Orientation Manual

Computer Science 1015F/1017F/1019F 2023

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1. Introduction

This is a self-paced tutorial on the procedure for setting up your computer in order to complete Computer Science 1015F/1017F/1019F practical assignments and submit them online using the *Amathuba* learning management system.

It is recommended that you follow the tutorial in sequence from beginning to end. However, do feel free to deviate from the procedure to explore the functions available but try not to get lost – if necessary, ask for assistance from a tutor or one of your peers (assuming they are not lost as well ☺).

NOTE: We have tried to cover the steps for PC and for Mac, however, at the time of writing, only Windows 10 was available, so screen snapshots are of this. We have Windows 11 in the Scilabs now. However, the steps are quite similar.

The tutorial is organised as follows:

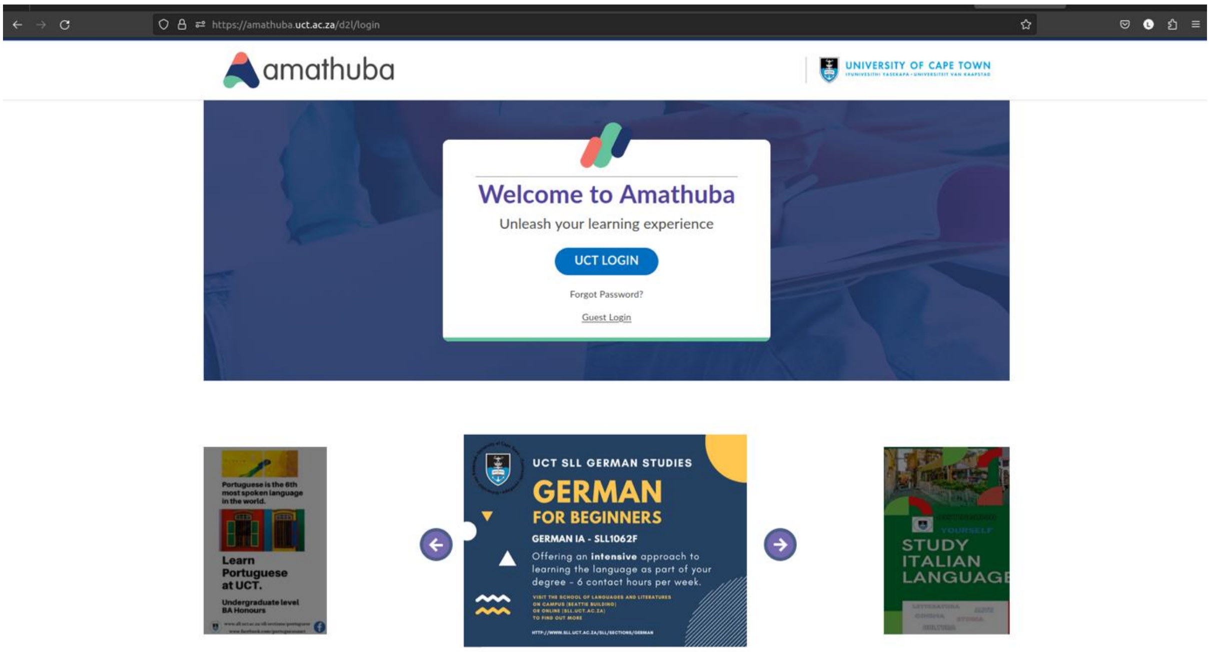
Section	*Content*
2	Accessing the Amathuba course site and accepting the *Academic Dishonesty for Computer Program Submissions Policy.*
3	Configuring cloud storage and organising folders for your programs.
4	Installing Python 3 and Wing 101 IDE.
5.	Writing and running a first Python program in Wing.
6.	Creating a ZIP archive file.
7.	Submitting an assignment to the automatic marker.
8.	Editing an existing Python program.
9.	Python Documentation.

2. Accessing Amathuba

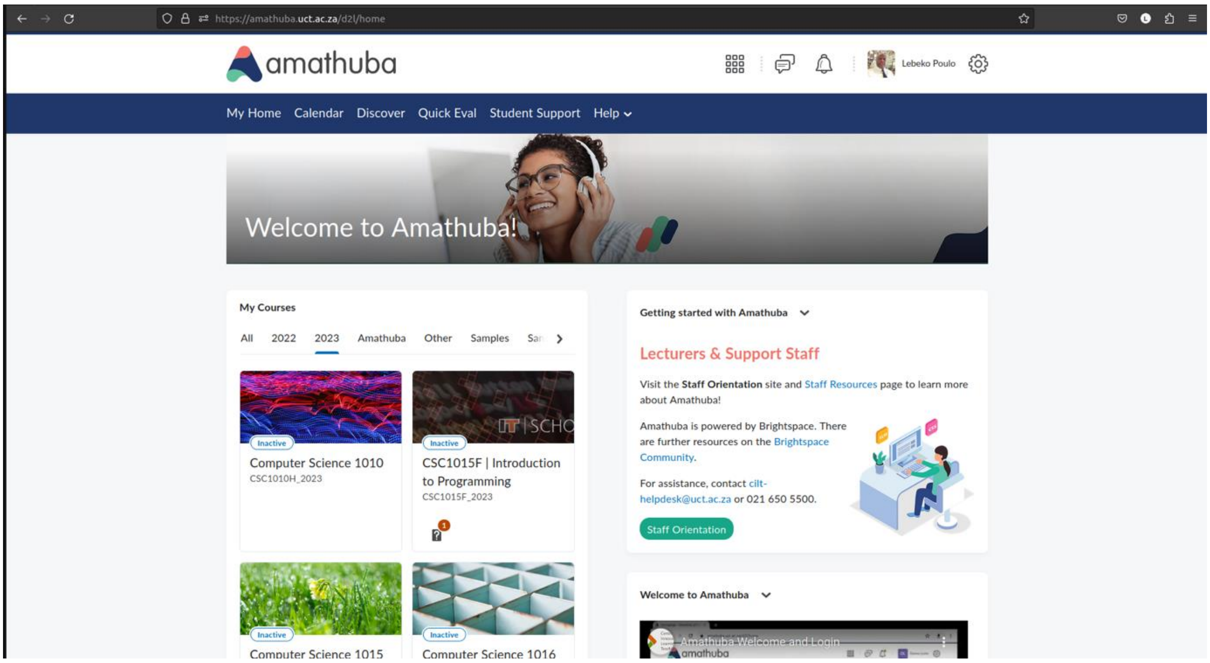
The first thing you will do is log on to *Amathuba*. The UCT course management system.

Execute a Web browser application such as *Google Chrome*.

Enter a URL of *https://amathuba.uct.ac.za/* to go to the *Amathuba* website. Click on *UCT Login* and if the Web browser pops up a box asking you for a password, this is UCT's system to control access to the outside Internet – simply enter your user ID and password as before and click Ok. *NB: your user ID is your UCT student number.*


https://amathuba.uct.ac.za/d2l/login
amathuba
UNIVERSITY OF CAPE TOWN
Welcome to Amathuba
Unleash your learning experience
UCT LOGIN
Forgot Password?
Guest Login
Portuguese is the 6th most spoken language in the world.
Learn Portuguese at UCT.
Undergraduate level
BA Honours
UCT SLL GERMAN STUDIES
GERMAN
FOR BEGINNERS
GERMAN IA - SLL1062F
Offering an intensive approach to learning the language as part of your degree - 6 contact hours per week.
STUDY ITALIAN LANGUAGE

Enter your username and password on the Amathuba website and you will be able to log in. Then click on the tab on the left under "My Courses" that corresponds to the class you are in, and you will arrive at the front page of the website for that class.



Visit the Staff Orientation site and Staff Resources page to learn more about Amathuba!

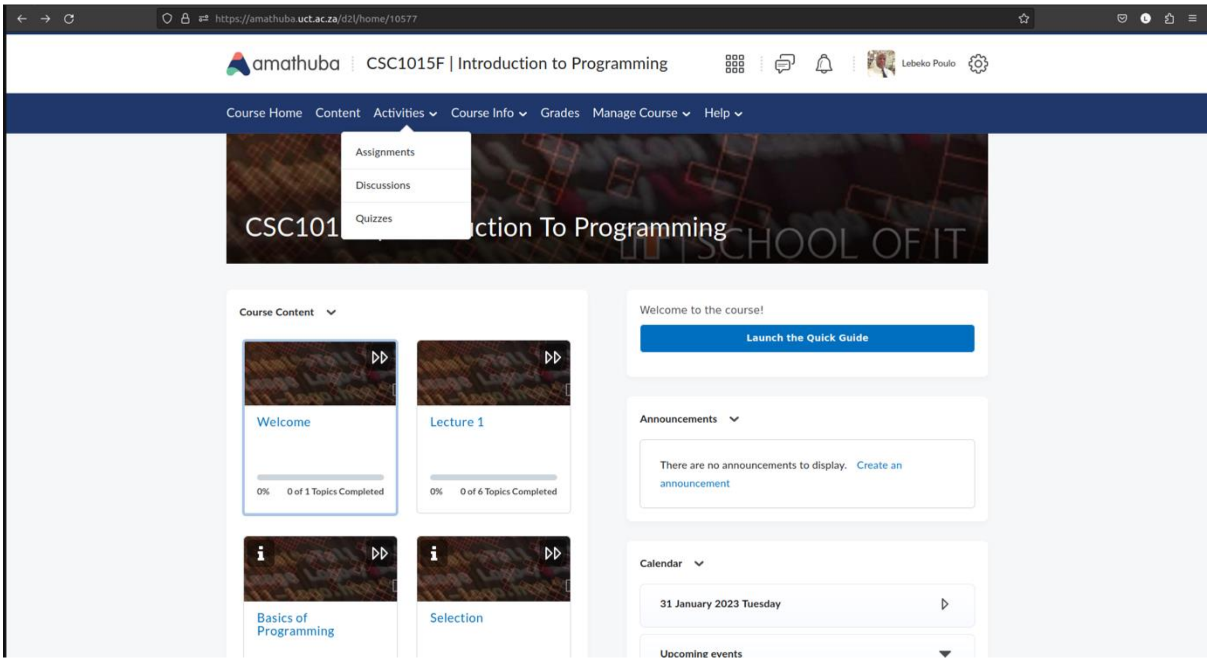
Amathuba is powered by Brightspace. There are further resources on the Brightspace Community.

For assistance, contact cilt-helpdesk@uct.ac.za or 021 650 5500.

2.1. Academic Dishonesty for Computer Program Submissions Policy

There are lots of tools available that you can explore later. For now, the next thing you will do is read and accept the Academic Dishonesty for Computer Program Submissions Policy.

Select the relevant course: CSC1015F/CSC1017F/CSC1019F as stated above. From the menu on top, click on *Activities, then Assignments*:

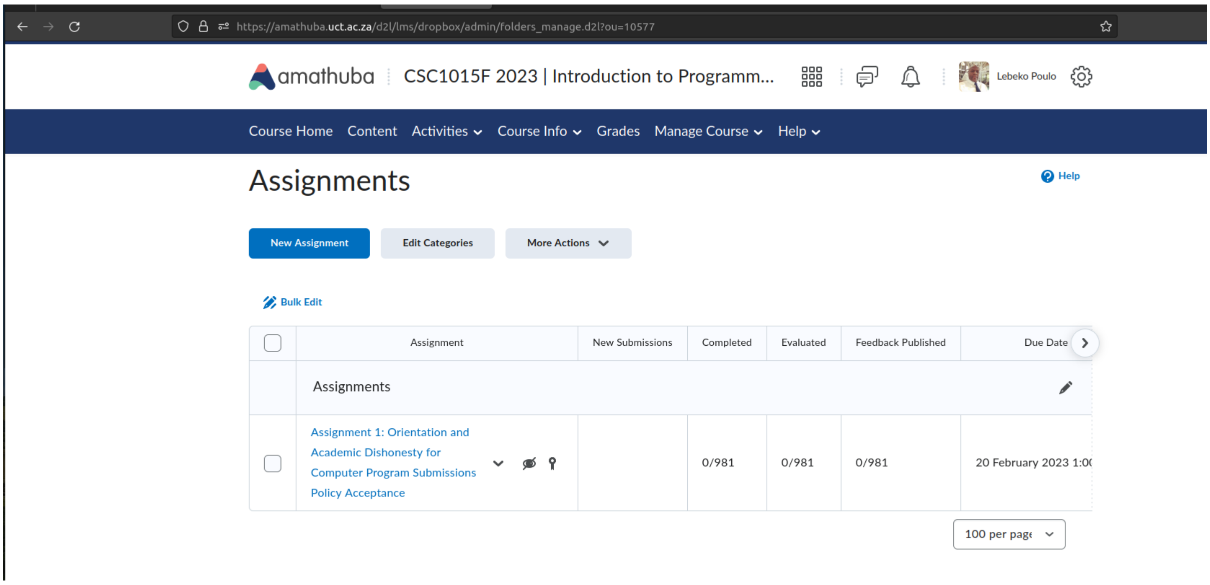


Welcome to the course!

There are no announcements to display. Create an announcement

31 January 2023 Tuesday

The entry first is the subject of this section which will be found under Assignments. Click on *Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance*:



☐	Assignment	New Submissions	Completed	Evaluated	Feedback Published	Due Date
	Assignments					
☐	Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance		0/981	0/981	0/981	20 February 2023 1:0

Follow the instructions: read the attached policy (click on the link to the PDF document *csc_2023_AcademicDishonestyPolicy.pdf*); accept by typing your name, student number and current date into the '*Assignment Text'* text box, and click Submit.

3. Files and Folders

You will be writing lots of computer programs. You will need to set up some folders to organise these programs; to make sure that everything can be easily found in future. You also need to ensure that your work is backed up. Both requirements are covered in this section.

