.Means,it returns 'None'.

Python-Basics

Python list insert():-

- The insert() method insert an element to list at specified index.
- Syntax:-

  list.insert(index,element)

- element can be of any type.
- This method does not return any value rather modifies the list.Means,it returns 'None'.

Python-Basics

- **LIST**
  - Remove()
  - Pop()
  - Clear()
  - Del

Python-Basics

- **1. remove(element)**

Purpose: Removes the first occurrence of a specified element from the list.

Argument: Takes the element to be removed as an argument.

Effect: Modifies the original list in place.

Raises ValueError: If the element is not found in the list.

Example:

```
my_list = [10, 20, 30, 20, 40]
my_list.remove(20)  # Removes the first occurrence of 20
print(my_list)  # Output: [10, 30, 20, 40]
```

Python-Basics

- **2. pop([index])**

  Purpose: Removes and returns the element at the specified index. If no index is provided, it removes and returns the last element.

  Argument: Optional index of the element to be removed.

  Effect: Modifies the original list in place.

  Raises IndexError: If the index is out of range.

  Example:

```
my_list = [10, 20, 30, 40]
removed_element = my_list.pop(1)  # Removes and returns the element at index 1 (20)
print(removed_element)  # Output: 20
print(my_list)  # Output: [10, 30, 40]
```

Python-Basics

- **3. clear()**

  Purpose: Removes all elements from the list, making it empty.

  Argument: Takes no arguments.

  Effect: Modifies the original list in place.

Example:

```
my_list = [10, 20, 30, 40]
my_list.clear()
print(my_list)  # Output: []
```

4.del

.

Purpose: Can be used to delete an element at a specific index, a slice of elements, or the entire list.

Argument: Takes the index, slice, or the list variable itself as an argument.

Effect: Modifies the original list in place or deletes the list variable entirely.

Raises IndexError: If the index is out of range.

Examples:

```
my_list = [10, 20, 30, 40]
del my_list[1]  # Deletes the element at index 1 (20)
print(my_list)  # Output: [10, 30, 40]

del my_list[1:3]  # Deletes elements from index 1 to 2 (30, 40)
print(my_list)  # Output: [10]

del my_list  # Deletes the entire list variable
# print(my_list)  # This would raise a NameError because my_list no longer exists
```

Python-Basics

Summary:

.

remove(): Removes the first occurrence of a specific element.

pop(): Removes and returns an element at a specific index (or the last element if no index is given).

clear(): Removes all elements, making the list empty.

del: Can be used to delete elements by index, slice, or the entire list variable.

What are Tuples?

- Tuples are ordered**, immutable** collections of elements.
- They are similar to lists, but unlike lists, tuples cannot be modified after creation.
- Tuples are defined using parentheses () and elements are separated by commas.
- Elements in a tuple can be of different data types.

Creating Tuples

.

- Empty Tuple: empty_tuple = ()
- Tuple with Elements: my_tuple = (1, "hello", 3.14)
- Tuple with a Single Element: single_tuple = (1,) (Note the trailing comma)
- Using the tuple() constructor: tuple_from_list = tuple([1, 2, 3])

Accessing Elements

- Elements in a tuple are accessed using indexing, similar to lists.
- Indexing starts from 0 for the first element.
- Negative indexing can be used to access elements from the end of the tuple.

Python-Basics

Immutability

- Once a tuple is created, its elements cannot be changed.
- This means you cannot add, remove, or modify elements in a tuple.
- Immutability provides data integrity and prevents accidental modifications.

Operations on Tuples

.

- Concatenation: tuple1 + tuple2 creates a new tuple by combining the elements of tuple1 and tuple2.
- Repetition: tuple * n creates a new tuple by repeating the elements of tuple n times.
- Membership: element in tuple checks if element is present in tuple.
- Iteration: You can iterate through the elements of a tuple using a for loop.

When to Use Tuples

- When you need an ordered collection of elements that should not be modified.
- For representing data that is logically grouped together, such as coordinates or database records.
- As keys in dictionaries, since tuples are immutable and hashable.
- For returning multiple values from a function.

Advantages of Tuples

- **Data Integrity**: Immutability ensures that the data in a tuple remains unchanged.
- **Performance**: Tuples are generally faster than lists for accessing elements due to their immutability.
- **Hashability**: Tuples can be used as keys in dictionaries, which is not possible with lists.

