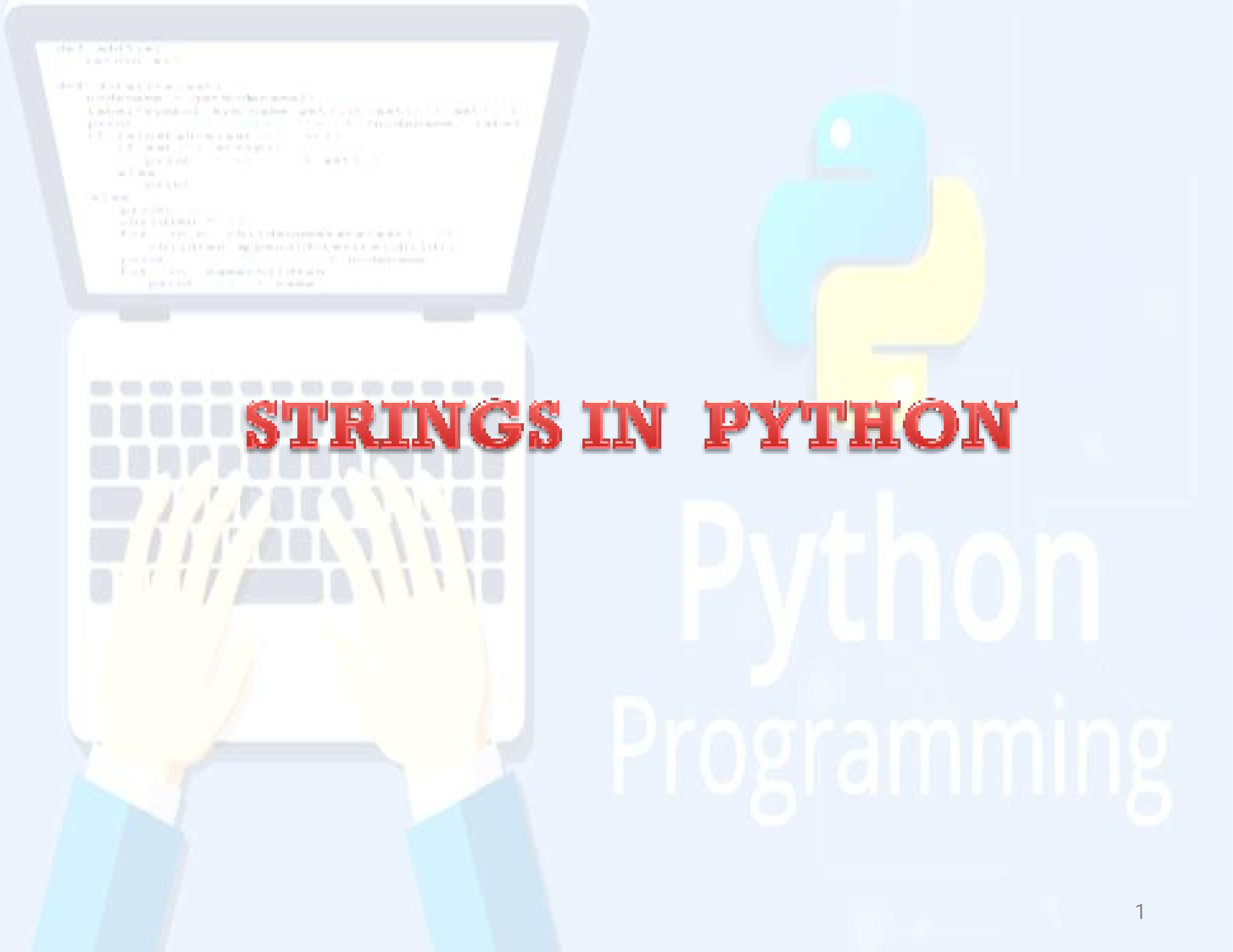
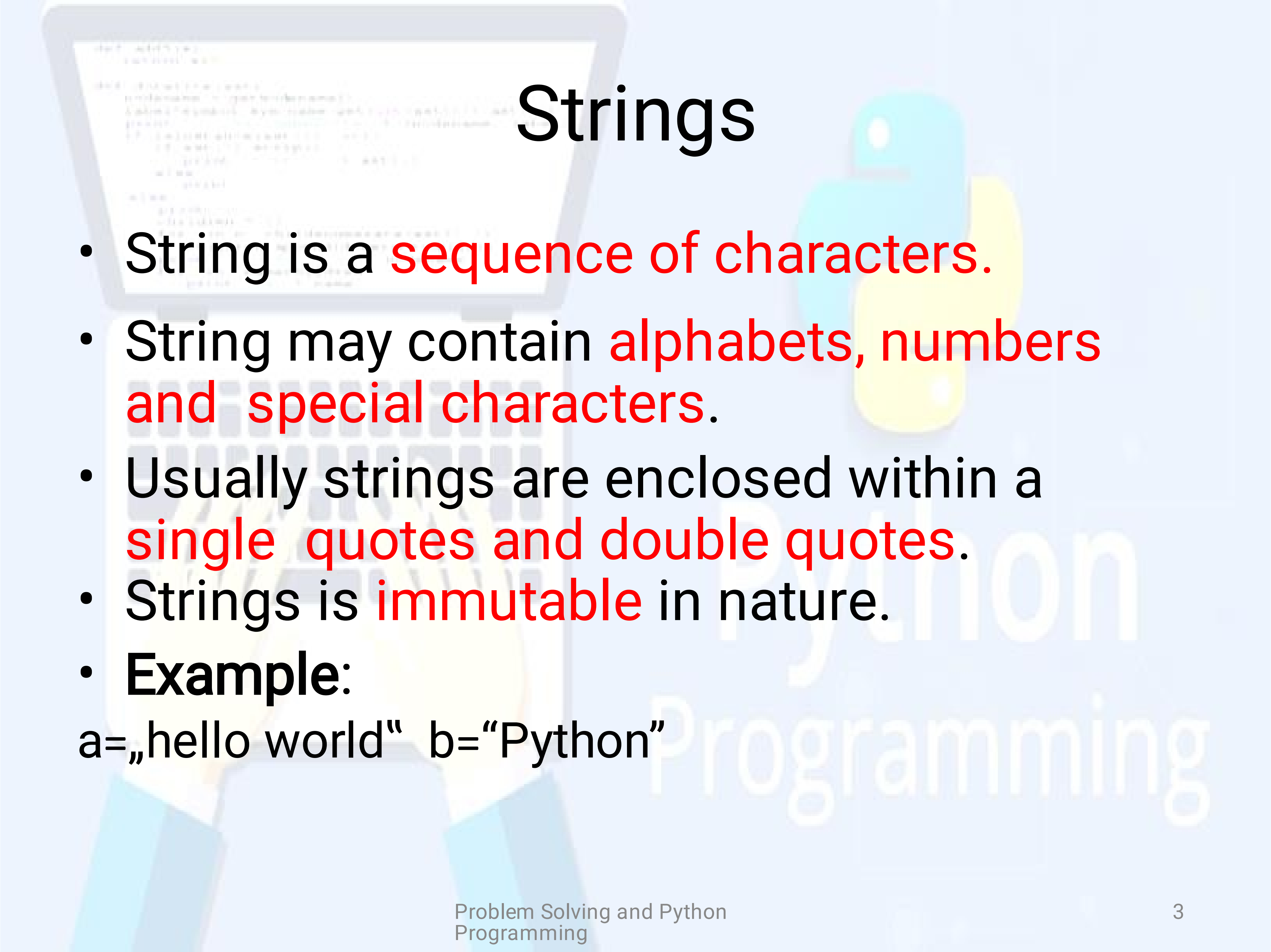