UCT students are provided with 1 terabyte of secure cloud storage space on Microsoft OneDrive. We explain how to set up access to this service, then we suggest a folder structure for organising your work.

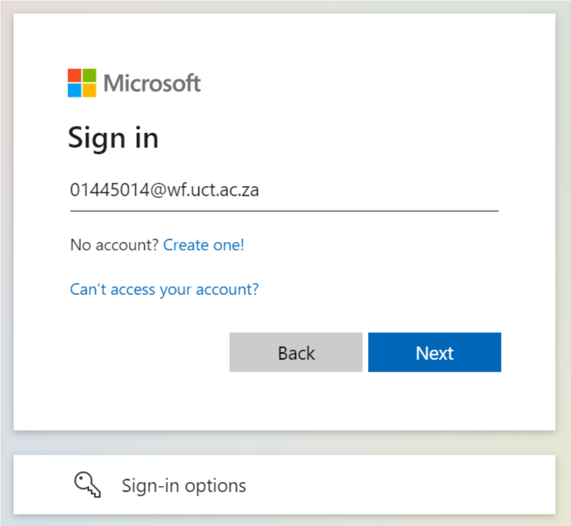
You may familiar with OneDrive, or similar service such as Google Drive or Drop Box. They all work in the same way. On your computer you have a special folder, the contents of which are duplicated in the cloud.

You are able to create and work with files in this folder knowing that any changes are backed up. You will also be able to access those files from anywhere and with any device – such as your phone or tablet. Any changes you make to files or the contents of the folder on one device will be duplicated across all your devices.

You can also work directly with the cloud copies of files using suitable Web apps.

3.1 Setting up OneDrive

Open a web browser such as Google Chrome and enter the URL http://portal.office.com. If you have used the service before, you may be invited to pick an account, otherwise you'll be asked to Sign in.



Microsoft

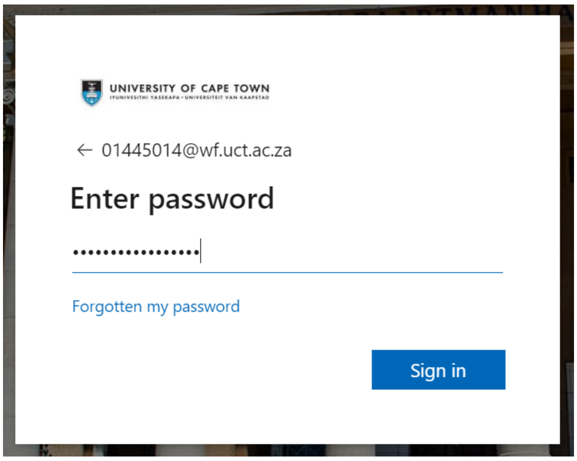
Sign in

01445014@wf.uct.ac.za

No account? Create one!

Can't access your account?

Enter your *studentnumber*@wf.uct.ac.za, i.e. an email address composed of your student number and "@wf.uct.ac.za". Click 'next'. Now you will be asked to enter your UCT password:



UNIVERSITY OF CAPE TOWN

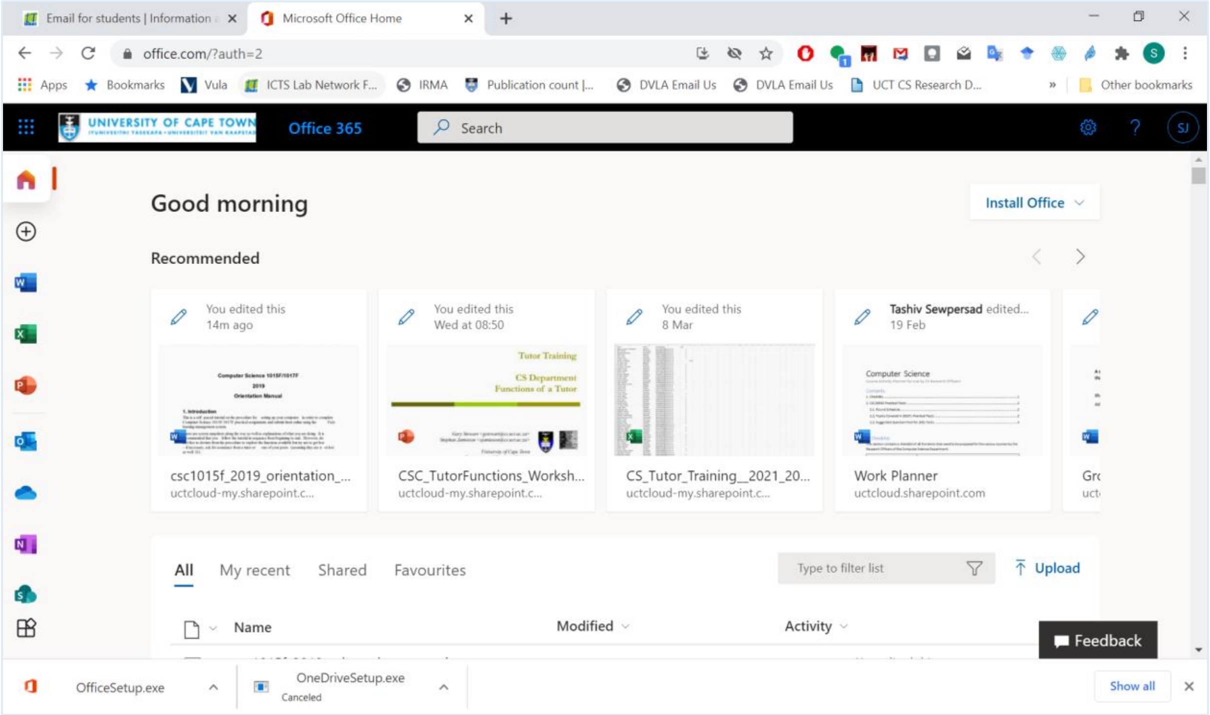
← 01445014@wf.uct.ac.za

Enter password

•••••••••••••••••

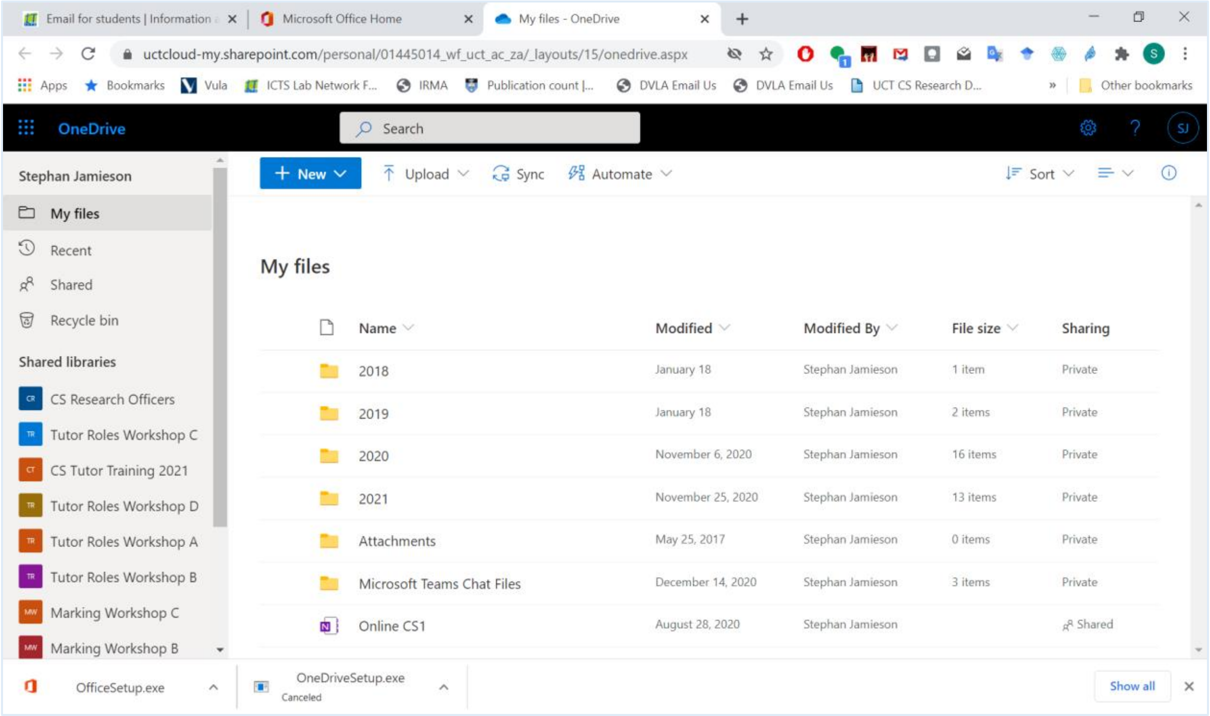
Forgotten my password

Click ‘Sign in’, and you will see the Microsoft Office web portal. (Your view will be much less cluttered than the following screenshot.)



Here you have access to the online versions of the Microsoft Office apps - the app icons are a column at the left-hand side of the page. The OneDrive app is the blue cloud icon.

Click on it to see your file storage space. (Which, again, will almost certainly be less cluttered than the following example!)

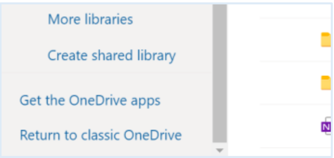


My files

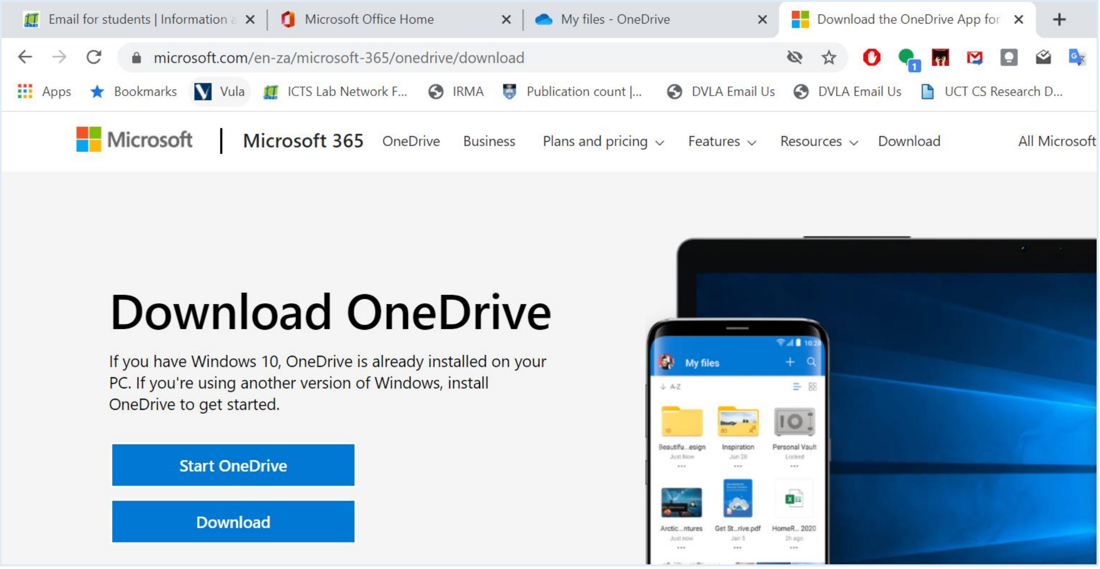
Name	Modified	Modified By	File size	Sharing
2018	January 18	Stephan Jamieson	1 item	Private
2019	January 18	Stephan Jamieson	2 items	Private
2020	November 6, 2020	Stephan Jamieson	16 items	Private
2021	November 25, 2020	Stephan Jamieson	13 items	Private
Attachments	May 25, 2017	Stephan Jamieson	0 items	Private
Microsoft Teams Chat Files	December 14, 2020	Stephan Jamieson	3 items	Private
Online CS1	August 28, 2020	Stephan Jamieson		Shared

You will see from the menu items at the top of the page that you can create files and upload files among other things. However, what we want to do is set up the OneDrive app so that you can create and edit files on your computer as you usually do but have them be transparently backed up to this online storage space. (For each file you will have a 'local' copy, i.e. on your computer, and a 'cloud' copy.)

Click on 'Get the OneDrive apps' at the bottom of the left-hand panel.



A new web page will open.



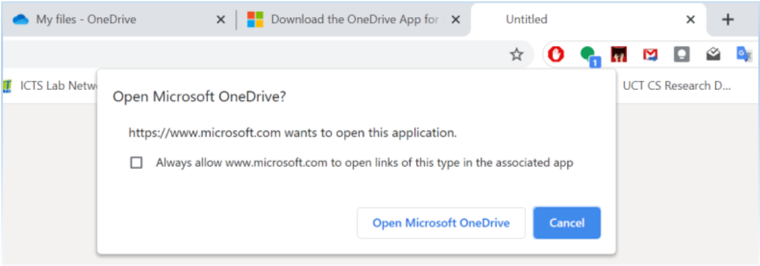
Download OneDrive

If you have Windows 10, OneDrive is already installed on your PC. If you're using another version of Windows, install OneDrive to get started.

The next step(s) depend on whether you are using Windows or a Mac.[1]

3.1.A Windows 10

OneDrive comes preinstalled on Windows 10 computers. If you are using such a computer click 'Start OneDrive'.

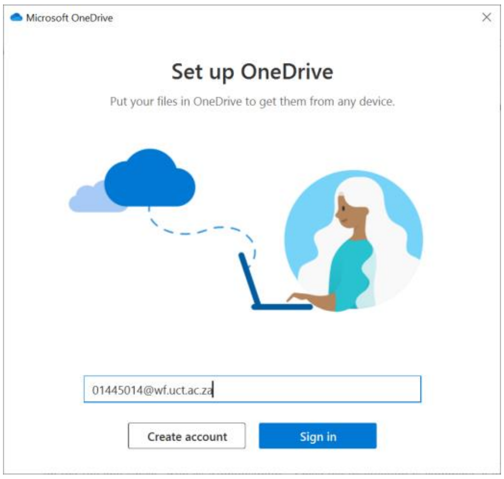


Open Microsoft OneDrive?

https://www.microsoft.com wants to open this application.

