

Box A—Key Words

Annotation: Commenting your code to explain what parts do.

Assignment: Storing a value (numerical or otherwise) to a variable.

Data Structure: A way of storing multiple bits of information at once.

Index: A position reference in a data structure.

Iteration: Repeating sections of codes using loops, usually with changing values each time.

List: Also known as an array. A data structure.

Module: A collection of linked functions. External modules can be imported in to your code.

Selection: Using code to choose what happens in a program. Also called a conditional.

User Input: Allowing the person using the code to provide data.

Variable: A value that can change. Used to store information for use in a code.

Basic Python Programming

Box B—Key Skills

Understanding Python Code:

```
name = input("Enter Name") #A
age = 14 #B
users = ["John", "Jane"] #C
length = len(users) #D
valid = False #E

for i in range(length): #F
    if name == users[i]: #G
        valid = True #H

if valid == True: #I
    print("Valid user") #J
else: #K
    print("Invalid user")
```

A: Stores user inputted text to a variable called name.

B: Stores an integer value 14 to a variable called age.

C: Creates a list which contains 2 string values. Stores to users.

D: Calculates the length (how many items are in) of users.

E: Stores the Boolean value False to variable valid.

F: Use of white space to make code clearer.

G: Creates a loop that will iterate for every element in users.

H: Use of selection to determine if the entered value match with any values from the list. users[i] looks up the current value from the list based on the given index.

I: If the name is in the list users, valid is changed to True.

J: Selection based on whether valid was changed to True.

K: Runs alternative code if the criteria from J is not met.

Box C—Key Knowledge

Key Syntax:

= used for assignment	== used for comparison
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Python functions (such as print or len) must have brackets after them, which may contain information. E.g. print("Hello") or exit()

Keywords in lower-case only e.g. if, while	# used to start a comment
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: must be used at the end of selection and iteration

Handling Data Types:

Convert to integer `int(x)`

Convert to float `float(x)`

Convert to string `str(x)`

Convert to Boolean `bool(x)`

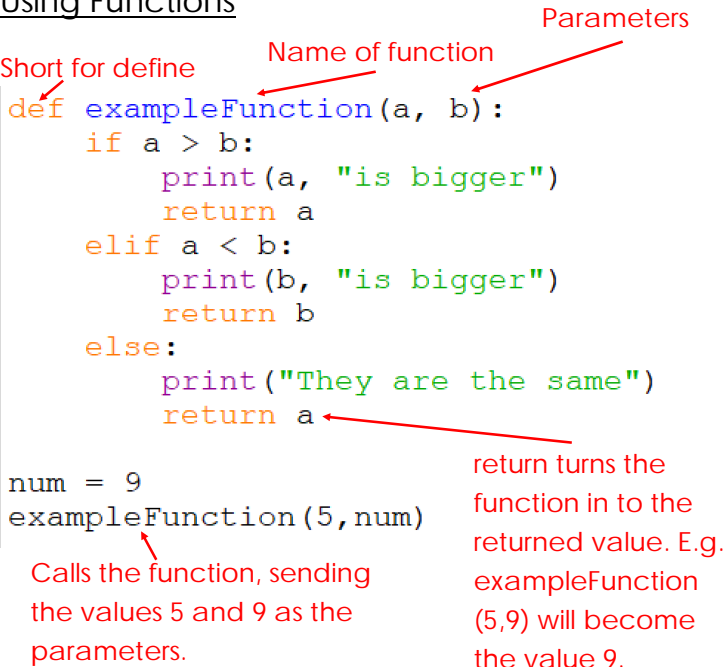
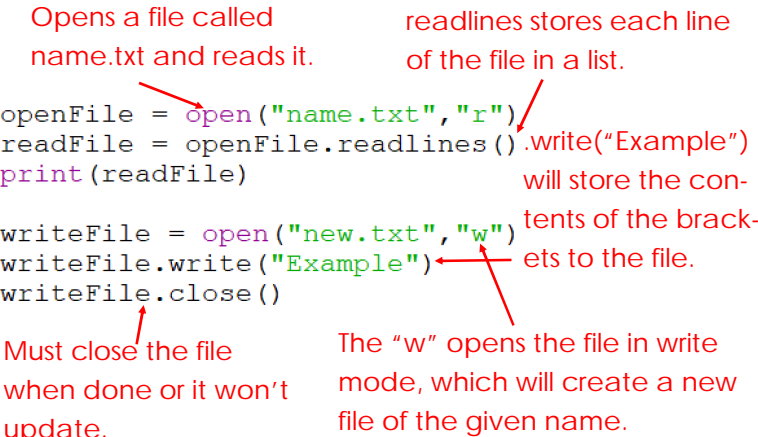
User input in python is `input()` string by default.