STRINGS IN PYTHON

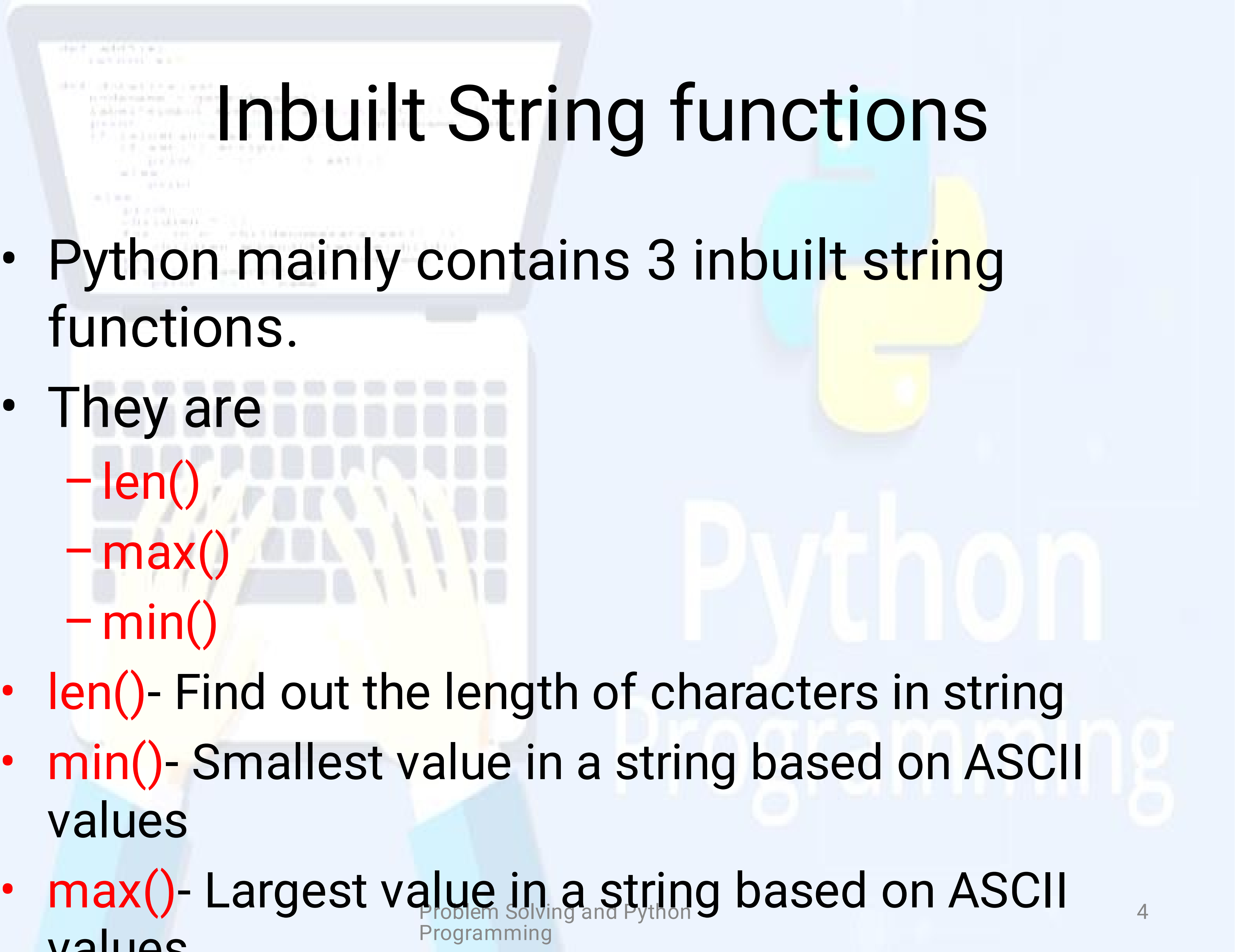
Strings: string slices, immutability, string functions and methods, string module



Strings

- String is a sequence of characters.
- String may contain alphabets, numbers and special characters.
- Usually strings are enclosed within a single quotes and double quotes.
- Strings is immutable in nature.
- **Example**:

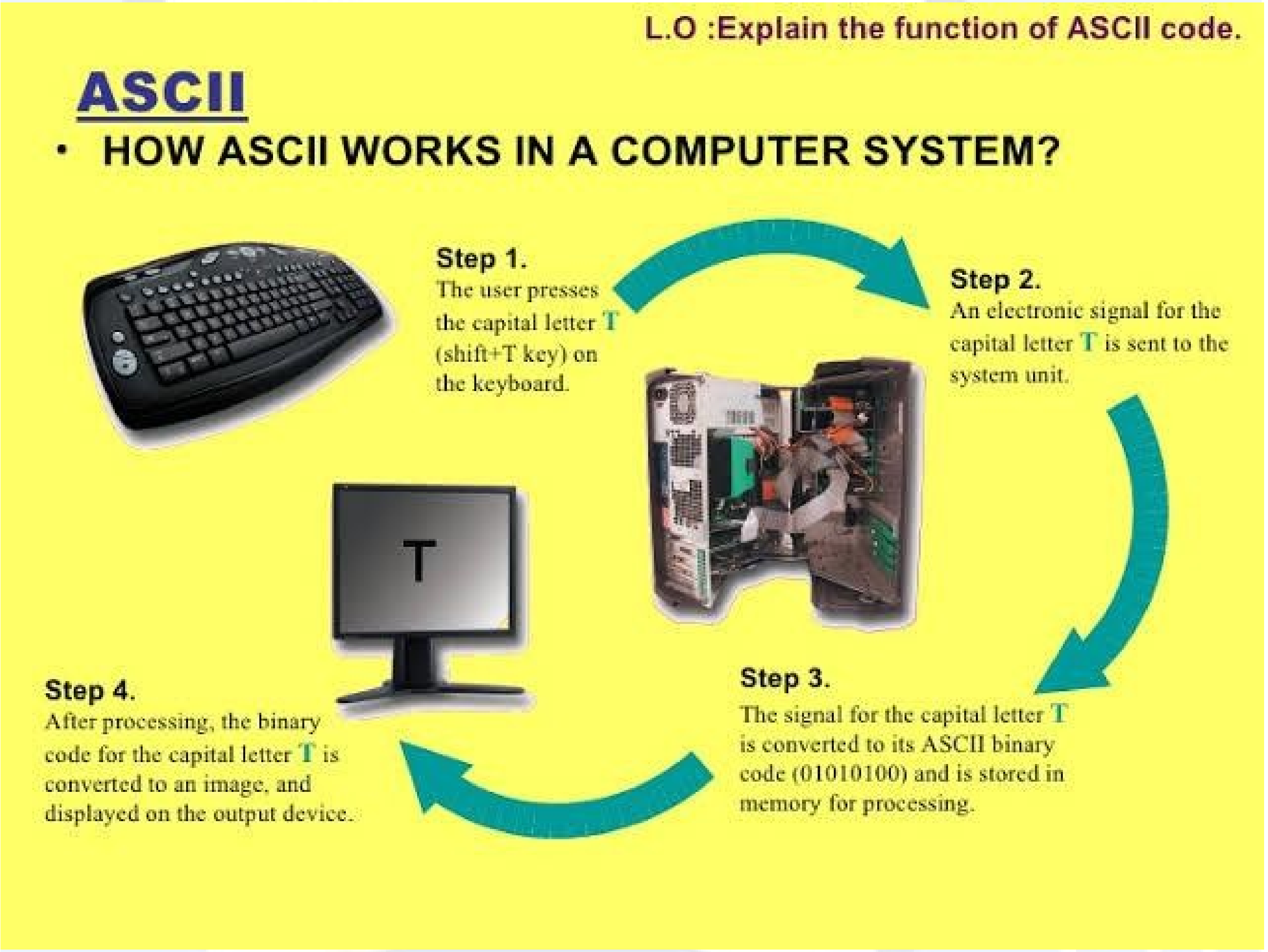
a=„hello world‟ b="Python”



Inbuilt String functions

- Python mainly contains 3 inbuilt string functions.
- They are
  - len()
  - max()
  - min()
- len()- Find out the length of characters in string
- min()- Smallest value in a string based on ASCII values
- max()- Largest value in a string based on ASCII values

What is ASCIIvalues



L.O :Explain the function of ASCII code.

ASCII

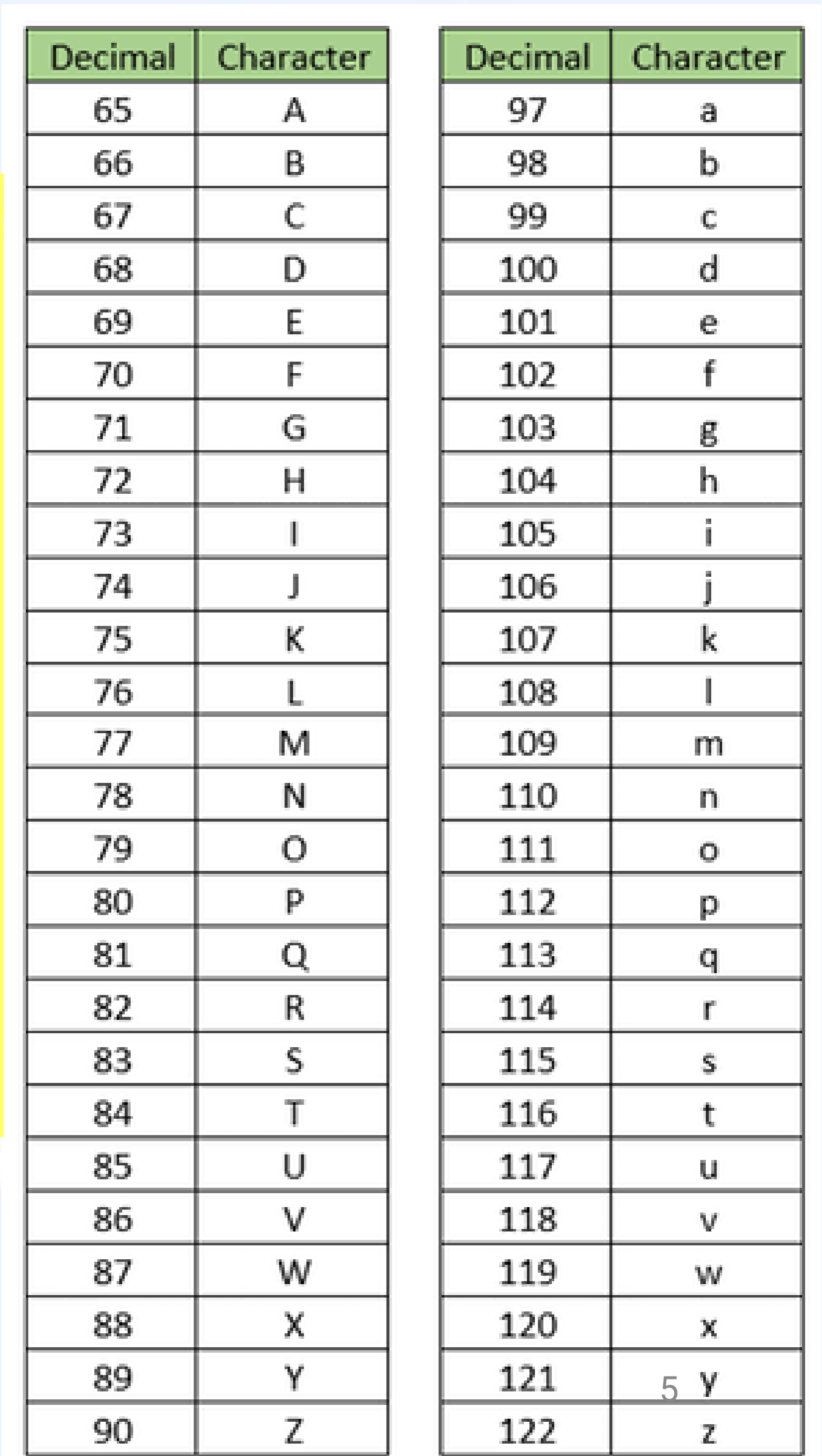
- **HOW ASCII WORKS IN A COMPUTER SYSTEM?**

Step 1. The user presses the capital letter T (shift+T key) on the keyboard.