□ Always allow www.microsoft.com to open links of this type in the associated app

A new browser tab will open and a pop-up will appear. Click 'Open Microsoft OneDrive'.

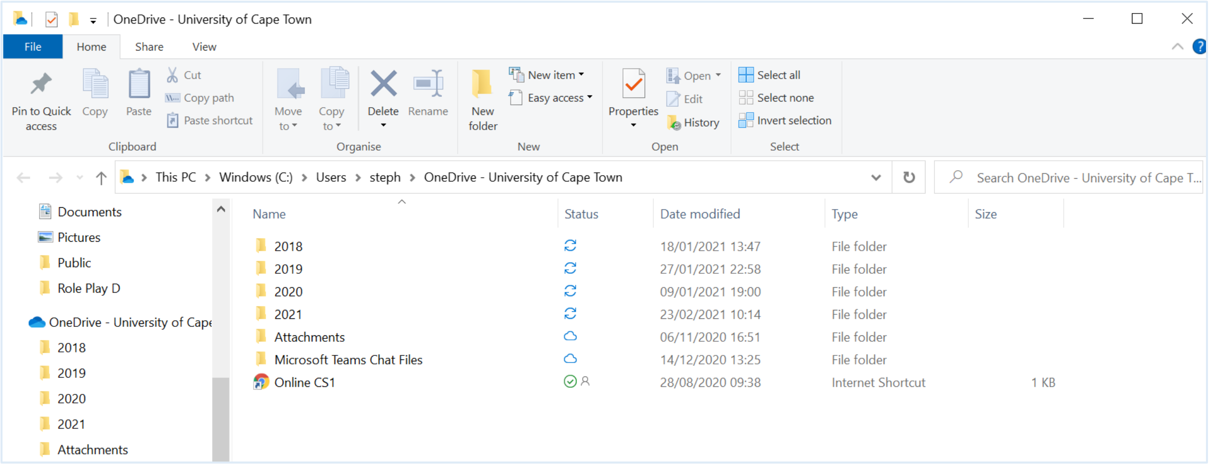


Set up OneDrive

Put your files in OneDrive to get them from any device.

01445014@wf.uct.ac.za

Sign in with your *studentnumber*@wf.uct.ac.za and UCT password. Once set up is complete, a File Explorer window will open.



Name	Status	Date modified	Type	Size
2018		18/01/2021 13:47	File folder	
2019		27/01/2021 22:58	File folder	
2020		09/01/2021 19:00	File folder	
2021		23/02/2021 10:14	File folder	
Attachments		06/11/2020 16:51	File folder	
Microsoft Teams Chat Files		14/12/2020 13:25	File folder	
Online CS1	✓	28/08/2020 09:38	Internet Shortcut	1 KB

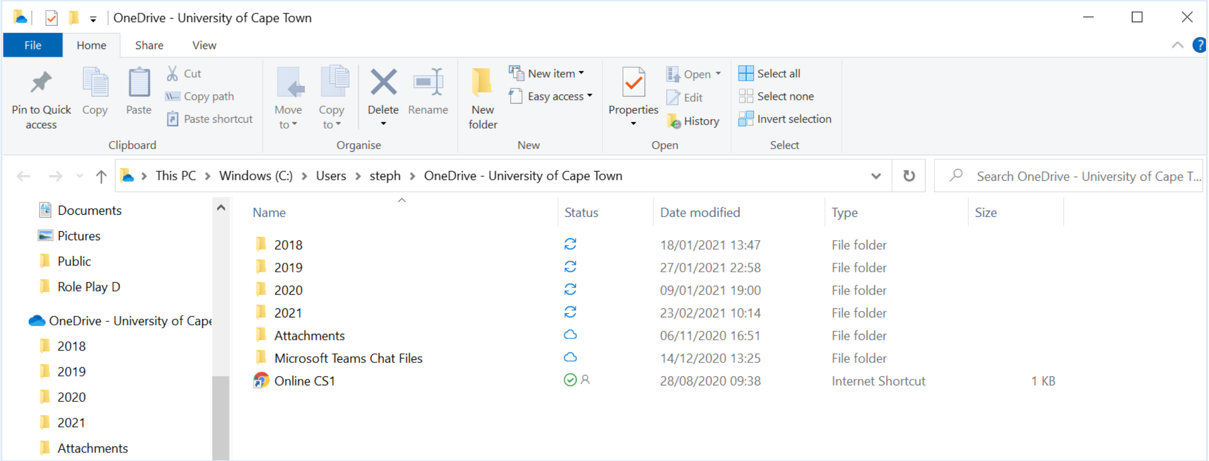
[1] Details extracted from the ICTS document "Move your data from your F: drive to OneDrive for Business".

You will see in the left-hand column there is a ‘OneDrive – University of Cape Town’ option, and in the right-hand pane, the files in this new folder are displayed.

3.1.B Other Windows PC

Click ‘Download’. The file ‘*OneDriveSetup.exe*’ is saved in your downloads folder. Right-click on the file and select ‘Run as Administrator’. Once the installation is complete, a cloud icon ☁ appears in the taskbar. Click the cloud icon and sign in with your *studentnumber*@wf.uct.ac.za and UCT password.

When you open File Explorer (by pressing, say Windows key and ‘E’, or by clicking on the Folder icon on the task bar), you will see that there is a *OneDrive – University of Cape Town* option in the left-hand column. Click on it, and the files in this folder will be displayed in the right-hand pane.



OneDrive - University of Cape Town

This PC > Windows (C:) > Users > steph > OneDrive - University of Cape Town

Name	Status	Date modified	Type	Size
2018	↻	18/01/2021 13:47	File folder	
2019	↻	27/01/2021 22:58	File folder	
2020	↻	09/01/2021 19:00	File folder	
2021	↻	23/02/2021 10:14	File folder	
Attachments	☁	06/11/2020 16:51	File folder	
Microsoft Teams Chat Files	☁	14/12/2020 13:25	File folder	
Online CS1	✓	28/08/2020 09:38	Internet Shortcut	1 KB

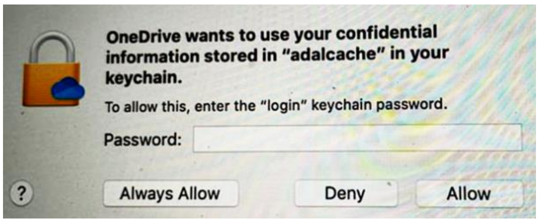
3.1.C Apple Mac

Click ‘Download’. (Alternatively, you may get the app from the Apple App Store.)

Go to your downloads folder, and click on the file ‘*OneDrive.pkg*’ to install.

Open ‘OneDrive for Business’ and if prompted, log in with your *studentnumber*@wf.uct.ac.za and UCT password.

A window may pop up with a message about accessing confidential information stored in your keychain.



OneDrive wants to use your confidential information stored in “adalcache” in your keychain.

To allow this, enter the “login” keychain password.

Password:

If you receive this, enter your Mac password and click ‘Allow’ or ‘Always Allow’ to update your keychain. Click ‘next’ to complete setup.

You can now access your OneDrive for Business folder.

3.2 Folders for your programs.

Now that OneDrive is set up, you should create some folders to organise the programs you write during the course; to make sure that everything can be easily found in future.

Open your ‘OneDrive – University of Cape Town’ folder and create a new folder. Give it the name *csc1015f_practical_assignments* or *csc1017f_practical_assignments* or whatever is suitable for your course.

Now double-click on the folder that you have created. You will be able to see the list of files it contains.

As you can expect, the folder is empty as we have just created it! Using the same procedure, create a folder here called *orientation*.

Double-click to change to this folder.

4. Python 3 and WING IDE 101

The aim of programming is to give the computer a series of instructions to solve a problem. Alas, the language understood by computers – **machine language** – is very difficult for humans to comprehend. So we use a simpler programming language and then somehow translate the program from what we can understand into something that the computer can understand. These human-understandable languages are called **high-level languages**, while machine language is a **low-level language**.

Python is the high-level programming language used in this course. To be precise, Python version 3.

Programs written in Python are **interpreted** and an equivalent set of machine instructions are executed for each Python instruction. This way we only need to know Python and not a low-level machine language. A **Python interpreter** is therefore the most important tool we will use.

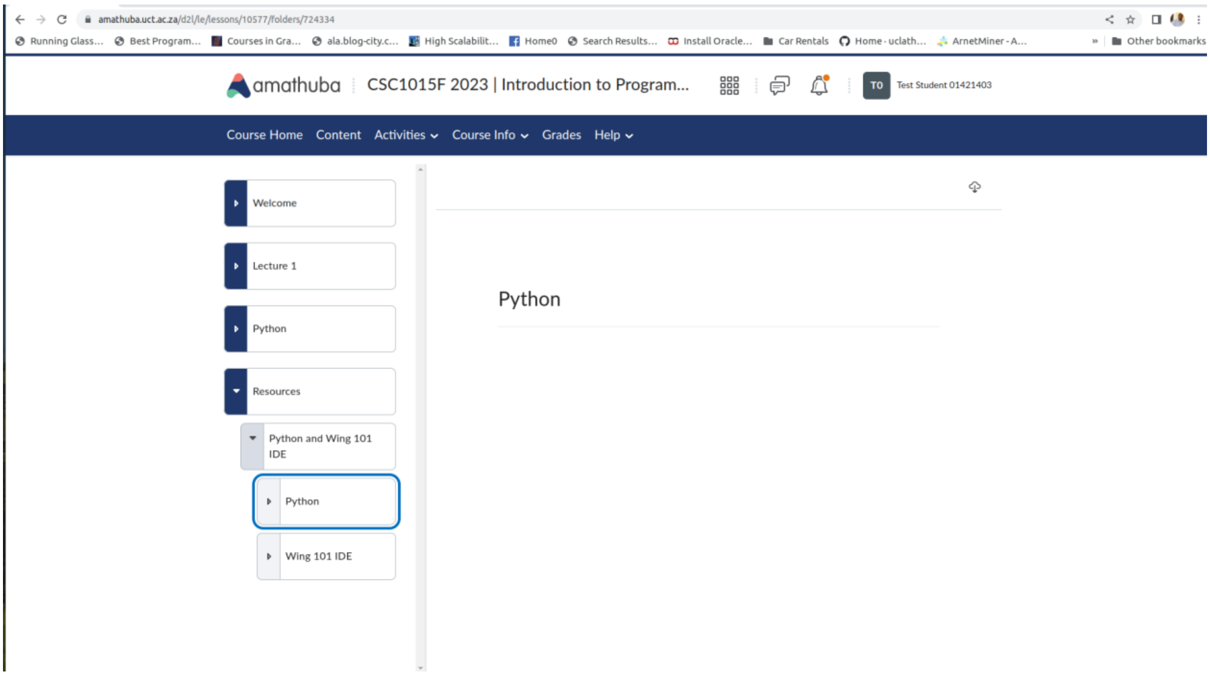
Not all programming languages work this way. Some use a tool called a **compiler** to convert the programs into machine code – we will use such tools in CSC1016S.

Before a program can be interpreted, it is typically stored in a file and to do this we can use a **text editor**.

Since programming happens in stages, the programmer has to switch quite a lot between a text editor and an interpreter – this can quickly get tiring. To make our lives much easier, the interpreter and text editor are usually combined into a single application called an **Integrated Development Environment (IDE)**. The IDE recommended for use in this course is *WING IDE 101*, though you are welcome to use any other tools – even a separate text editor and interpreter if you wish to simply do things the hard way ☺.

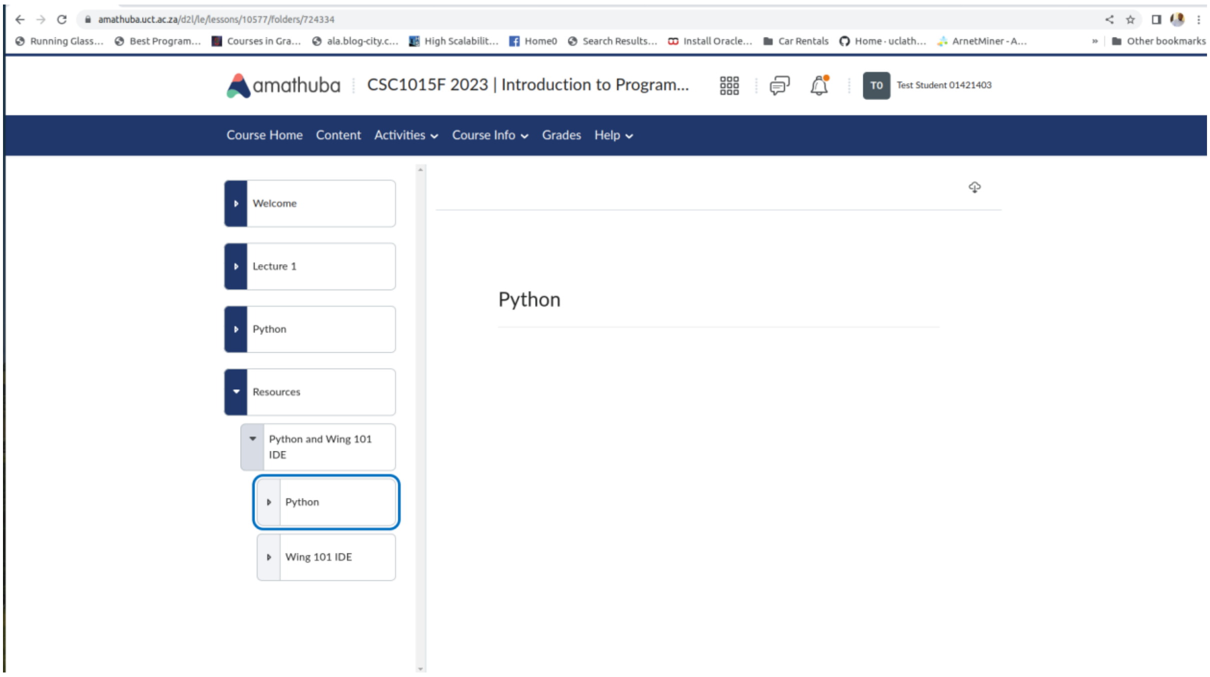
We have uploaded a copy of the latest version of the Python Interpreter and Wing 101 to the Amathuba website for the course.