Memory Allocation: List Vs Tuple

Lists: Lists are mutable, meaning their size and contents can be changed after creation. To accommodate potential changes, Python allocates extra memory to lists beyond the space required to store the initial elements. This extra memory allows for efficient insertion and deletion of elements without frequent reallocations.

Tuples: Tuples are immutable, meaning their size and contents are fixed once they are created. Since tuples cannot be modified, Python allocates only the minimum memory block required to store their data. This results in tuples being more memory-efficient compared to lists.

Python-Basics

What is a dictionary?

- An unordered collection of key-value pairs.
- Keys must be unique and immutable (e.g., strings, numbers, tuples).
- Values can be of any data type.
- Denoted by curly braces { }.

Python-Basics

What is a dictionary?

- An unordered collection of key-value pairs.
- Keys must be unique and immutable (e.g., strings, numbers, tuples).
- Values can be of any data type.
- Denoted by curly braces {}.

Why use dictionaries?

- Efficient way to store and retrieve data based on keys.
- Useful for representing real-world objects with attributes.
- Flexible and adaptable data structure.

Accessing Values

- Using keys: my_dict["name"] (returns "Alice")
- Using the get() method: my_dict.get("age") (returns 30)
- get() method avoids KeyError if the key is not found.
- Checking for key existence: "name" in my_dict (returns True)

Modifying Dictionaries

- Adding new key-value pairs: my_dict["occupation"] = "Engineer"
- Updating existing values: my_dict["age"] = 31
- Removing key-value pairs:
- del my_dict["city"]
- my_dict.pop("age") (returns the removed value)

Dictionary Methods

- keys(): Returns a list of all keys.
- values(): Returns a list of all values.
- items(): Returns a list of key-value pairs as tuples.
- clear(): Removes all key-value pairs.
- copy(): Creates a shallow copy of the dictionary.

What is set?

- A set is an unordered collection of items of different types enclosed in curly braces.
- Ex.

```
s = {101,'shantanu','pass',98.2}
```

Creating set:-

Two ways:-

1) using curly braces.

syntax:- setname = {ele1,ele2,ele3}

2) using set() function.

syntax:- setname = set(iterable)

Important about set:-

- 1. No duplicates are allowed.

Ex.

```
s={10,20,10,10,20,30,20}
print(s)
```

o/p:- {10,20,30}

Python-Basics

- 2. Elements are not in particular order.

Ex.

```
s={10,20,10,10,20,30,20}
print(s)
```

o/p:- {10,20,30} / {20,10,30} / {30,10,20} /anything

Python-Basics

- 3. Indexing and slicing cannot be applied on set.

Ex.

```
s={10,20,10,10,20,30,20}
print(s[1])
```

o/p:- TypeError: 'set' object is not subscriptable

Python-Basics

- 4. Set is mutable.

Ex.

```
s={10,20,10,10,20,30,20}
s.add(100)
```

o/p:- 100 will be added at any position.

- 5. Elements in set must be immutable.

Ex.

```
s={10,20,10,10,[10,20,30]}
print(s)
```

o/p:- Type-Error: unhashable type: 'list'

Creating Empty set:-

- Syntax:-

```
set_name =set( )
```

Set with single item:-

- Syntax:-

```
set_name = {100}
```

Revision

Set in python

- ❑ Items are unique
- ❑ Set is mutable
- ❑ Items are immutable.
- ❑ Items are unordered
- ❑ No indexing and slicing

Python-Basics

Real-World Use Cases for Sets:

- **1.Removing Duplicates:** Sets are excellent for removing duplicates from a list or any other iterable. Simply convert the iterable to a set, and the duplicates will be automatically eliminated.

  2.Membership Testing: Checking if an element exists in a large collection is much faster with sets compared to lists. This is useful for tasks like validating user input or filtering data.

  3.Mathematical Operations: Sets provide efficient implementations of set operations like union, intersection, difference, and symmetric difference. These are useful for tasks like finding common elements, identifying unique elements, or comparing data sets.

  4.Data Deduplication: In databases or data analysis, sets can be used to identify and remove duplicate records.