Step 2. An electronic signal for the capital letter T is sent to the system unit.

Step 3. The signal for the capital letter T is converted to its ASCII binary code (01010100) and is stored in memory for processing.

Step 4. After processing, the binary code for the capital letter T is converted to an image, and displayed on the output device.



Decimal	Character
65	A
66	B
67	C
68	D
69	E
70	F
71	G
72	H
73	I
74	J
75	K
76	L
77	M
78	N
79	O
80	P
81	Q
82	R
83	S
84	T
85	U
86	V
87	W
88	X
89	Y
90	Z

Decimal	Character
97	a
98	b
99	c
100	d
101	e
102	f
103	g
104	h
105	i
106	j
107	k
108	l
109	m
110	n
111	o
112	p
113	q
114	r
115	s
116	t
117	u
118	v
119	w
120	x
121	y
122	z

Example for Inbuilt string functions

name=input("Enter Your name:") print("Welcome",name)

print("Length of your name:",len(name)) print(" Maximum value of chararacter in your name", max(name))

print("Minimum value of character in your name", min(name))

OUTPUT

```
Enter Your name:PRABHAKARAN
Welcome PRABHAKARAN  Length of your
name: 11
Maximum value of chararacter in your
name R  Minimum value of character in
your name A
```

Strings Concatenation

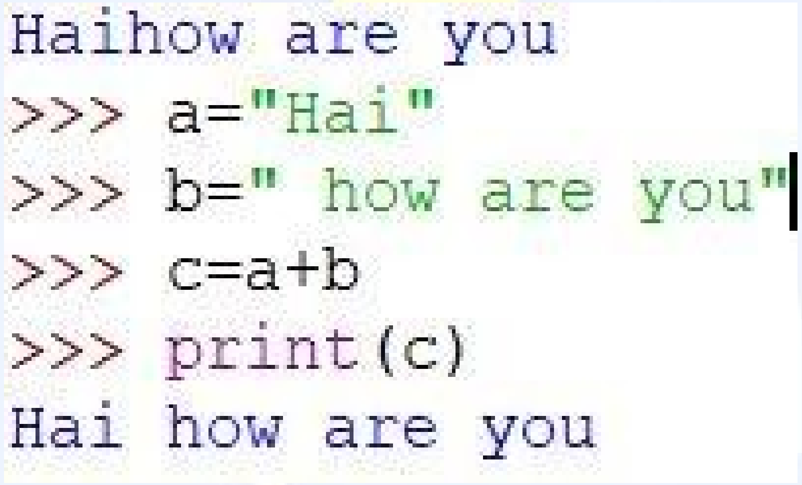
- The + operator used for string concatenation.

Example:

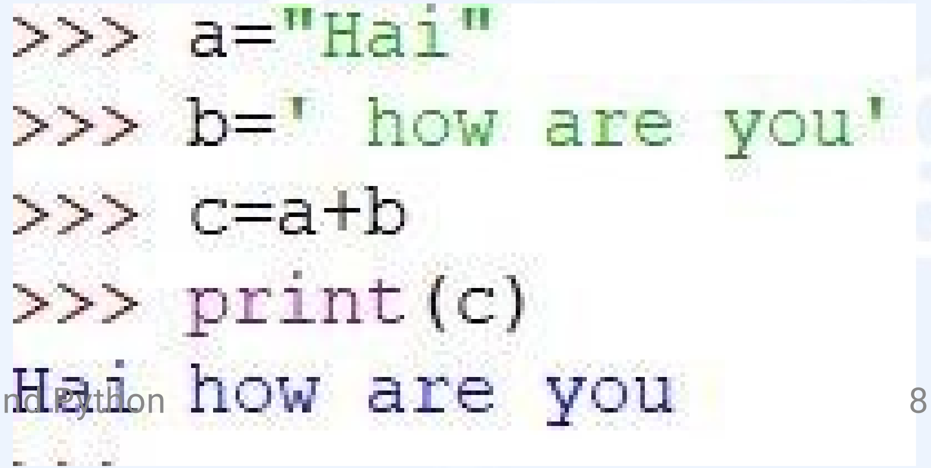
a="Hai"

b="how are you"   c=a+b

print(c)



```
Haihow are you
>>> a="Hai"
>>> b=" how are you"
>>> c=a+b
>>> print(c)
Hai how are you
```

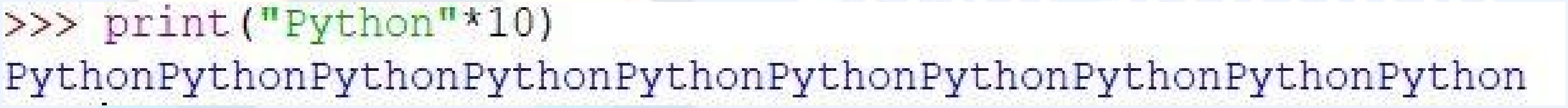


```
>>> a="Hai"
>>> b=' how are you'
>>> c=a+b
>>> print(c)
Hai how are you
```

Operators on String

- The Concatenate strings with the "*" operator can create multiple concatenated copies.
- Example:

```
>>> print("Python"*10)
PythonPythonPythonPythonPythonPytho
n  PythonPythonPythonPython
```