To access them, click on the ‘Content’ tab at the top, then ‘Resources’ in the left-hand column, then scroll down the list and click on the folder ‘Python and Wing 101 IDE’.


amathuba.uct.ac.za/d2l/le/lessons/10577/folders/724334
Running Glass... Best Program... Courses in Gra... ala.blog-city.c... High Scalabilit... Home0 Search Results... Install Oracle... Car Rentals Home · uclath... ArnetMiner - A... Other bookmarks
amathuba
CSC1015F 2023 | Introduction to Program...
TO Test Student 01421403
Course Home
Content
Activities
Course Info
Grades
Help
Welcome
Lecture 1
Python
Resources
Python and Wing 101 IDE
Python
Wing 101 IDE
Python

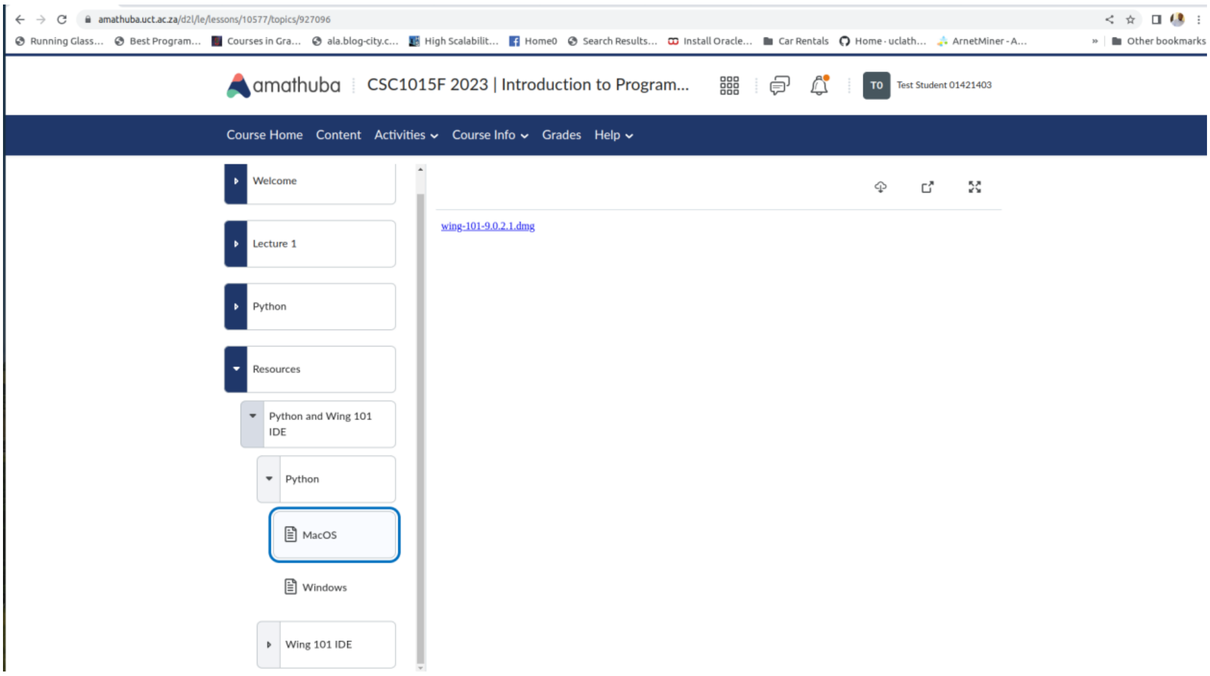
4.1 Installing Python

Select the ‘Python’ folder. You will see sub folders for Mac and Windows, and a note for Linux Users.


amathuba.uct.ac.za/d2l/le/lessons/10577/folders/724334
Running Glass... Best Program... Courses in Gra... ala.blog-city.c... High Scalabilit... Home0 Search Results... Install Oracle... Car Rentals Home · uclath... ArnetMiner - A... Other bookmarks
amathuba
CSC1015F 2023 | Introduction to Program...
TO Test Student 01421403
Course Home
Content
Activities
Course Info
Grades
Help
Welcome
Lecture 1
Python
Resources
Python and Wing 101 IDE
Python
Wing 101 IDE
Python

Click on the appropriate folder and then click on the installer file that it contains.

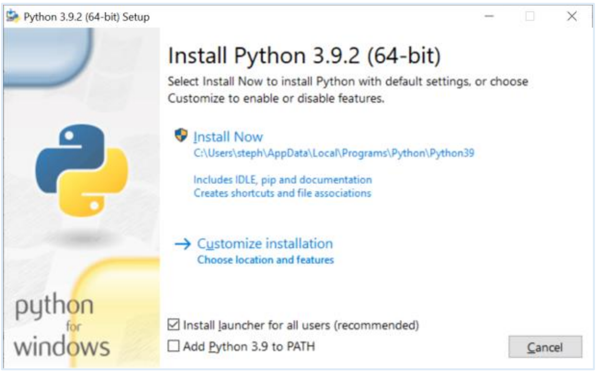
For example, for MacOS:



Once the installer file is downloaded, if it does not run automatically, open your downloads folder and run it from there (by double clicking).

Here is what you should see for a Windows installation:

Note: This installer is for an earlier version of Python. A newer version can be downloaded from the Amathuba site of the course.



Python 3.9.2 (64-bit) Setup

Install Python 3.9.2 (64-bit)

Select Install Now to install Python with default settings, or choose Customize to enable or disable features.

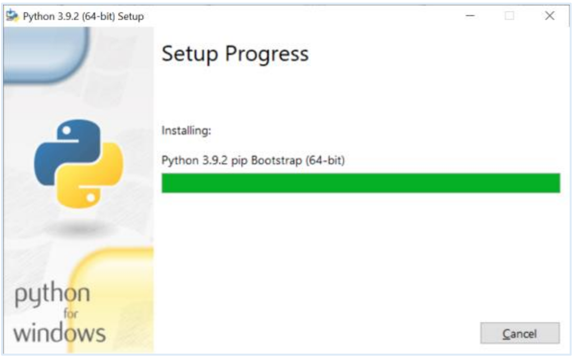
Install Now
C:\Users\steph\AppData\Local\Programs\Python\Python39

Includes IDLE, pip and documentation
Creates shortcuts and file associations

→ Customize installation
Choose location and features

☑ Install launcher for all users (recommended)
☐ Add Python 3.9 to PATH

Click ‘Install Now’. You will be asked if you wish to allow the app to install (the language varies depending in whether you are using a Mac or PC.) You should say ‘yes’.

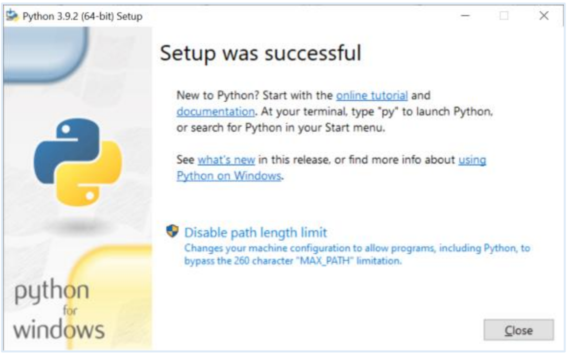


Python 3.9.2 (64-bit) Setup

Setup Progress

Installing:

Python 3.9.2 pip Bootstrap (64-bit)



Python 3.9.2 (64-bit) Setup

Setup was successful

New to Python? Start with the online tutorial and documentation. At your terminal, type "py" to launch Python, or search for Python in your Start menu.

See what's new in this release, or find more info about using Python on Windows.

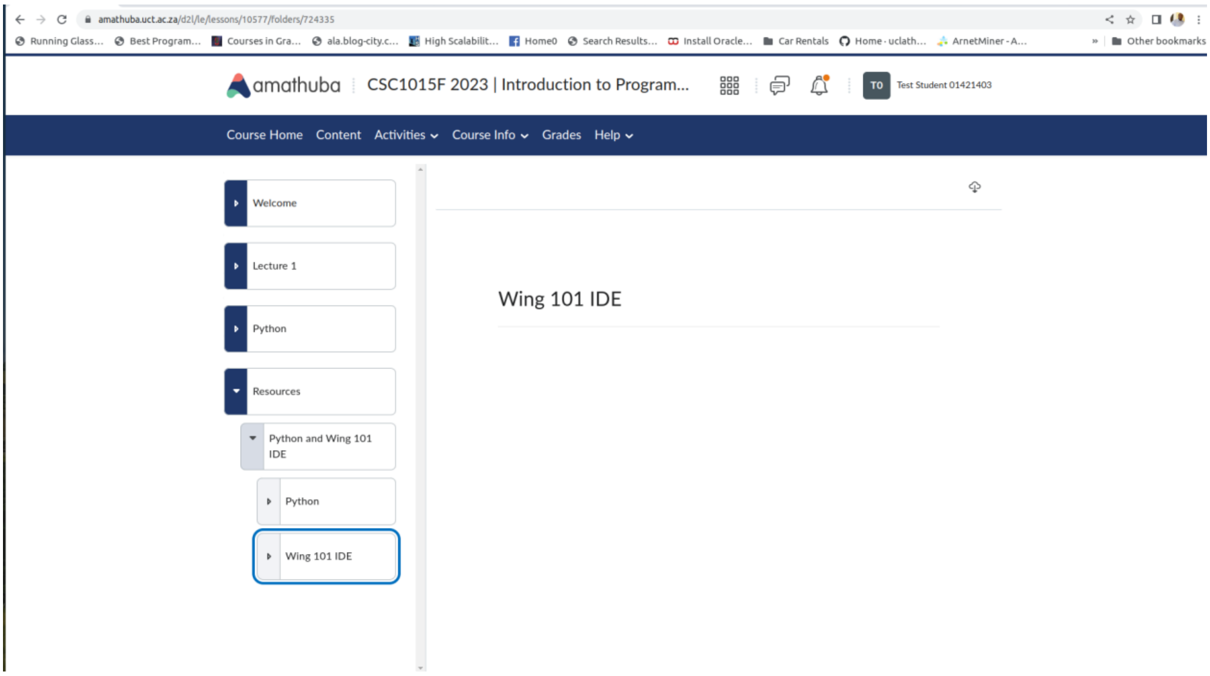
Disable path length limit
Changes your machine configuration to allow programs, including Python, to bypass the 260 character "MAX_PATH" limitation.

Click ‘Close’ when it is done.

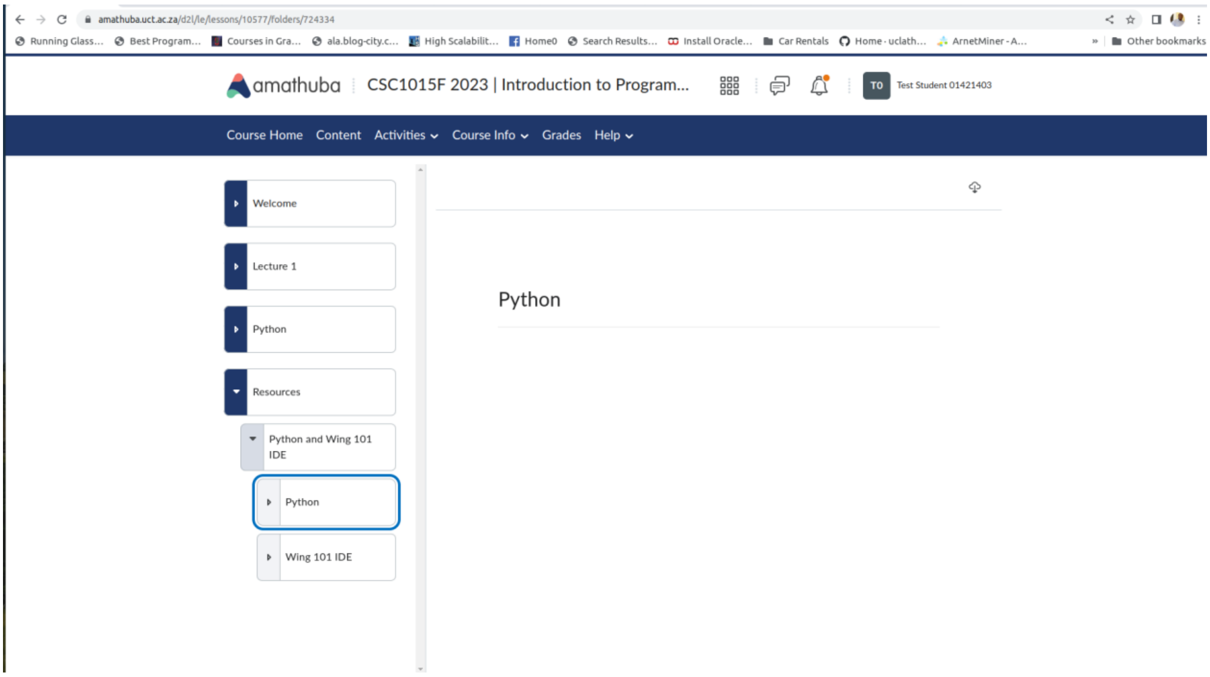
You will see a similar sequence on a Mac: licence agreement, select where to put the files, enter your Mac username and password to authorise. Click ‘Close’ when it is done.