Python-Basics

01 add() method

- Add one element to set

02 update() method

- Add multiple elements in set

03 remove() method

- Remove one element

04 discard() method

- Remove one element

05 pop() method

- Remove any element randomly

06 clear() method

- Remove all elements from set

Adding item to set

- Add single item to set at random position.
- Syntax:

```
set_name.add(item)
```

Adding items to set

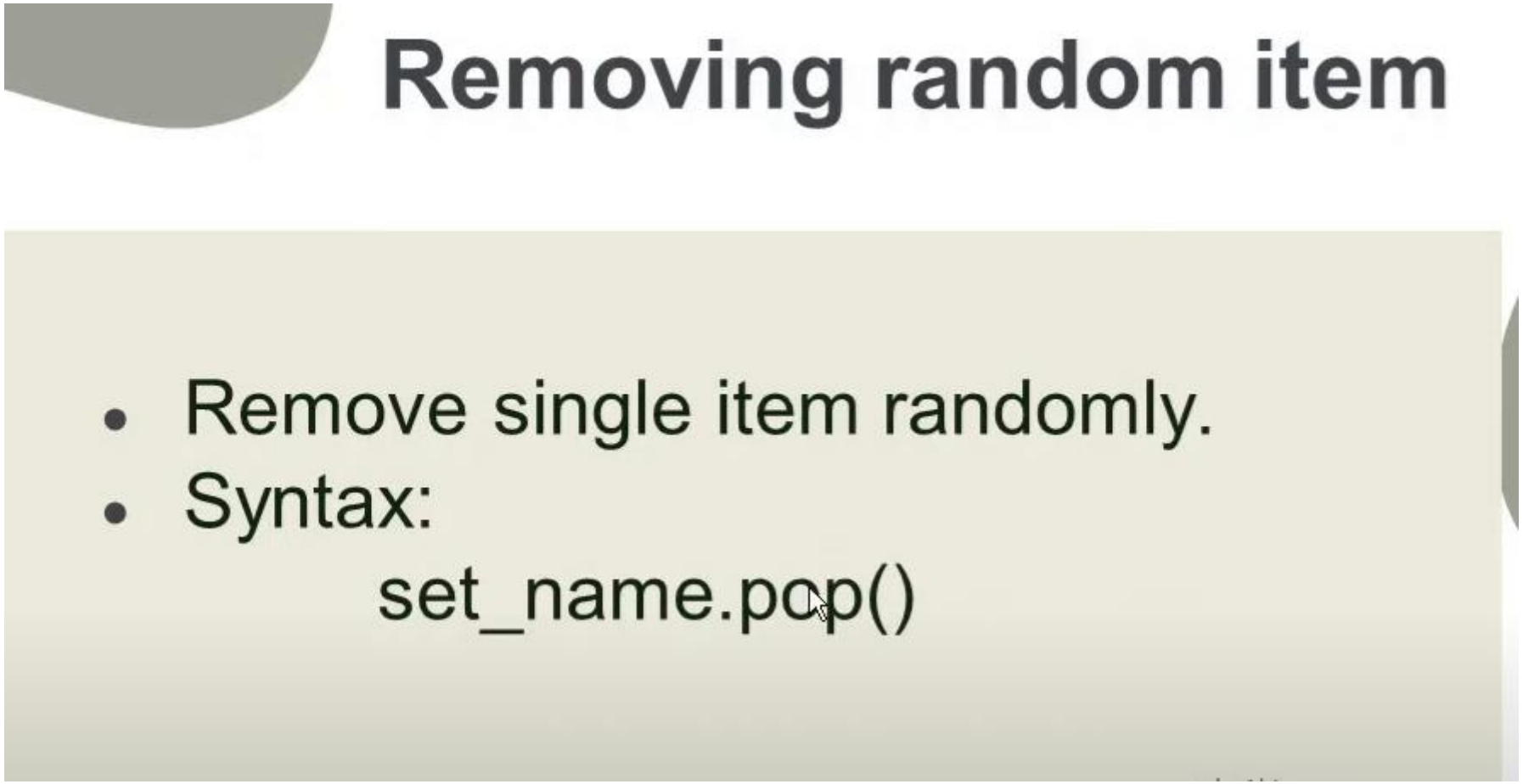
- Add multiple items to set at random positions.
- Syntax:

```
set_name.update([item1,item2])
```

Removing single item

- Remove single item.
- Syntax:

```
set_name.discard(item)
set_name.remove(item)
```



Python-Basics

Q1

1. Which of the following is the correct way to access the third element of a list named my_list?

a) my_list[2]

b) my_list[3]

c) my_list[-1]

d) my_list[-3]

Python-Basics

Q1

.

