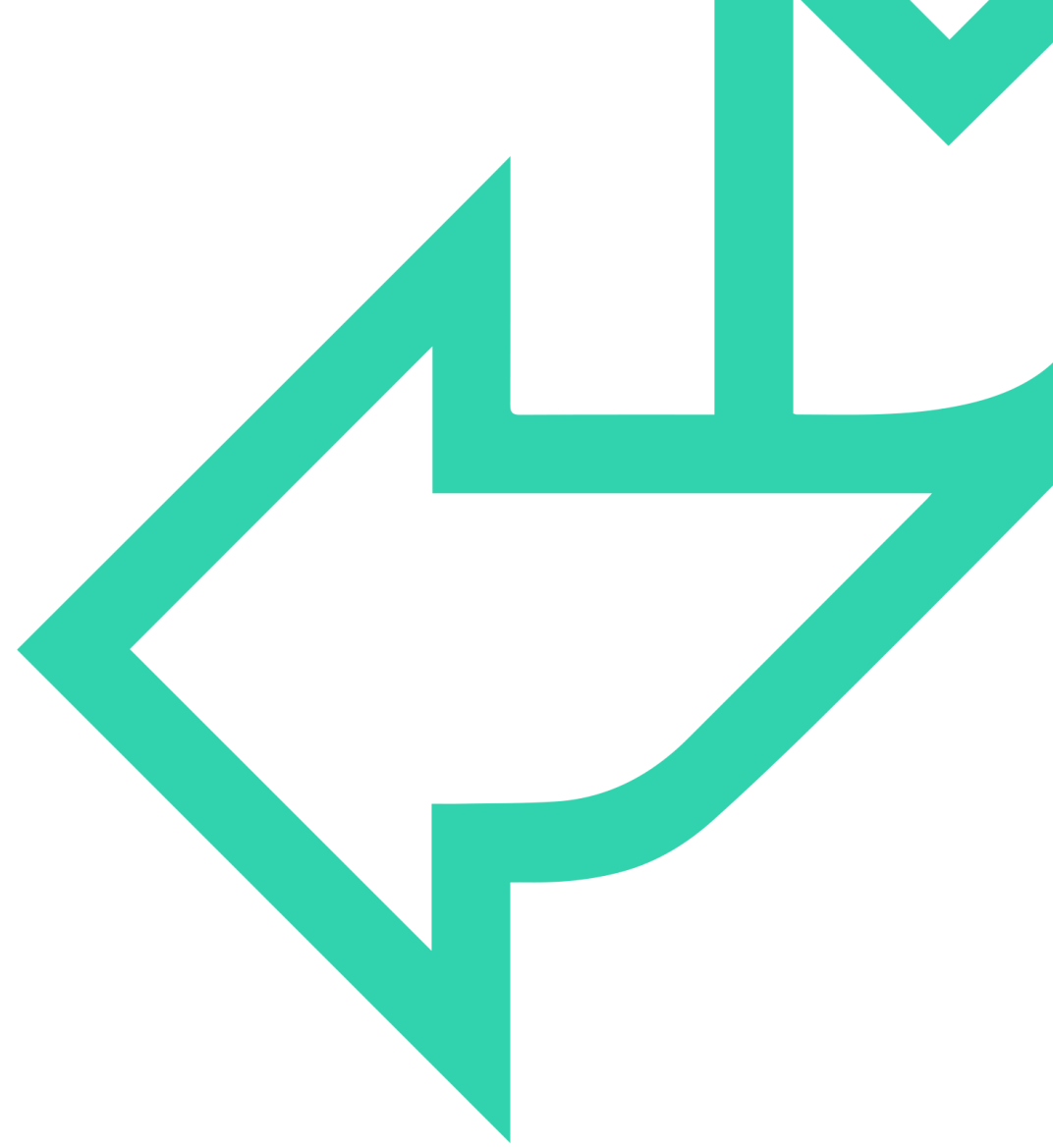




# Python programming basics





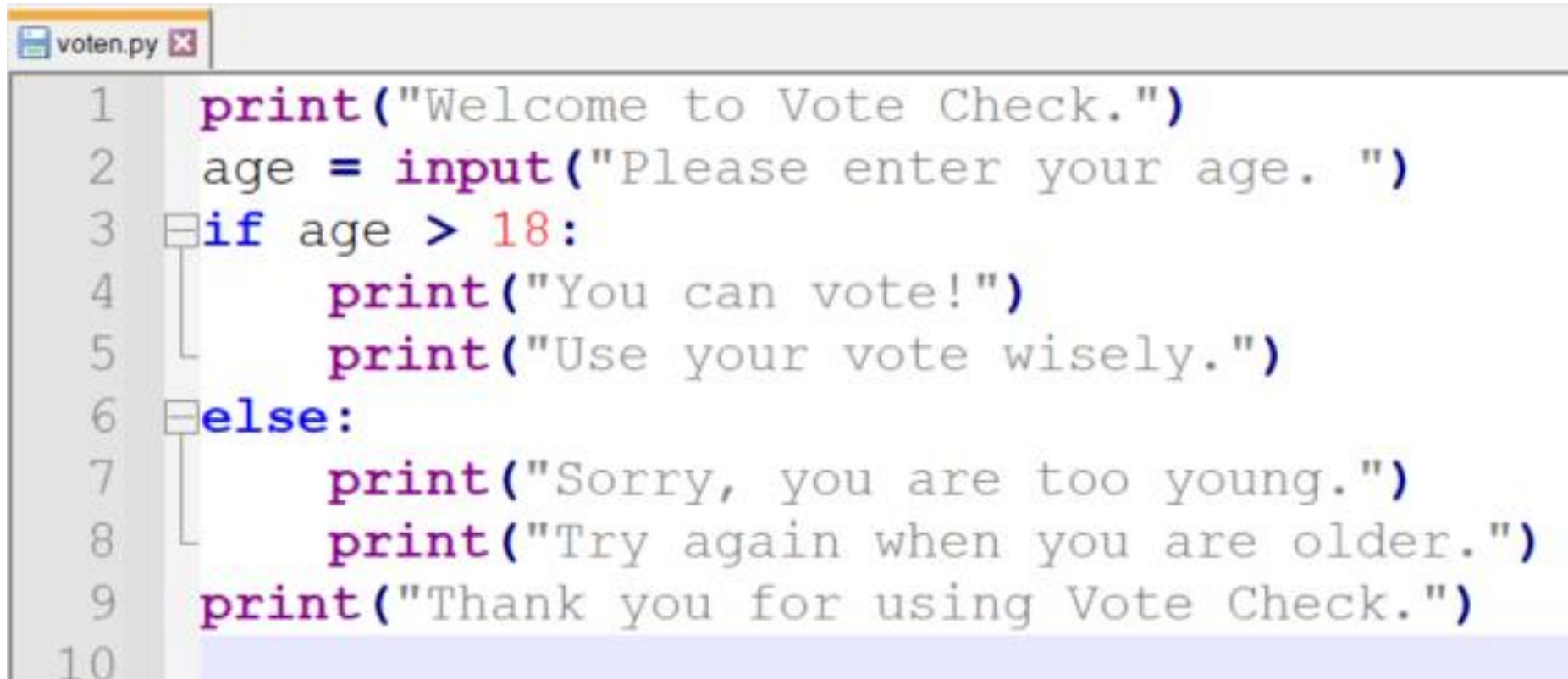
# PYTHON FUNDAMENTALS

In this chapter you'll learn about:

- Python – writing it and running it
- Basic statements
- Numbers, strings, and Boolean variables
- Keyboard input. Screen output.
- Casting