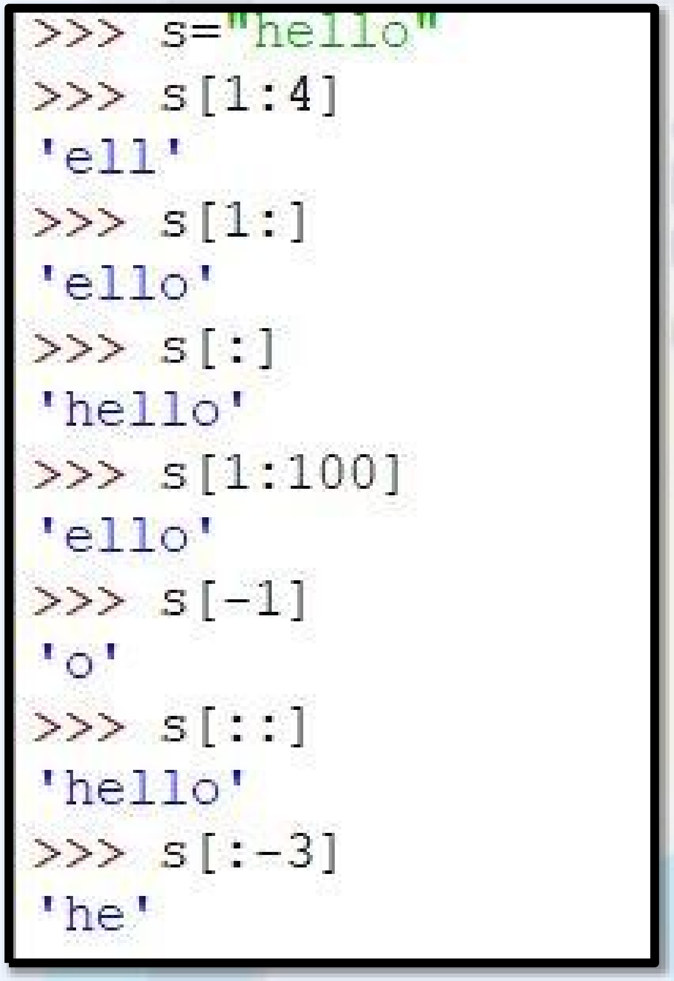
```
>>> print("Python"*10)
PythonPythonPythonPythonPythonPythonPythonPythonPythonPython
```

String Slicing

- Slicing operation is used to return/ select/slice the particular substring based on user requirements.
- A segment of string is called slice.
- **Syntax**: string_variablename [start:end]

String Slice example

s="Hello"

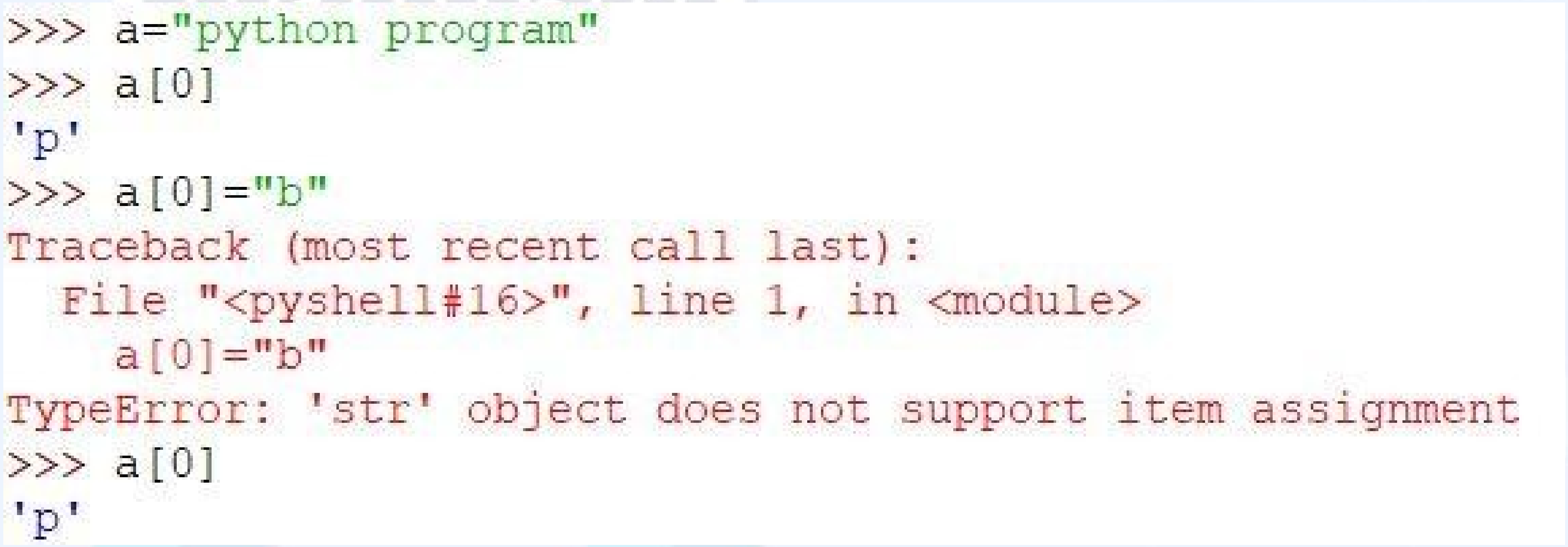


```
>>> s="hello"
>>> s[1:4]
'ell'
>>> s[1:]
'ello'
>>> s[:]
'hello'
>>> s[1:100]
'ello'
>>> s[-1]
'o'
>>> s[::]
'hello'
>>> s[:-3]
'he'
```