1. Which of the following is the correct way to access the third element of a list named my_list?

a) my_list[2]

b) my_list[3]

c) my_list[-1]

d) my_list[-3]

Python-Basics

Q2

. my_list = [1, 2, 3, 4, 5]
print(my_list[1:3])

a) [1, 2]

b) b) [2, 3]

c) c) [2, 3, 4]

d) d) [1, 2, 3]

Python-Basics

Q2

. my_list = [1, 2, 3, 4, 5]
print(my_list[1:3])

a) [1, 2]

b) b) [2, 3]

c) c) [2, 3, 4]

d) d) [1, 2, 3]

Python-Basics

Q3

. 3. Which list method is used to add an element to the end of a list?

a) insert()

b) b) append()

c) c) extend()

d) d) add()

Python-Basics

Q3

. 3. Which list method is used to add an element to the end of a list?

a) insert()

b) b) append()

c) c) extend()

d) d) add()

Python-Basics

Q4

. 4. What is the output of the following code snippet?

```
my_list = [1, 2, 3]
my_list.extend([4, 5])
print(my_list)
```

a) [1, 2, 3, 4, 5]
b) [1, 2, 3, [4, 5]]
c) [1, 2, 3, 4]
d) [1, 2, 3, 5]

Python-Basics

Q4

. 4. What is the output of the following code snippet?

```
my_list = [1, 2, 3]
my_list.extend([4, 5])
print(my_list)
```

a) [1, 2, 3, 4, 5]
b) [1, 2, 3, [4, 5]]
c) [1, 2, 3, 4]
d) [1, 2, 3, 5]

Python-Basics

Q5

. 5. Which list method is used to remove an element by its value?

a) pop() b) remove() c) delete() d) clear()

Python-Basics

Q5

. 5. Which list method is used to remove an element by its value?

a) pop() b) remove() c) delete() d) clear()

Python-Basics

Q6

. 6. Which list method is used to insert an element at a specific index?

a) append() b) extend() c) insert() d) add()

Python-Basics

Q6

. 6. Which list method is used to insert an element at a specific index?

a) append() b) extend() c) insert() d) add()

Python-Basics

Q7

. 7. What is the output of the following code snippet?

```
my_list = [1, 2, 3, 4, 5]
print(my_list[::-1])
```

a) [1, 2, 3, 4, 5]

b) b) [5, 4, 3, 2, 1]

c) c) [1, 3, 5]

d) d) [2, 4]

Python-Basics

Q7

. 7. What is the output of the following code snippet?

```
my_list = [1, 2, 3, 4, 5]
print(my_list[::-1])
```

a) [1, 2, 3, 4, 5]

b) b) [5, 4, 3, 2, 1]

c) c) [1, 3, 5]

d) d) [2, 4]

Python-Basics

Q8

. 8. What is the output of the following code snippet?

```
my_list = [1, 2, 3, 4, 5]
new_list = my_list[:]
new_list[0] = 10
print(my_list)
```

a) [10, 2, 3, 4, 5]
b) [1, 2, 3, 4, 5]
c) [1, 10, 3, 4, 5]
d) [10, 10, 3, 4, 5]

Python-Basics

Q8

. 8. What is the output of the following code snippet?

```
my_list = [1, 2, 3, 4, 5]
new_list = my_list[:]
new_list[0] = 10
print(my_list)
```

a) [10, 2, 3, 4, 5]
b) [1, 2, 3, 4, 5]
c) [1, 10, 3, 4, 5]
d) [10, 10, 3, 4, 5]

Python-Basics

Q9

. 9. What is the output of the following code snippet?

```
my_list = [1, 2, [3, 4]]
print(my_list[2][0])
```

a) 1
b) 2
c) 3
d) 4

Python-Basics

Q9

. 9. What is the output of the following code snippet?

```
my_list = [1, 2, [3, 4]]
print(my_list[2][0])
```

a) 1
b) 2
c) 3
d) 4

Python-Basics

Q10

. 10. What is the result of the expression [1, 2, 3] * 3?