4.2 Installing Wing 101

Now you need to install Wing 101. Return to the Python and Wing folder on Amathuba.



Select Wing IDE 101 and again, open the folder for your computer and download the file it contains.

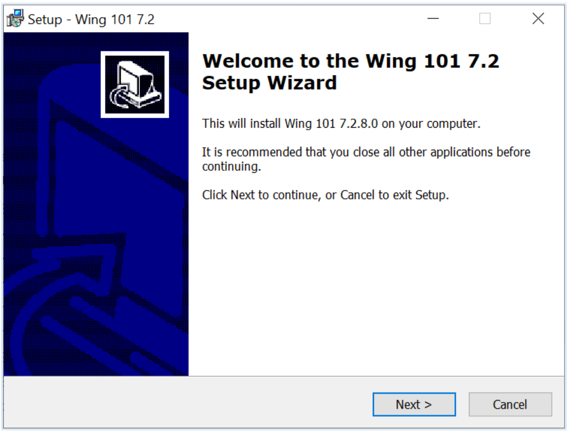


NOTE: The folder for Linux contains 3 files: one for Debian, one for Red Hat, and one generic compressed tar file.

Once the installer file is downloaded, if it does not run automatically, open your downloads folder, and run it from there (by double clicking). You will be asked if you wish to allow the app to run, you should say ‘yes’.

The file for Apple Mac is a ‘distributed disk image’. It will create a ‘virtual disk drive’/folder on your desktop. Open it and drag the contents to the Applications folder, and from there to the task bar, if you want quick access in future.

The Windows installer has several dialogue windows.



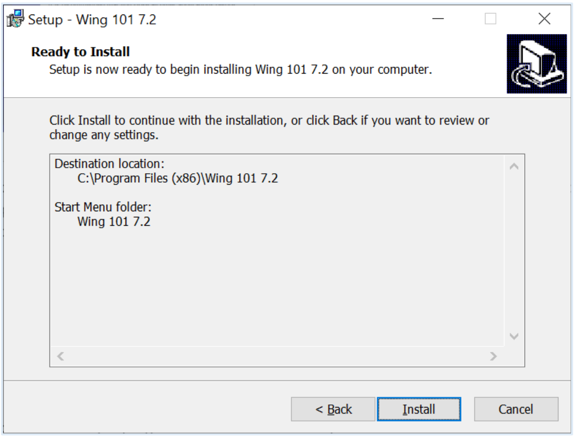
Welcome to the Wing 101 7.2 Setup Wizard

This will install Wing 101 7.2.8.0 on your computer.

It is recommended that you close all other applications before continuing.

Click Next to continue, or Cancel to exit Setup.

Click 'Next' and accept the licence agreement and click 'Next' again. If you are asked where to install, accept the default location and click 'Next'. You may also be invited to create a desktop shortcut, click 'Next'. Finally, click 'Install'!

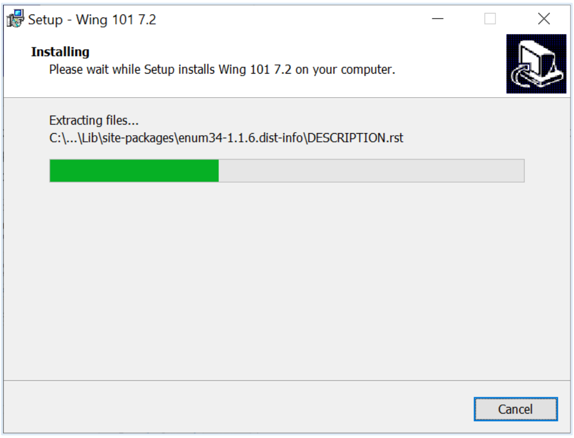


Ready to Install
Setup is now ready to begin installing Wing 101 7.2 on your computer.

Click Install to continue with the installation, or click Back if you want to review or change any settings.

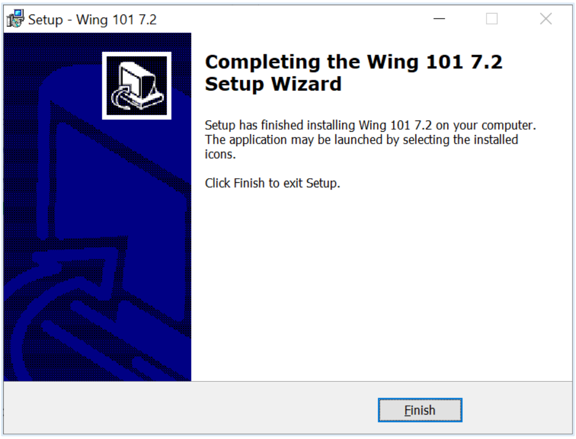
Destination location:
C:\Program Files (x86)\Wing 101 7.2

Start Menu folder:
Wing 101 7.2



Installing
Please wait while Setup installs Wing 101 7.2 on your computer.

Extracting files...
C:\...\Lib\site-packages\enum34-1.1.6.dist-info\DESCRIPTION.rst



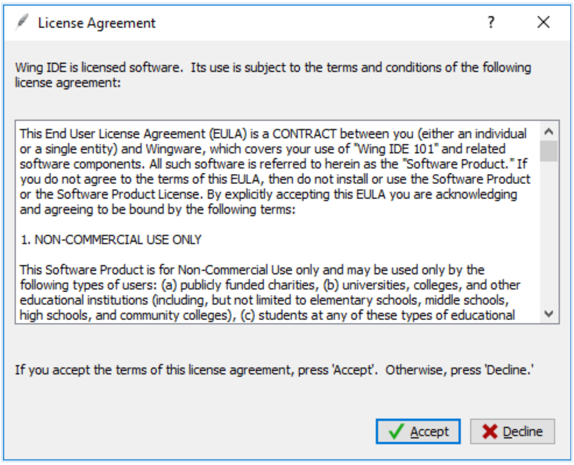
Completing the Wing 101 7.2 Setup Wizard

Setup has finished installing Wing 101 7.2 on your computer. The application may be launched by selecting the installed icons.

Click Finish to exit Setup.

4.3 Starting (and configuring) Wing 101

When you run Wing 101 for the first time, you will be asked to accept the licence agreement.



License Agreement

Wing IDE is licensed software. Its use is subject to the terms and conditions of the following license agreement:

This End User License Agreement (EULA) is a CONTRACT between you (either an individual or a single entity) and Wingware, which covers your use of "Wing IDE 101" and related software components. All such software is referred to herein as the "Software Product." If you do not agree to the terms of this EULA, then do not install or use the Software Product or the Software Product License. By explicitly accepting this EULA you are acknowledging and agreeing to be bound by the following terms:

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This Software Product is for Non-Commercial Use only and may be used only by the following types of users: (a) publicly funded charities, (b) universities, colleges, and other educational institutions (including, but not limited to elementary schools, middle schools, high schools, and community colleges), (c) students at any of these types of educational

If you accept the terms of this license agreement, press 'Accept'. Otherwise, press 'Decline.'

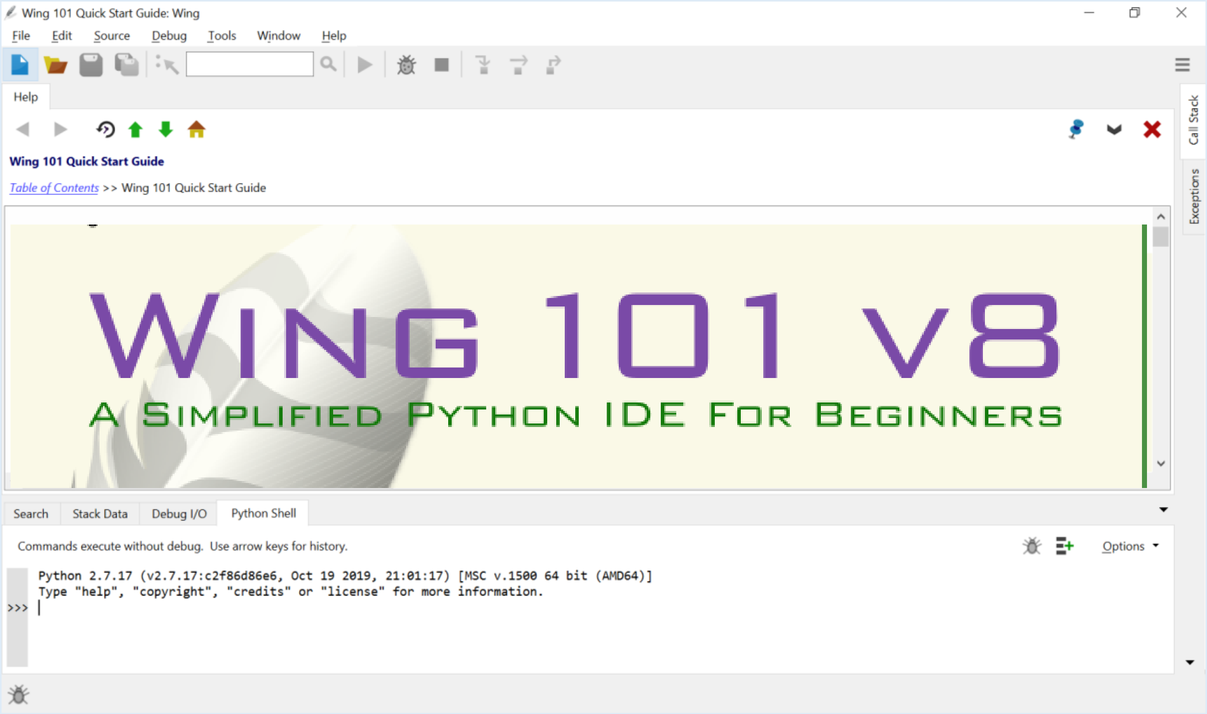
As *WING IDE* eventually starts up, it temporarily displays a **splash-screen**, which provides some information about the **application** as it is loaded into the computer's memory.

Note: the Wing 101 screenshots below were captured using version 8 of the IDE. Please download the most recent version from Amathuba. You should be able to find version 9 on Amathuba.

Starting version 8.1.2.1

WING 101 v8
A Simplified Python IDE For Beginners
Copyright 1998 - 2021 Wingware

As this is the first time you are running Wing, a quick start guide will appear as the main window.


Wing 101 Quick Start Guide: Wing
File Edit Source Debug Tools Window Help
Help
Wing 101 Quick Start Guide
Table of Contents >> Wing 101 Quick Start Guide
WING 101 v8
A SIMPLIFIED PYTHON IDE FOR BEGINNERS
Search Stack Data Debug I/O Python Shell
Options
Call Stack
Exceptions

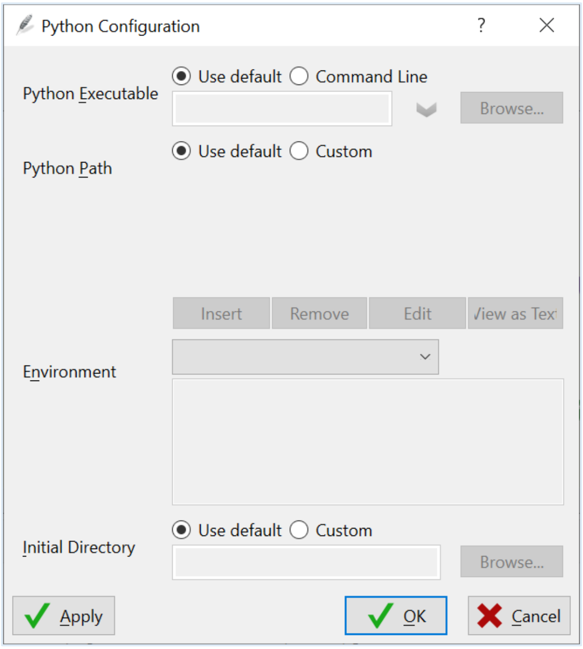
Commands execute without debug. Use arrow keys for history.

```
Python 2.7.17 (v2.7.17:c2f86d86e6, Oct 19 2019, 21:01:17) [MSC v.1500 64 bit (AMD64)]
Type "help", "copyright", "credits" or "license" for more information.
>>> |
```

Wing automatically detects and selects an installed version of the Python Interpreter. You will be able to see which it has picked by scrutinising the text in the bottom panel. It should say '`Python 3.9.2` …'.

It is possible that it does not because you had another version installed before. Mac OS X, in fact, definitely does have another version – it comes with a default installation of Python 2 - and it's possible that Wing picks this up.

To configure the right version of Python, click on the Edit menu then 'Configure Python'.



Python Executable ● Use default ○ Command Line

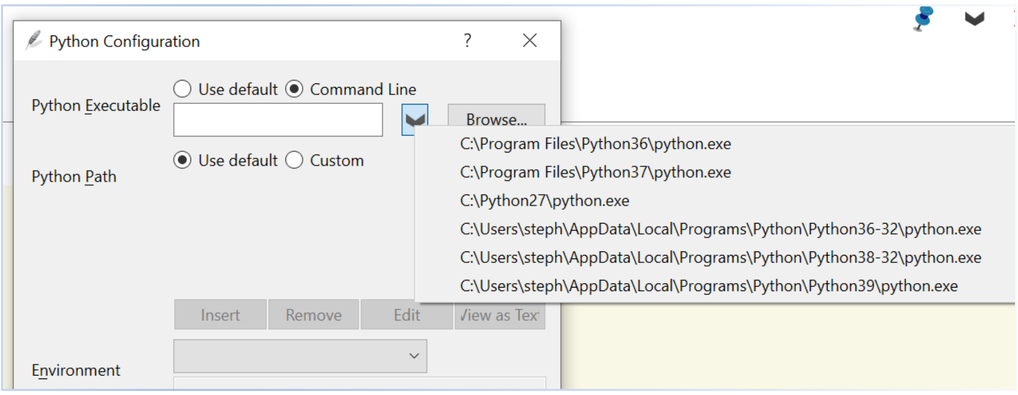
Python Path ● Use default ○ Custom

Environment

Initial Directory ● Use default ○ Custom

At the top, click the 'Command Line' radio button.