## QA A simple program with 2 errors



```
voten.py
1  print("Welcome to Vote Check.")
2  age = input("Please enter your age. ")
3  if age > 18:
4      print("You can vote!")
5      print("Use your vote wisely.")
6  else:
7      print("Sorry, you are too young.")
8      print("Try again when you are older.")
9  print("Thank you for using Vote Check.")
10
```

The image shows a code editor window titled 'voten.py'. The code is a Python script for a 'Vote Check' program. It consists of 10 lines. Line 3 has a checkbox next to the 'if' statement. Line 6 has a checkbox next to the 'else:' statement. The code is as follows:

## QA A simple program with no errors (?)

```
vote.py
1  print("Welcome to Vote Check.")
2  age = input("Please enter your age. ")
3  age = int(age)
4  if age >= 18:
5      print("You can vote!")
6      print("Use your vote wisely.")
7  else:
8      print("Sorry, you are too young.")
9      print("Try again when you are older.")
10 print("Thank you for using Vote Check.")
11
```



# Getting Started with Python

- For hands-on experience, and to be able to follow along, please open **Getting Started With Python** in the exercise guide folder.
- We will work through it together.
- Feel free to ask questions!

# QA Comments in code

- Comments are explanations to help readers understand your code
- Use a `#` to tell Python to ignore the characters to the right

```
# process user information  
  
print('Hello World!') # display greetings  
  
# x = x + 3
```

# QA Data Types in Python

There are three basic variable types:

1. Numbers: Integer and Float

- **1,2,3, 1.23, 0.0005**

2. Character or String

- **'Hello world'**  
or  
**"Hello world"**

3. Boolean

- **True** or **False**  
(case-sensitive)

```
age=21
salary = 2000.78
companyName='QA Ltd'
isRegistered = True
hasLicence = False
```

type is determined  
automatically.  
value can change.

# QA Variables naming standards

- Use letters not punctuations

salay\$ = 1500 ❌

my-city='London' ❌

my city='London' ❌

my\_city='London' ✅

myCity='London' ✅

- No 'reserved word'

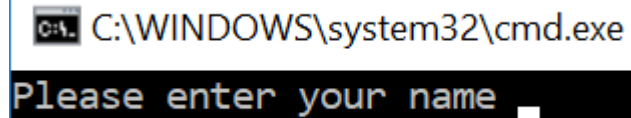
print = 10 ❌



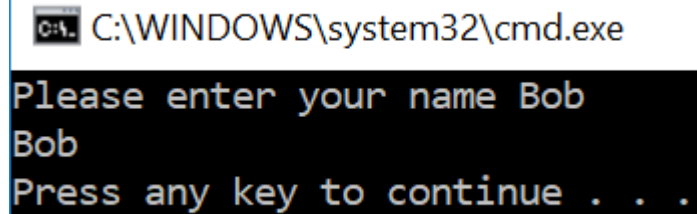
# QA User input using keyboard

- Input with a prompt  
`input(<prompt>)`

```
name = input('Please enter your name ')\nprint(name)
```



C:\WINDOWS\system32\cmd.exe  
Please enter your name \_



C:\WINDOWS\system32\cmd.exe  
Please enter your name Bob  
Bob  
Press any key to continue . . .



# Putting strings together

```
username = 'Bob'  
print('Hello' , username)  
print('Hello' + username)  
print('Hello ' + username)
```

Hello Bob  
HelloBob  
Hello Bob

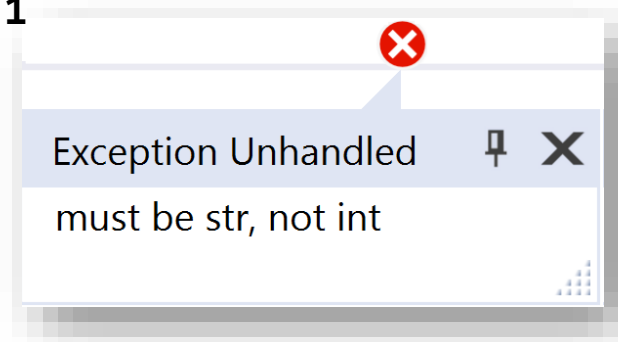
## Cannot add numbers and strings

```
age = 21  
print('Your age is ' + age)  
Message = 'Your age is ' + age
```