a) [1, 2, 3, 1, 2, 3, 1, 2, 3]

b) [3, 6, 9]

c) [[1, 2, 3], [1, 2, 3], [1, 2, 3]]

d) Error

Python-Basics

Q10

. 10. What is the result of the expression [1, 2, 3] * 3?

a) [1, 2, 3, 1, 2, 3, 1, 2, 3]

b) [3, 6, 9]

c) [[1, 2, 3], [1, 2, 3], [1, 2, 3]]

d) Error

Python-Basics

Q11

11. Which of the following is the correct way to create an empty dictionary?

a) {}

b) []

c) ()

d) dict()

Python-Basics

Q11

11. Which of the following is the correct way to create an empty dictionary?

a) {}

b) []

c) ()

d) dict()

Python-Basics

Q12

.

12. What is the output of the following code snippet?

```
my_dict = {'a': 1, 'b': 2, 'c': 3}
print(my_dict['b'])
```

a) 1
b) 2
c) 3
d) KeyError

Python-Basics

Q12

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12. What is the output of the following code snippet?

```
my_dict = {'a': 1, 'b': 2, 'c': 3}
print(my_dict['b'])
```

a) 1
b) 2
c) 3
d) KeyError

Python-Basics

Q13

1Which dictionary method is used to add a new key-value pair?

a) append()

b) insert()

c) update()

d) There is no specific method; you can directly assign a value to a new key.

Python-Basics

Q13

.

1Which dictionary method is used to add a new key-value pair?

a) append()

b) insert()

c) update()

d) There is no specific method; you can directly assign a value to a new key.

Python-Basics

Q14

14. Which dictionary method is used to add a new key-value pair?

a) append()

b) insert()

c) update()

d) There is no specific method; you can directly assign a value to a new key.

Python-Basics

Q14

.

14Which dictionary method is used to add a new key-value pair?

a) append()

b) insert()

c) update()

d) There is no specific method; you can directly assign a value to a new key.

Python-Basics

Q15

15 Which of the following is NOT a valid dictionary key?

a) 10

b) "hello"

c) [1, 2, 3]

d) (1, 2).

Python-Basics

Q15

.

15 Which of the following is NOT a valid dictionary key?

a) 10

b) "hello"

c) [1, 2, 3]

d) (1, 2).

Python-Basics

Q16

16 How can you check if a key exists in a dictionary?

a) Use the in keyword.

b) Use the has_key() method.

c) Use the find() method.

d) Use the index() method.

Python-Basics

Q16

16 How can you check if a key exists in a dictionary?

a) Use the in keyword.

b) Use the has_key() method.

c) Use the find() method.

d) Use the index() method.

Python-Basics

Q17

Which of the following is the correct way to create an empty tuple?

a) ()

b) []

c) {}

d) tuple()

Python-Basics

Q17

Which of the following is the correct way to create an empty tuple?

a) ()

b) []

c) {}

d) tuple()

Python-Basics

Q18

.

Which of the following operations is NOT allowed on a tuple?

a) Concatenation using the + operator.

b) Repetition using the * operator.

c) Slicing using the : operator.

d) Modifying an element using indexing (e.g., my_tuple[0] = 10).

Python-Basics

Q18

.

Which of the following operations is NOT allowed on a tuple?

a) Concatenation using the + operator.

b) Repetition using the * operator.

c) Slicing using the : operator.

d) Modifying an element using indexing (e.g., my_tuple[0] = 10).

Python-Basics

Q19

.

19 Why are tuples often preferred over lists in certain situations?

a) They are more memory-efficient.

b) They can be used as dictionary keys.

c) They provide data integrity when immutability is desired.

d) All of the above.

Python-Basics

Q19

.

19 Why are tuples often preferred over lists in certain situations?

a) They are more memory-efficient.

b) They can be used as dictionary keys.

c) They provide data integrity when immutability is desired.

d) All of the above.

Python-Basics

Q20

.

Which of the following statements accurately describes the key difference between tuples and lists?

a) Tuples are ordered collections, while lists are unordered.

b) Tuples are mutable, while lists are immutable.

c) Tuples are immutable, while lists are mutable.

d) Tuples can only contain homogeneous elements, while lists can contain heterogeneous elements.

Python-Basics

Q20

.

Which of the following statements accurately describes the key difference between tuples and lists?

a) Tuples are ordered collections, while lists are unordered.

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