On Windows, click the down arrow to the left of Browse and you will see a list of the Python installations on the computer.

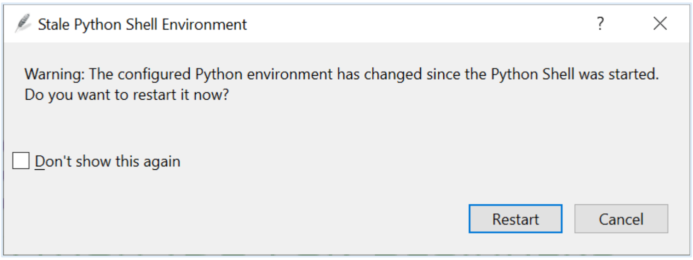


C:\Program Files\Python36\python.exe
C:\Program Files\Python37\python.exe
C:\Python27\python.exe
C:\Users\steph\AppData\Local\Programs\Python\Python36-32\python.exe
C:\Users\steph\AppData\Local\Programs\Python\Python38-32\python.exe
C:\Users\steph\AppData\Local\Programs\Python\Python39\python.exe

Select the line with ‘Python39’ contained within it and then click ‘Okay’.

On Mac, first open a Terminal (press Command-Space bar and type ‘Terminal’ then select from search results. In the terminal window, type ‘which python3’. Copy the result to the text box in the Wing Python Configuration window and click ‘Okay’.

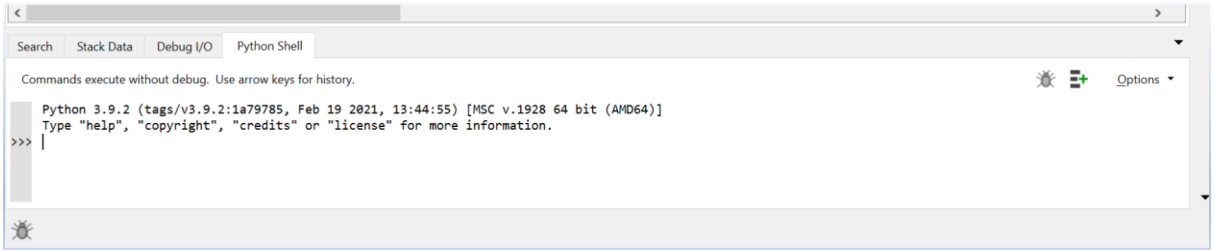
Wing will invite you to restart.



Warning: The configured Python environment has changed since the Python Shell was started.
Do you want to restart it now?

□ Don't show this again

Click ‘Restart’ and when the Wing main window reopens, check the details in the bottom pane again.



Commands execute without debug. Use arrow keys for history.

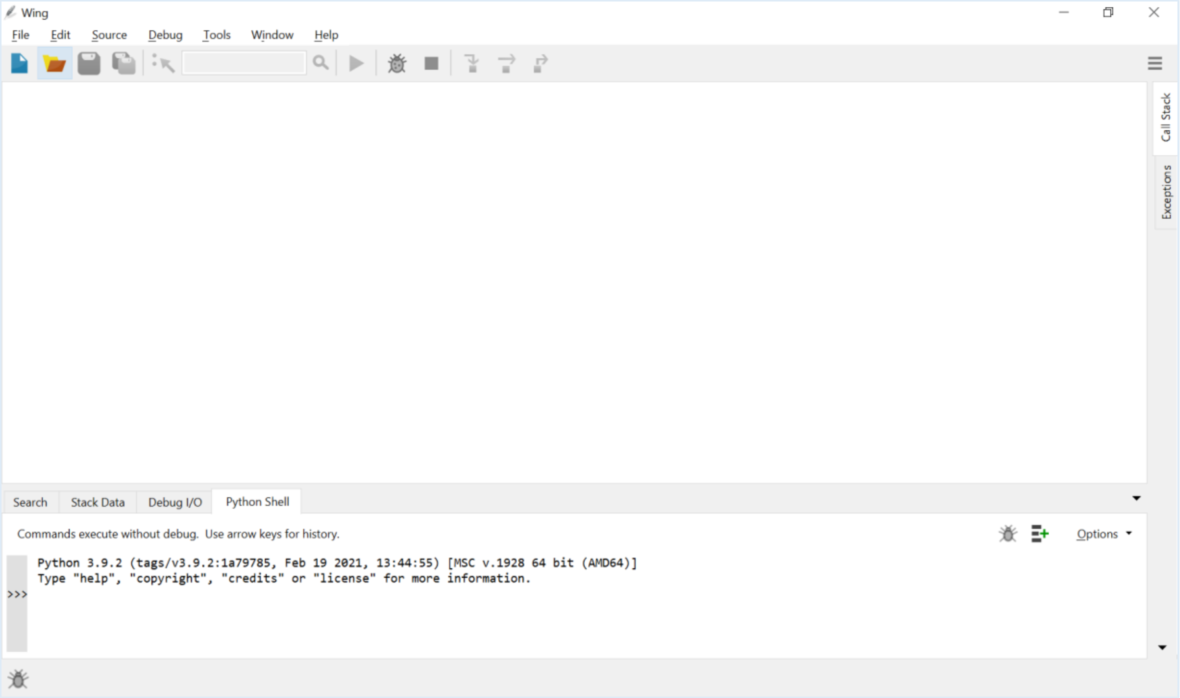
```
Python 3.9.2 (tags/v3.9.2:1a79785, Feb 19 2021, 13:44:55) [MSC v.1928 64 bit (AMD64)]
Type "help", "copyright", "credits" or "license" for more information.
>>> |
```

You should see Python 3.9.2.

5. Writing a Python Program in Wing 101

Now you’re ready to try out your new software setup with a simple Python program.

We do not need the Wing quick start guide for now. Close the main window by clicking on the little red cross next to the words “Call Stack” near the top right. You will now see a blank space.


Wing
File Edit Source Debug Tools Window Help
Call Stack
Exceptions
Search Stack Data Debug I/O Python Shell
Options

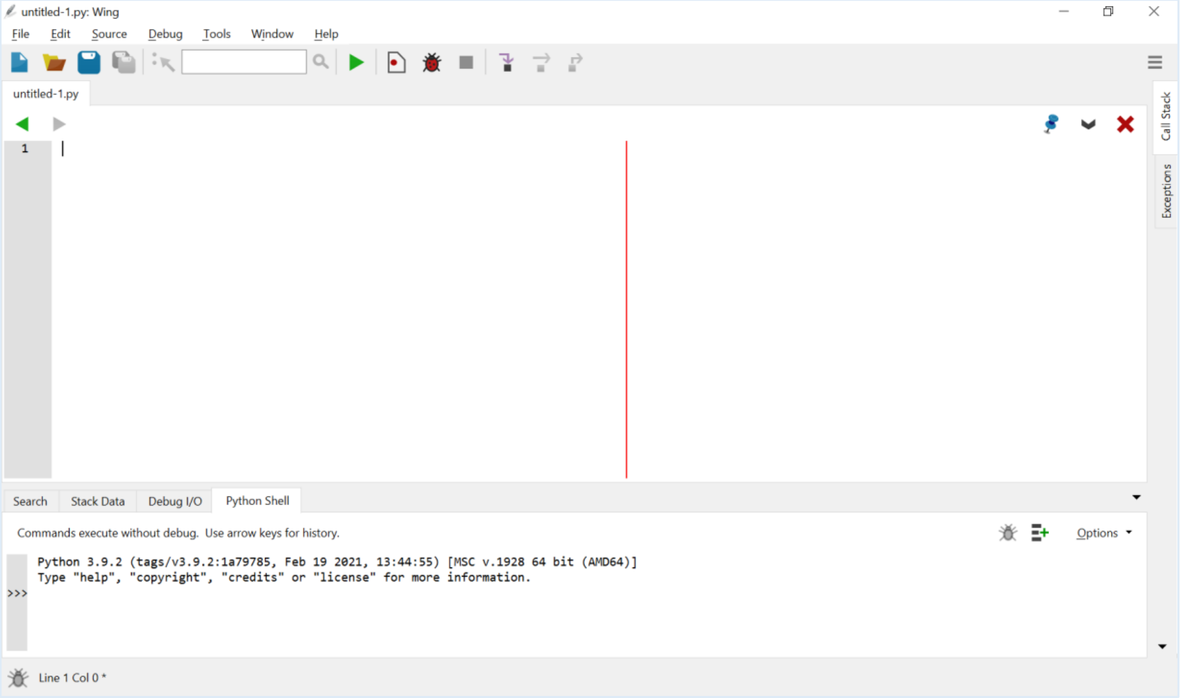
Commands execute without debug. Use arrow keys for history.

```
Python 3.9.2 (tags/v3.9.2:1a79785, Feb 19 2021, 13:44:55) [MSC v.1928 64 bit (AMD64)]
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

The *WING IDE* has 2 major **panes** (sections of a window) at start-up. At the top are **buttons** and a **menu** to activate various functions of the IDE. The main section is an empty **canvas** where editing of files will take place. The bottom pane contains a number of **tabs**. The "Python Shell" tab is where Python input and output will take place.

(You might also see the "Search" tab open beside the "Python Shell" tab. This provides a search and replace option to help in editing – we will not use this right now.)

The first step is to create a new file to store your program. You will usually do this as the first step of the solution to each part of a programming assignment. Click on *File* on the menu, then *New*. A new blank window will appear to take up the empty space.

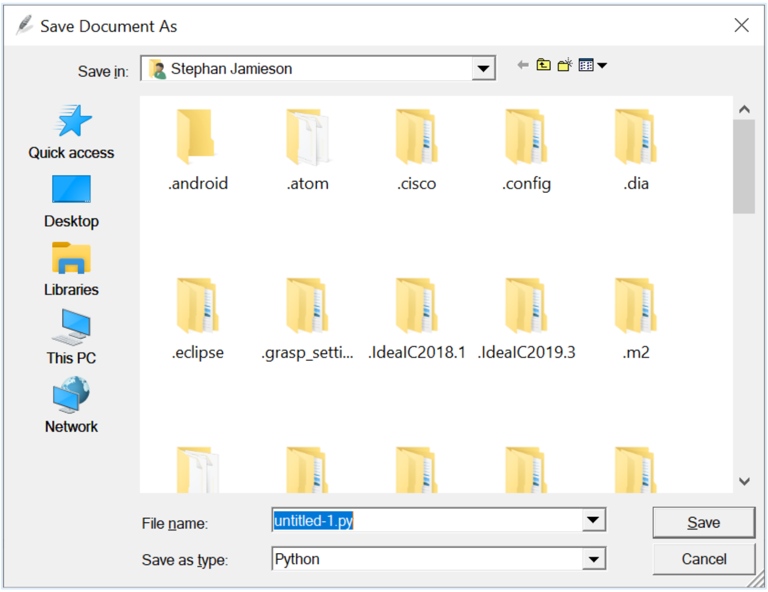

untitled-1.py: Wing
File Edit Source Debug Tools Window Help
untitled-1.py
1
Call Stack
Exceptions
Search Stack Data Debug I/O Python Shell
Options
Line 1 Col 0 *

Commands execute without debug. Use arrow keys for history.

```
Python 3.9.2 (tags/v3.9.2:1a79785, Feb 19 2021, 13:44:55) [MSC v.1928 64 bit (AMD64)]
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

The first thing you want to do is save the file – even though you have not typed in anything yet, this will provide a name for the program. Click on the *Save* button (the blue icon shaped like an old 3.5" floppy disk) or choose *Save* from the *File* menu.

You will now be presented with a **dialog box** where you can choose the directory to save the file in and you can enter a filename e.g. on windows:


Save Document As

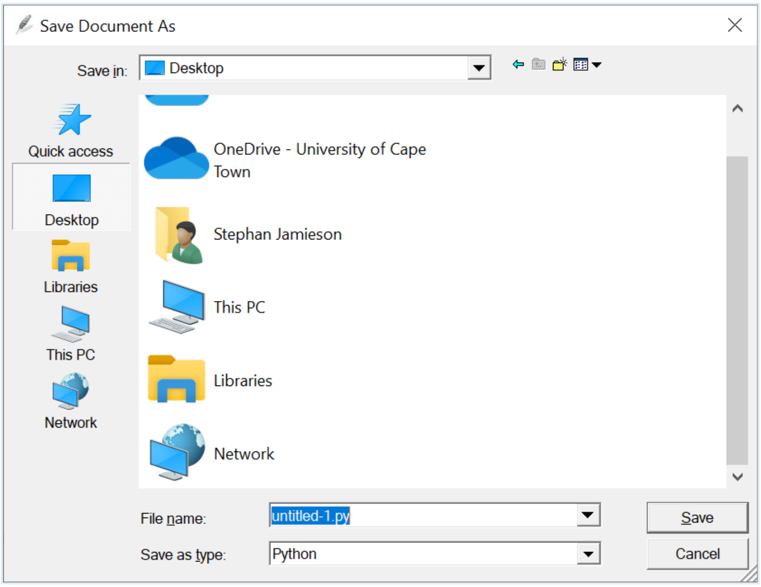
Save in: Stephan Jamieson

File name: untitled-1.py

Save as type: Python

Now, remember that you created a folder called *orientation* within a folder called csc*1015f_practical_assignments with*in your *OneDrive – University of Cape Town*. This is where you will save your file.