## keyboard input is always text... even if it 'looks' like a number

```
age = input('Please enter your age ')  
age = age + 1
```



# QA Which type?

- `>>> w = 42`
- `>>> x = 42.0`
- `>>> y = 'Forty two'`
- `>>> z = True`

- `>>> type(w)`
- `<class 'int'>`

- `>>> type(x)`
- `<class 'float'>`

- `>>> type(y)`
- `<class 'str'>`

- `>>> type(z)`
- `<class 'bool'>`

# QA Casting

- keyboard is text so we use **casting** to convert it to other types

```
age = int(input('What is your age? '))  
age = age + 1  
print('Next year you will be', age, 'years old')
```



```
What is your age? 21  
Next year you will be 22 years old
```

```
age = input('What is your age? ')  
age = int(age)  
age = age + 1  
print('Next year you will be', age, 'years old')
```



# QA Casting a number to string

- Use the `str()` function

```
## Find the average of a few numbers
```

```
total = 1 + 3 + 5 + 7 + 9 + 11  
average = total / 6
```

```
print("Total is = " + str(total))  
print("Average is = " + str(average))
```

# QA Casting floats

```
price = int(input('What is the price? '))  
totalPrice = price * 1.2
```



```
price = float(input('What is the price? '))  
totalPrice = price * 1.2
```





### **In this lab you will write code to:**

- Edit code in Notepad++
- Compile and run your code
- Input values into variables
- Lab duration: 30 minutes
- **01-Python Programming basics Lab.docx**



## FURTHER ACTIVITY

- Join a group.
- Building on the voting program, write a program that asks you your age and tells you if you are eligible for an 18-30 holiday.
- Begin with one that simply says Yes or No.
- Develop it so that it tells you if you are eligible, or too young, or too old.
- Note that Python recognises “and” and “or” in its if statements.



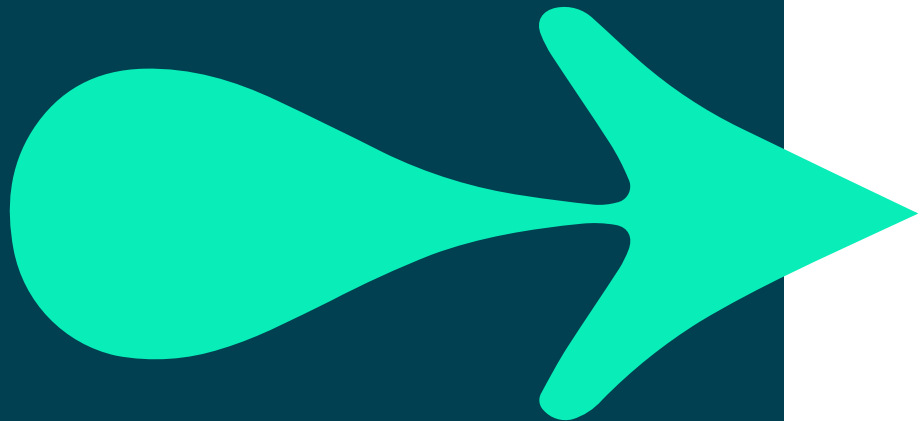




# SUMMARY

In this chapter you learned about:

- Basic statements
- Numbers, strings and Boolean variables
- Keyboard input. Screen output.
- Casting





## FURTHER READING

- <https://www.python.org/>
- <https://www.python.org/dev/peps/pep-0008/#a-foolish-consistency-is-the-hobgoblin-of-little-minds>