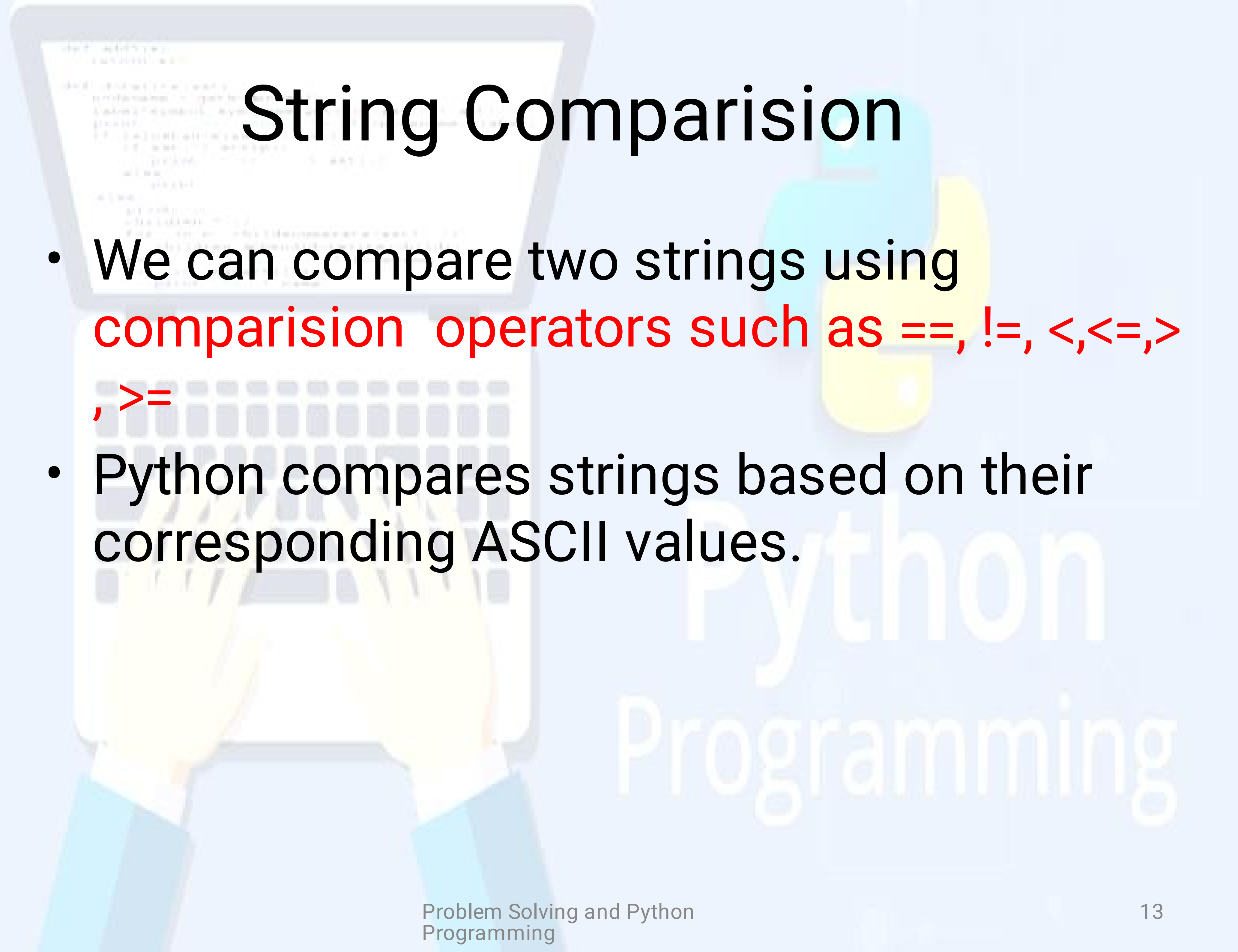
H	e	l	l	o
0	1	2	3	4
-5	-4	-3	-2	-1

Strings are immutable

- Strings are immutable character sets.
- Once a string is generated, you cannot change any character within the string.



```
>>> a="python program"
>>> a[0]
'p'
>>> a[0]="b"
Traceback (most recent call last):
  File "<pyshell#16>", line 1, in <module>
    a[0]="b"
TypeError: 'str' object does not support item assignment
>>> a[0]
'p'
```



String Comparision

- We can compare two strings using comparision operators such as ==, !=, <,<=,> , >=
- Python compares strings based on their corresponding ASCII values.

Example of string comparision

```
str1="green"  str2="black"
print("Is both Equal:",
str1==str2)  print("Is str1> str2:"
, str1>str2)  print("Is str1< str2:"
, str1<str2)
```

```
OUTPUT:

Is both Equal: False
Is str1> str2: True  Is
str1< str2: False
```

String formatting operator

- String formatting operator % is unique to strings.
- **Example:**

```
print("My name is %s and i secured %d marks in python” % ("Arbaz",92))
```

- **Output:**

```
My name is Arbaz and i secured 92 marks in python
```

String functions and methods

len()	min()	max()	isalnum()	isalpha()
isdigit()	islower()	isuppe()	isspace()	isidentifier()
endswith()	startswith()	find()	count()	capitalize()
title()	lower()	upper()	swapcase()	replace()
center()	ljust()	rjust()	center()	isstrip()
rstrip()	strip()			

i) Converting string functions

captitalize()	Only First character capitalized
lower()	All character converted to lowercase
upper()	All character converted to uppercase
title()	First character capitalized in each word
swapcase()	Lower case letters are converted to Uppercase and Uppercase letters are converted to Lowercase
replace(old,new)	Replaces old string with nre string

Program:

```
str=input("Enter any string:")  print("
String Capitalized:", str.capitalize())
print("String lower case:", str.lower())
print("String upper case:", str.upper())
print("String title case:", str.title())
print("String swap case:", str.
swapcase())
print("String replace case:",str.replace("python","python
programming"))
```

Output:

```
Enter any string: Welcome to python  String Capitalized: Welcome to python  String lower
case: welcome to python  String upper case: WELCOME TO PYTHON  String title case:
Welcome To Python  String swap case: wELCOME TO PYTHON
String replace case: Welcome to python programming
```

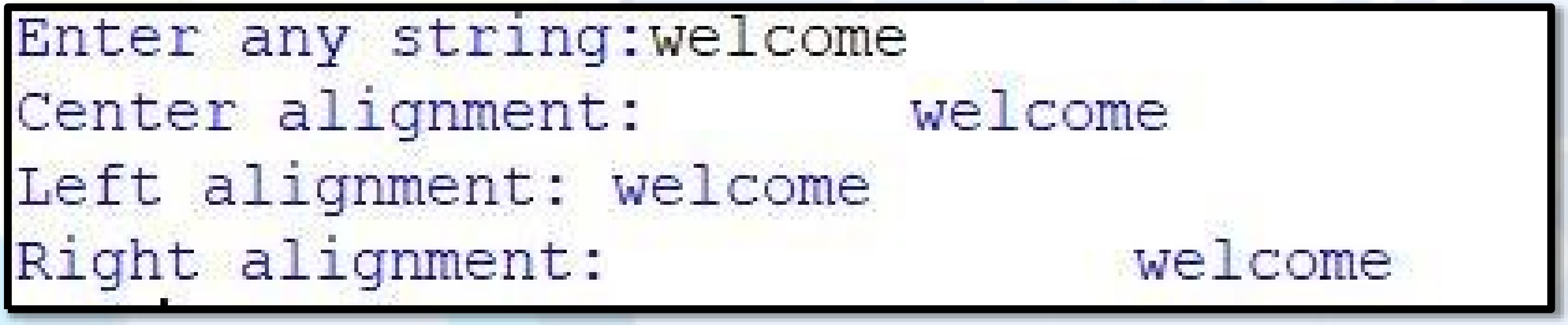
ii)Formatting String functions

center(width)	Returns a string centered in a field of given width
ljust(width)	Returns a string left justified in a field of given width
rjust(width)	Returns a string right justified in a field of given width
format(items)	Formats a string

Program:

```
a=input("Enter any string:")  print("
 Center alignment:", a.center(20))
print("Left alignment:", a.ljust(20))
print("Right alignment:", a.rjust(20))
```