Variable Name Conventions:

Should not be overly long but should be easy to identify purpose. Must start with a letter.

Must not contain any symbols or spaces. Instead of a space, use an underscore or camelCase, e.g.:

user name ✗ user_name ✓ userName ✓

Box D—Key Words	Advanced Programming	Box F—Key Knowledge
<p><u>Append</u>: Add or attach.</p> <p><u>Callback</u>: Running a function.</p> <p><u>Function</u>: A defined section of code to carry out a certain process. Useful where code may be reused and to improve structure.</p> <p><u>GUI</u>: Graphical user interface. The visual elements of a program that allow the user to interact with the program.</p> <p><u>Import</u>: Bringing in an external resource. In python, this means loading external functions ready to be used.</p> <p><u>Parameter</u>: The information required for a function to run.</p> <p><u>Scope</u>: (of variables). The domain which a variable is valid. For example, a variable defined in a function will be local, only usable by that function.</p> <p><u>Widget</u>: A component of a user interface.</p>	<h3 data-bbox="801 220 1198 272">Box E—Key Skills</h3> <h4 data-bbox="629 309 864 341">Using Functions</h4> <div data-bbox="629 325 1352 995">  <pre data-bbox="629 416 1279 751"> def exampleFunction(a, b): if a > b: print(a, "is bigger") return a elif a < b: print(b, "is bigger") return b else: print("They are the same") return a </pre> <p data-bbox="629 791 1050 855">num = 9 exampleFunction(5, num)</p> </div> <h4 data-bbox="629 1003 920 1035">Using External Files:</h4> <div data-bbox="629 1051 1384 1490">  <pre data-bbox="629 1150 1384 1358"> openFile = open("name.txt", "r") readFile = openFile.readlines() print(readFile) writeFile = open("new.txt", "w") writeFile.write("Example") writeFile.close() </pre> </div>	<h4 data-bbox="1397 209 1666 240"><u>Random Module</u>:</h4> <p data-bbox="1397 269 2103 349">The random module contains functions allowing random features within your code.</p> <p data-bbox="1397 373 1615 405">Key Functions:</p> <p data-bbox="1397 429 2085 509">randint(a, b) #generates a random integer between a and b.</p> <p data-bbox="1397 533 2074 612">choice(LIST) #chooses a random element from LIST.</p> <p data-bbox="1397 636 2103 716">LIST.shuffle() #randomises the elements in LIST.</p> <p data-bbox="1397 740 2107 820">sample(LIST, n) #returns n random items from LIST</p> <h4 data-bbox="1397 844 1503 876"><u>Tkinter</u>:</h4> <p data-bbox="1397 900 2130 1123">Tkinter is a GUI for python, allowing professional looking menus and interactivity. It contains many widgets for different functionality. Widgets need to be placed using either grid or pack geometry manager. E.g. widget.grid()</p> <p data-bbox="1397 1147 1615 1179">Key Functions:</p> <p data-bbox="1397 1203 2080 1283">Tk() #loads tkinter to the program and creates a root window.</p> <p data-bbox="1397 1307 1951 1339">Label() #Widget used to store text.</p> <p data-bbox="1397 1362 2130 1442">Button() #Interactive widget which can call a function when clicked.</p> <p data-bbox="1397 1466 1973 1498">Entry() #Textbox to allow user input.</p>