On Windows, to find your OneDrive folder, click on Desktop:


Save Document As

Save in: Desktop

File name: untitled-1.py

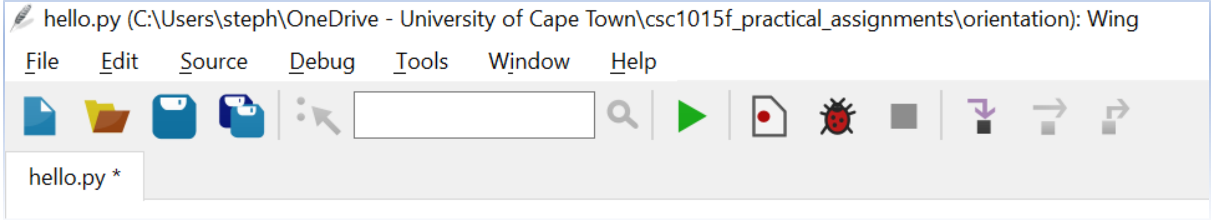
Save as type: Python

Double-click on the OneDrive folder to open, then on csc*1015f_practical_assignments* and finally on *orientation*.

Once you know that you are in the correct location, change the filename from whatever it is (often *untitled-1)* to *hello* and click on *Ok.*

We usually write programs and store them in multiple files. There are many reasons for this, including that large files are difficult to manage. For most of your assignments, however, there will only be a single file for each question. You can open all files simultaneously if you wish, or work on one at a time.

You should now be back at the main IDE **workspace** and the filename in the tab top will have changed to *hello.py*. Note that the **title bar** of the window also indicates the name and location of the file.



hello.py (C:\Users\steph\OneDrive - University of Cape Town\csc1015f_practical_assignments\orientation): Wing

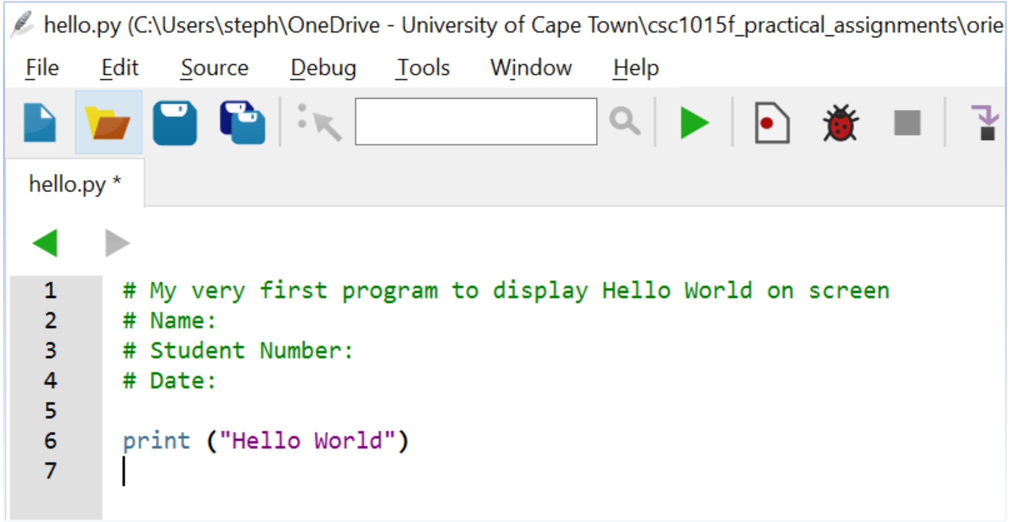
Now we are ready for some programming!

Click anywhere on the white portion of the top pane to make sure your cursor is in the right place and then type in the following program exactly as it appears, but inserting your name, student number and date where specified:

```
# My very first program to display Hello World on screen
# Name:
# Student Number:
# Date:

print ("Hello World")
```

This small program simply prints out the words *Hello World* to the screen. It is classically the first program most people learn to write when learning a new programming language.



hello.py (C:\Users\steph\OneDrive - University of Cape Town\csc1015f_practical_assignments\orie
File
Edit
Source
Debug
Tools
Window
Help
hello.py *

```
# My very first program to display Hello World on screen
# Name:
# Student Number:
# Date:

print ("Hello World")
```

As you typed the program in, *WING IDE* highlighted the words in different colours. This **syntax highlighting** helps programmers to understand their code more easily. The green lines are comments that are not instructions to the computer but help any readers of the program understand what it does, who wrote it, when it was written, etc. Comments are absolutely critical and all your programming assignments MUST contain appropriate comments – this will be elaborated upon further by your lecturers.

The blue words are **reserved words** that have special meaning in Python so cannot be used by the programmer in any other way. Anything within quotation marks is purple and the rest is black.

Now that we have entered the program, the FIRST thing we ALWAYS do is **save** the file. This transfers the program from the computer's memory to the computer's hard drive, where it is stored permanently. Without saving, if there is a power failure (for which Cape Town used to be infamous!), any changes made in the IDE will be lost! For longer programs, we save the file much more often – not just after writing the whole program. You also MUST save the file every time you modify it – your IDE may try to help by reminding you if you forget but don't rely on that.

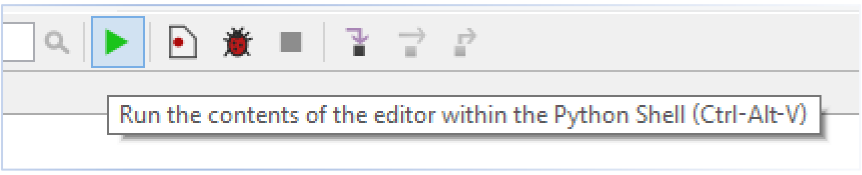
Click on the *Save* button (or click) *File* and then *Save*.

WING IDE saves the file – it does not ask you where to put it because it already knows the filename (which is *hello.py* in this case).

We can now execute the program on the machine. WING IDE starts the Python interpreter and gets it to execute your program. The input and output from this process can be seen in the bottom pane.

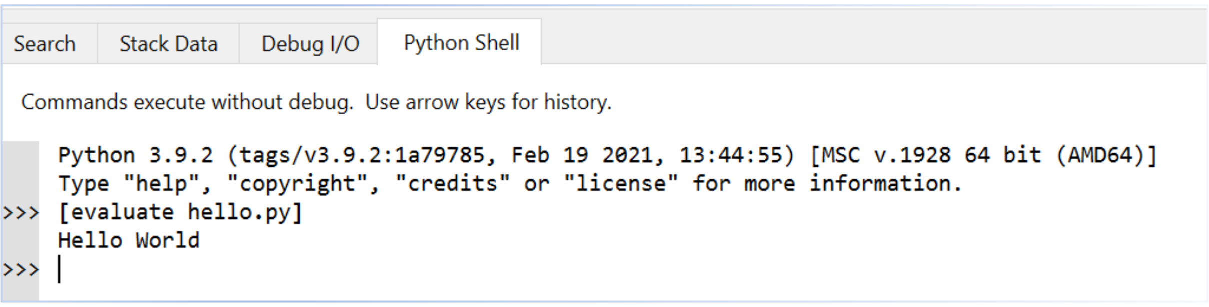
If there are errors in your program, it means that the interpreter could not understand the language used by the programmer – the programmer probably made an error. If you get error messages you need to correct the error(s) in your program before proceeding.

Click on the *Run* icon in the menu to **run** or **execute** the program.



Run the contents of the editor within the Python Shell (Ctrl-Alt-V)

The Python Shell in the bottom pane will show the output from your program. If you see the words *Hello World*, your program has executed successfully.



Commands execute without debug. Use arrow keys for history.

```
    Python 3.9.2 (tags/v3.9.2:1a79785, Feb 19 2021, 13:44:55) [MSC v.1928 64 bit (AMD64)]
    Type "help", "copyright", "credits" or "license" for more information.
>>> [evaluate hello.py]
    Hello World
>>> |
```

Congratulations! You have written your first program in this course!

Now, if you had wanted to save the results of this program for some reason, say to impress your better half, you can easily save the **output** to a file or transfer it to another program. If you right-click in the Python Shell pane you can *Copy* any text you have selected to the clipboard, and then paste this into any other program. This is usually not necessary for 1015F/1017F/1019F assignments, but some courses may require that you submit output as well as the program you wrote.

Note also that you can type instructions directly into the Python Shell pane – this is useful to test fragments of code. Your lecturer will probably use this feature in class!

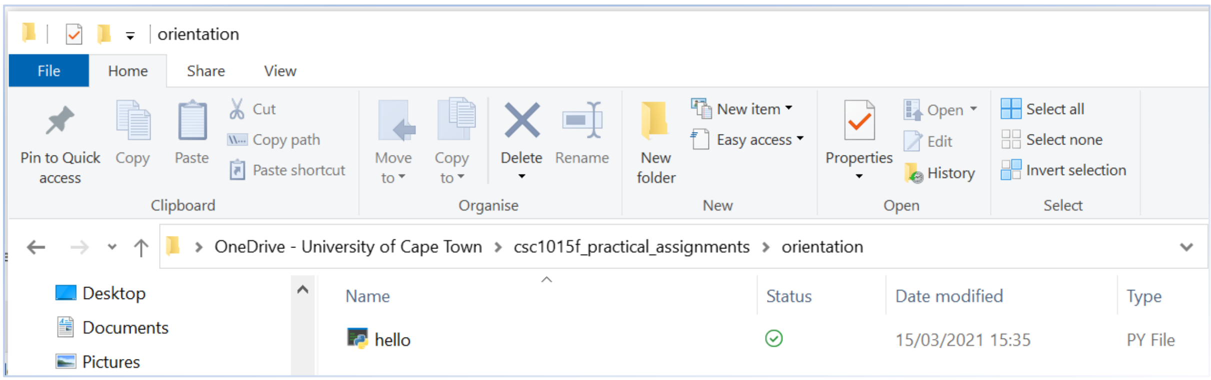
You can close *WING IDE.*

6. Creating a Zip File

Now that the programming is done, it is almost time to submit the files that constitute this program to the online assignment submission system on *Amathuba*.

If you have the *orientation* folder still open, you should see one file in it.

(If you are using Windows and do not see the file, click on the window and then press F5 to refresh it. Unfortunately, there's no quick shortcut for Mac – try clicking the back arrow to go to the previous folder than reopen the orientation folder.)



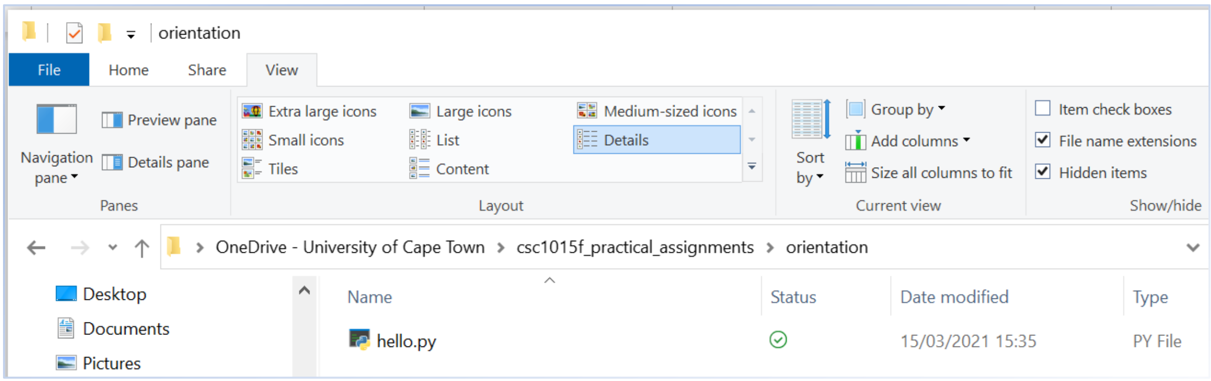
OneDrive - University of Cape Town > csc1015f_practical_assignments > orientation

Name	Status	Date modified	Type
hello	✓	15/03/2021 15:35	PY File

But there may be a small problem. In *WING IDE* we created a file called *hello.py* but the folder may display something called *hello*. The filename *hello.py* has an **extension** of *py*. These are the letters after the period and usually indicate what the purpose of the file is. Windows 10 and Mac OS X take some liberties and tries to make folders more graphical by removing the old-style extensions and replacing them with little icons e.g., the logo to the left of *hello*. For normal computer users, this is fine. Programmers, however, need a bit more control so we need to see the extensions.

Luckily, we can tell Windows and Mac OS not to hide the extensions.

On Windows, click on the *View* tab (at the top of the window, just below the title), and then select the tick box labelled '*File name extensions'*. The folder now displays the complete filenames for all files.