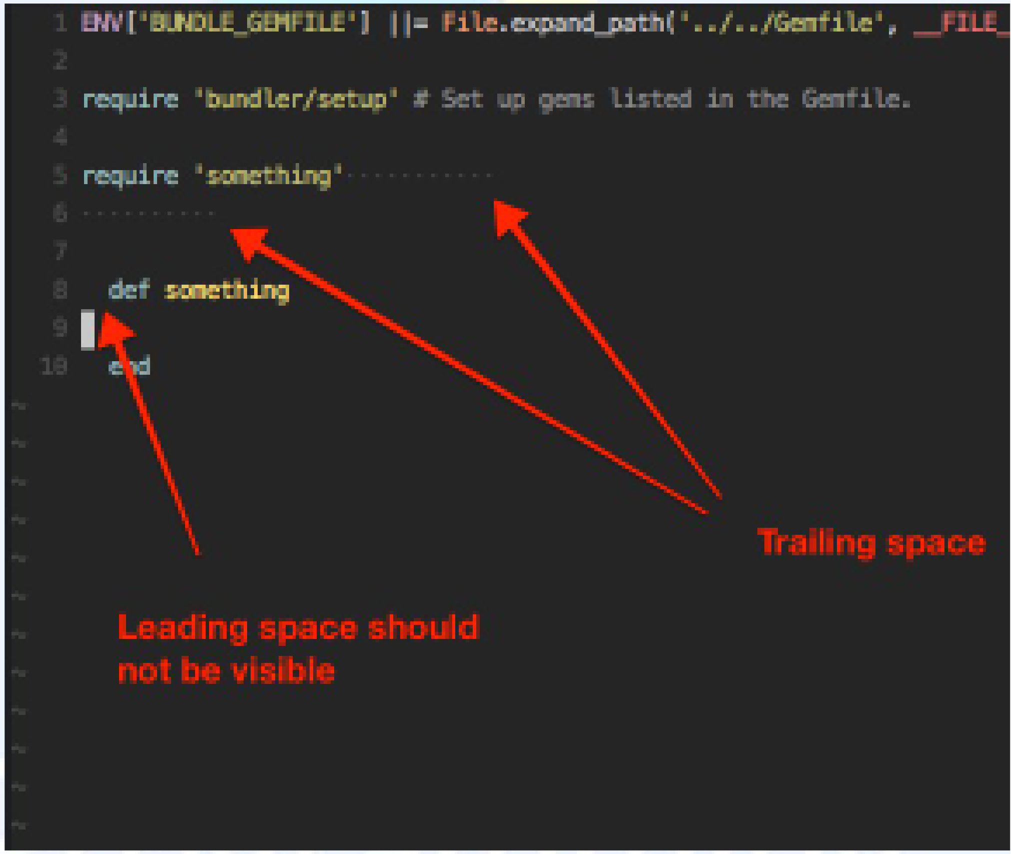
Output:



```
Enter any string:welcome
Center alignment:       welcome
Left alignment: welcome
Right alignment:              welcome
```

iii) Removing whitespace characters

lstrip()	Returns a string with leading whitespace characters removed
rstrip()	Returns a string with trailing whitespace characters removed
strip()	Returns a string with leading and trailing whitespace characters removed

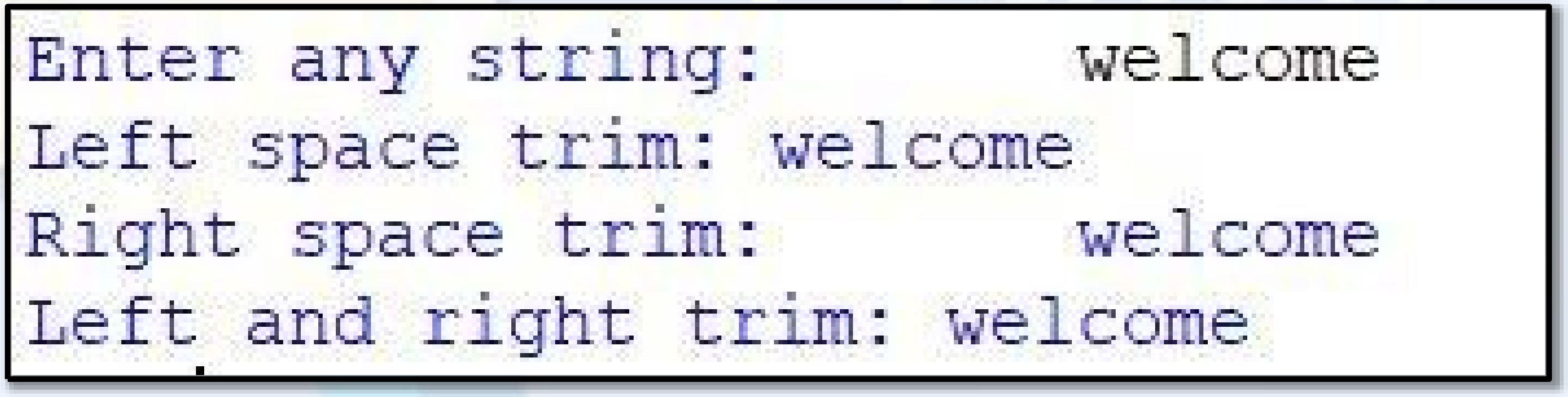


```
ENV['BUNDLE_GEMFILE'] ||= File.expand_path('../../Gemfile', __FILE_

require 'bundler/setup' # Set up gems listed in the Gemfile.

require 'something'············
···········

  def something

  end
```

Progra
m

```
a=input("Enter any string:")
print("Left space trim:",a.lstrip())
print("Right space trim:",a.
rstrip()) print("Left and right
trim:",a.strip())
```

Output:



```
Enter any string:         welcome
Left space trim: welcome
Right space trim:         welcome
Left and right trim: welcome
```

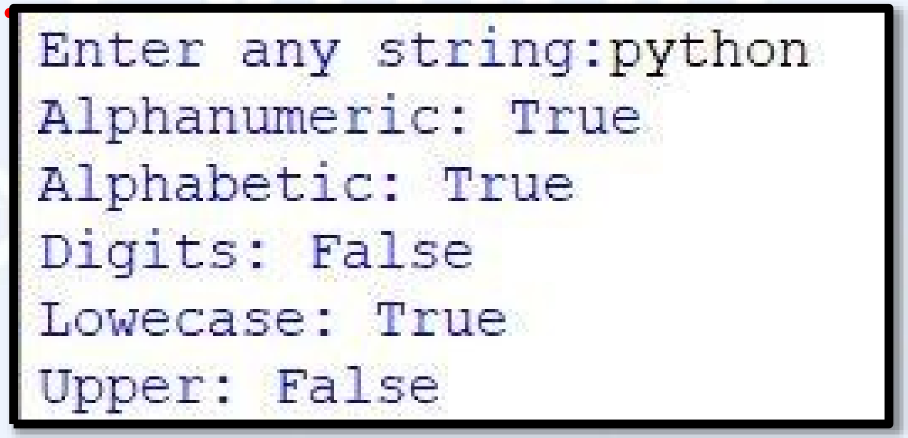
iv) Testing String/Character

isalnum()	Returns true if all characters in string are alphanumeric and there is atleast one character
isalpha()	Returns true if all characters in string are alphabetic
isdigit()	Returns true if string contains only number character
islower()	Returns true if all characters in string are lowercase letters
isupper()	Returns true if all characters in string are uppercase letters
isspace()	Returns true if string contains only whitespace characters.

Progra
m

```
a=input("Enter any string:")
print("Alphanumeric:",a.
isalnum())  print("Alphabetic:",a.
isalpha())  print("Digits:",a.
isdigit())  print("Lowecase:",a.
islower())  print("Upper:",a.
isupper())
```

Output:



```
Enter any string:python
Alphanumeric: True
Alphabetic: True
Digits: False
Lowecase: True
Upper: False
```

v) Searching for substring

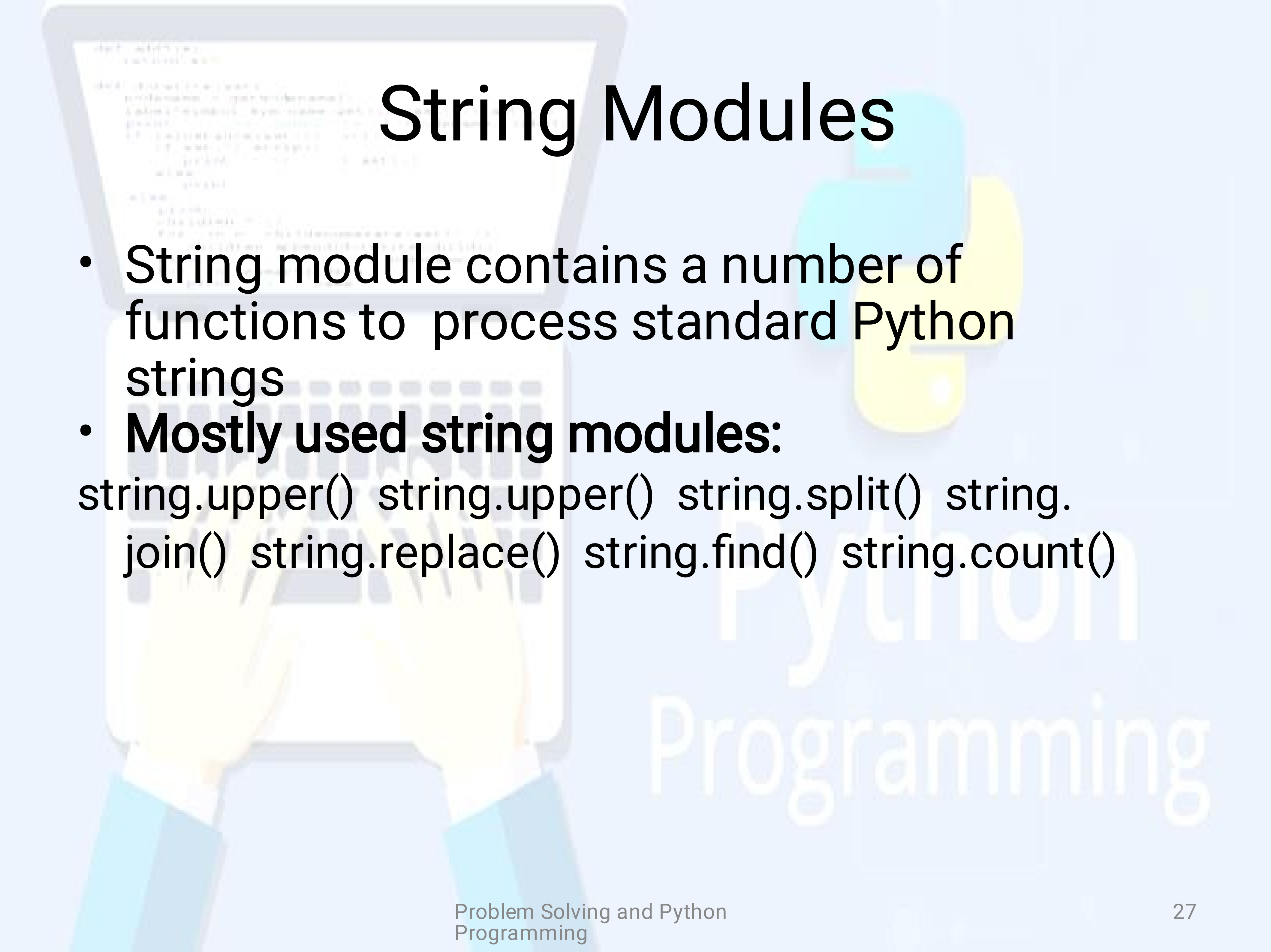
Endswith()	Returns true if the strings ends with the substring
Startswith()	Returns true if the strings starts with the substring
Find()	Returns the lowest index or -1 if substring not found
Count()	Returns the number of occurrences of substring

Program

```
a=input("Enter any string:")
print("Is string ends with thon:", a.endswith("thon"))
print("Is string starts with good:", a.startswith("
good"))  print("Find:", a.find("ython"))
print("Count:", a.count(“o"))
```

Output:

```
Enter any string : welcome to python  Is string
ends with thon: True
Is string starts with good: False
Find: 12
Count: 3
```



String Modules

- String module contains a number of functions to process standard Python strings
- **Mostly used string modules:**

string.upper() string.upper() string.split() string.
   join() string.replace() string.find() string.count()

Example

```
import string
text="Monty Python Flying Circus"  print("Upper:", string.upper(text))  print("Lower:", string.lower(text))  print("Split:", string.split(text))
print("Join:", string.join(string.split(test),"+"))
print("Replace:", string.replace(text,"Python", "Java"))  print("Find:", string.find(text,"Python"))
print("Count", string.count(text,"n"))
```

Output

```
Upper: “MONTY PYTHON FLYING CIRCUS”

Lower: “monty python flying circus”

Split: [„Monty‟, „Python‟, „Flying‟, „Circus‟]  Join :

Monty+Python+Flying+Circus  Replace: Monty Java

Flying Circus

Find: 7

Count: 3
```