□ Item check boxes
☑ File name extensions
☑ Hidden items

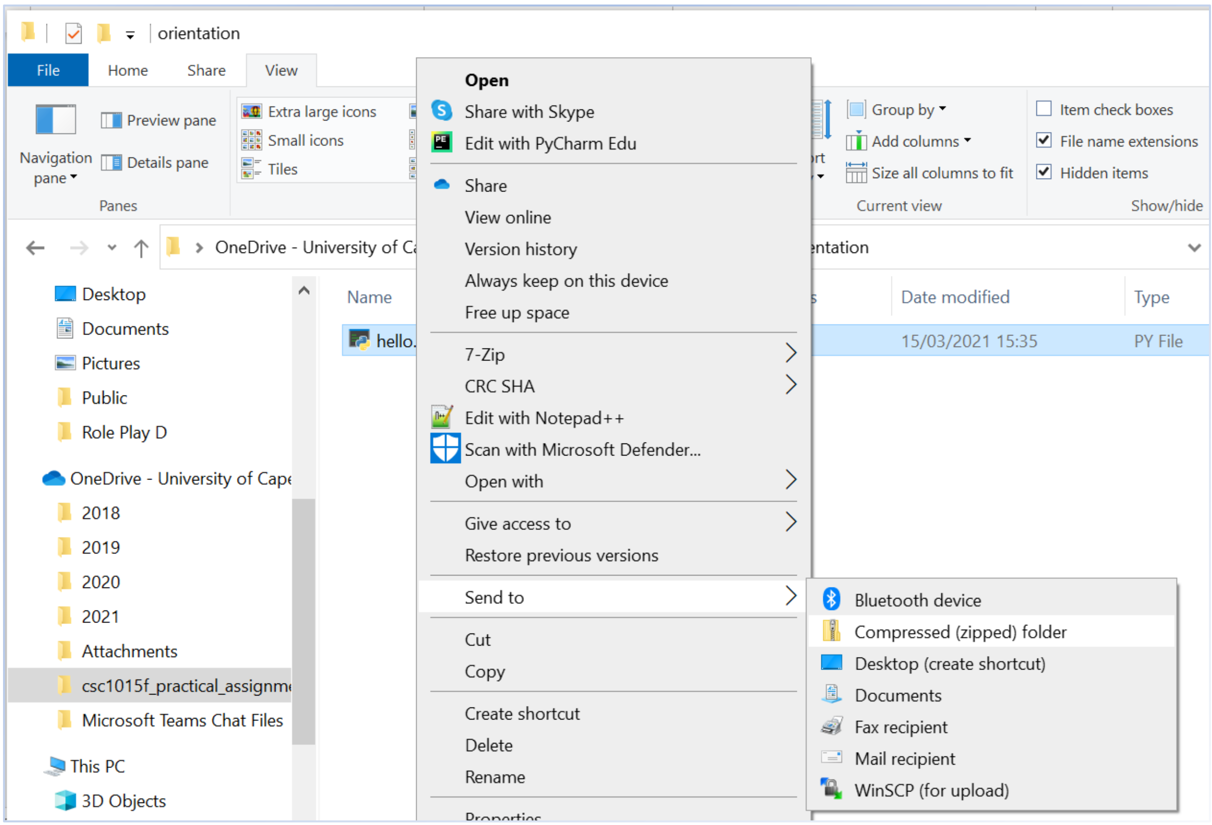
OneDrive - University of Cape Town > csc1015f_practical_assignments > orientation

Name	Status	Date modified	Type
hello.py	✓	15/03/2021 15:35	PY File

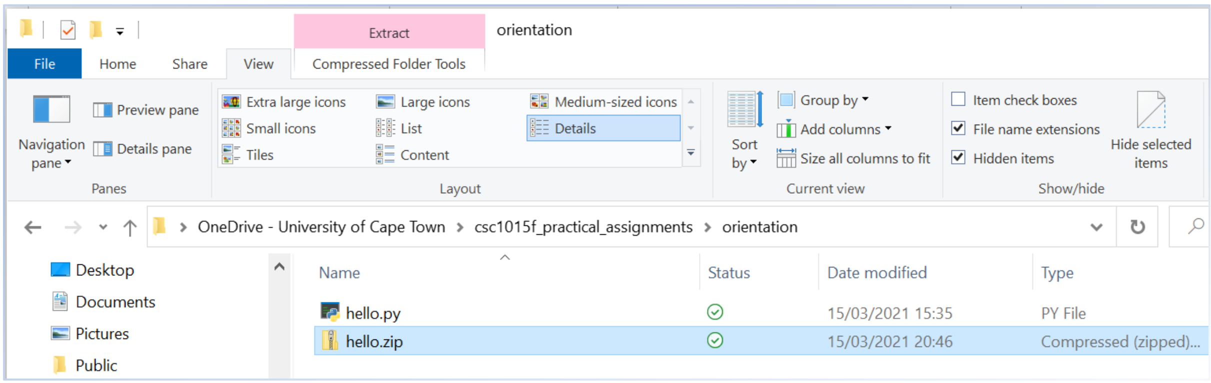
On Mac OS 10, select the Finder/Folder window then select the Finder Preferences menu. Select the Advanced tab and check the box for "Show all filename extensions".

To submit an assignment, you can only send in one file, however, you often need to send in at least all the source code files and most assignments have multiple files. To make this possible we first create a **Zip file** that can contain other files. This is almost like a folder, and in fact is sometimes referred to as a compressed folder – compressed since special algorithms are used to make it use less storage space than one would expect.

On Windows, to create a Zip file, right-click on the *hello.py* file, select '*Send to'* and then click on '*Compressed (zipped) folder*'.



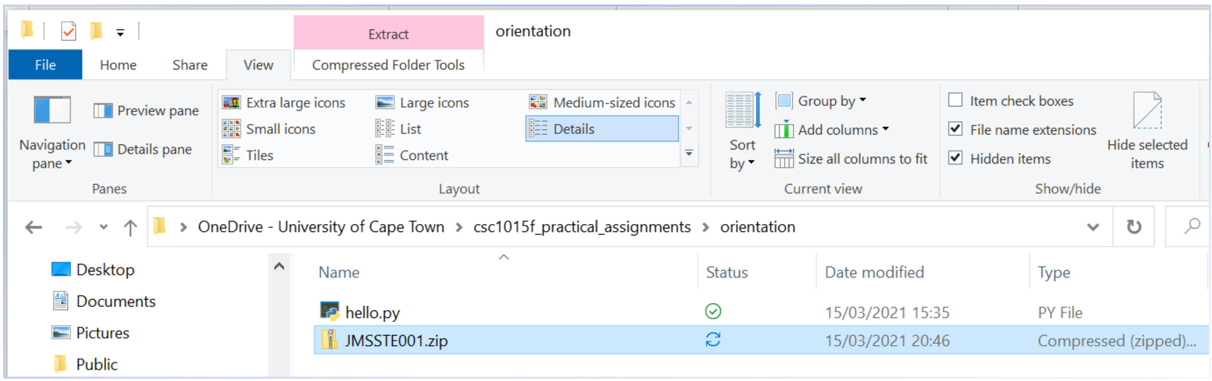
A Zip file has an icon that usually includes a little zip. If you do not see the new file, press F5 to refresh the window.



On Mac, the procedure is similar, right-click on the *hello.py* file and select ‘Compress hello.py’. Again, the new file should have an icon that includes a little ZIP.

Now, you should rename the Zip file *Orientation_ABCXYZ123*, where *ABCXYZ123* is your student number – this practice helps staff easily identify the owners of files submitted for an assignment.

On Windows, Right-click and select *Rename*.



OneDrive - University of Cape Town > csc1015f_practical_assignments > orientation

Name	Status	Date modified	Type
hello.py	✓	15/03/2021 15:35	PY File
JMSSTE001.zip	⟳	15/03/2021 20:46	Compressed (zipped)...

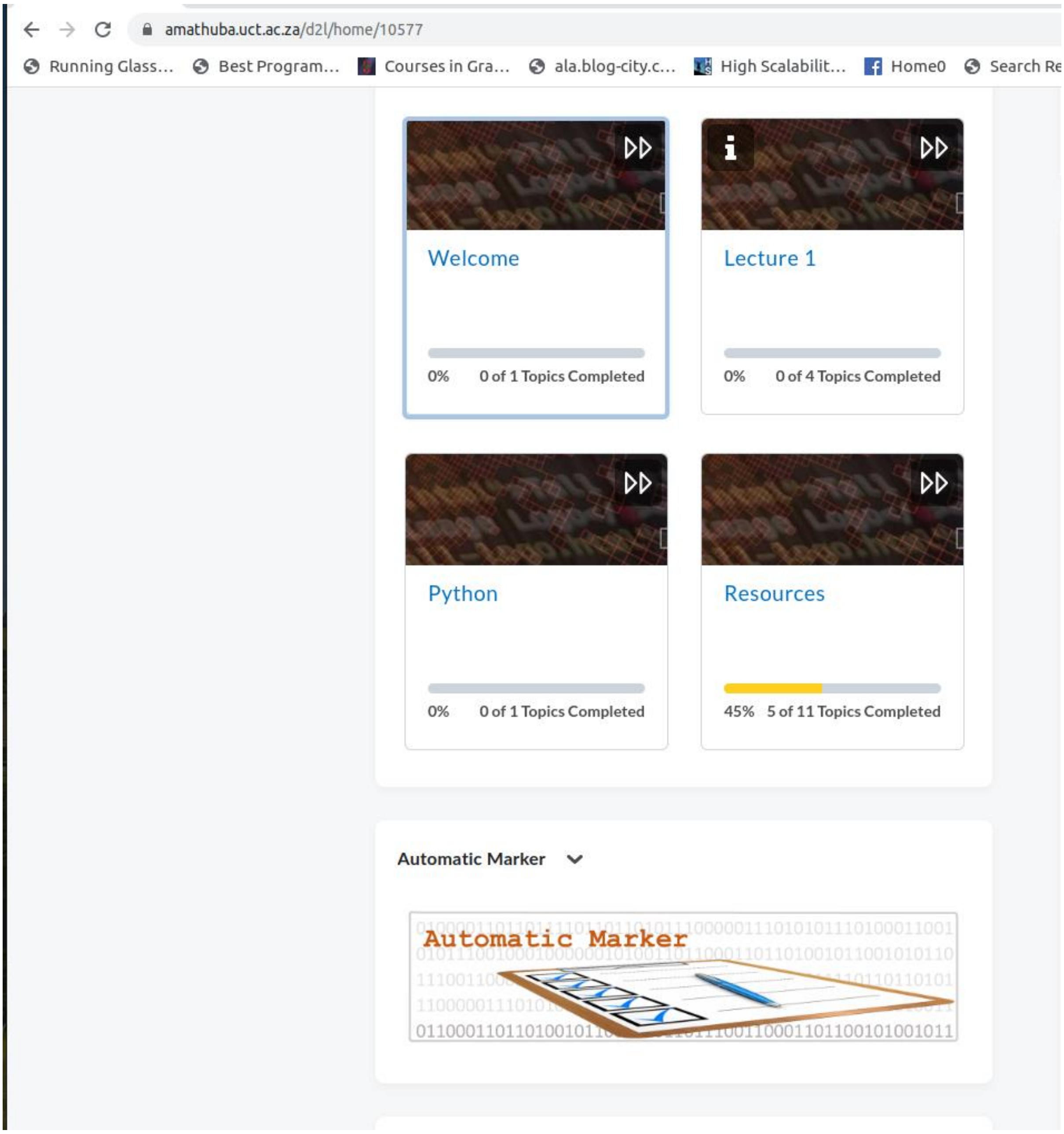
On Mac, click on the file, then press Enter/Return. A text box appears around the name so you can edit it.

For this orientation, this is all you need to do to create the Zip file. From the very first assignment, however, you will have to include multiple files. To do this, just select all the items you want before right-clicking (on Mac or Windows).

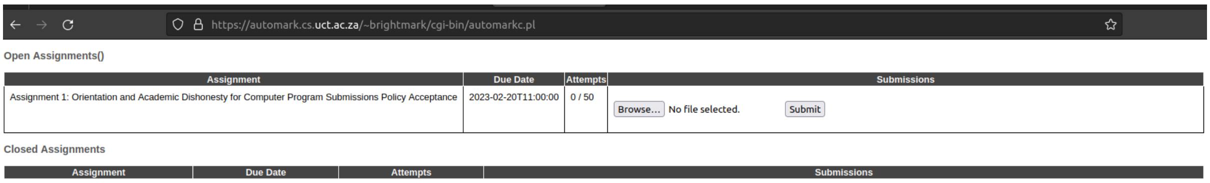
7. Submission of Assignment

Assignments must be submitted on time. Any assignment that is handed in late is usually assessed a 10% penalty per day late, up to the 5th day – after that a mark of zero will be assigned!

Run *Chrome* as before and go to the *Amathuba* website. Log in and switch to the class website. On the course homepage, you will see "*Course Content*", scroll down until you see "*Automatic Marker*".



Click on *Automatic Marker*. The automatic Marker will open in a new tab. You will get a screen similar to the one below:


https://automark.cs.uct.ac.za/~brightmark/cgi-bin/automarkc.pl

Open Assignments()

Assignment	Due Date	Attempts	Submissions
Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance	2023-02-20T11:00:00	0 / 50	Browse... No file selected. Submit

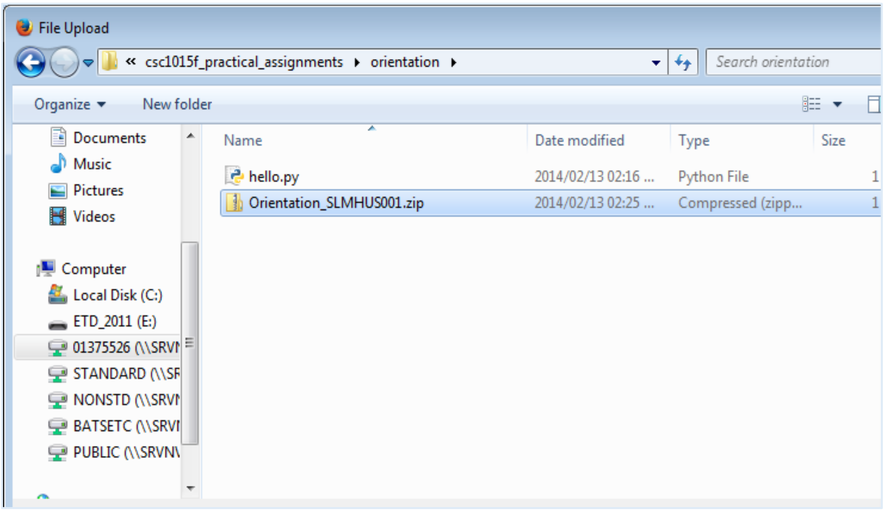
Closed Assignments

Assignment	Due Date	Attempts	Submissions

A list of all assignments is displayed, and you can click on the one that you wish to submit. For this orientation task, you want to use Assignment 1: *Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance*. The date indicates when the assignment is due and if your assignment is late this will be indicated by a change in colour, as well as the penalty you will be assessed for late submission. The number of attempts indicates how many times you have submitted this assignment and how many times you are allowed. In general, you can resubmit your assignment until you are satisfied with the result you obtain – the last mark is the one that we will use.

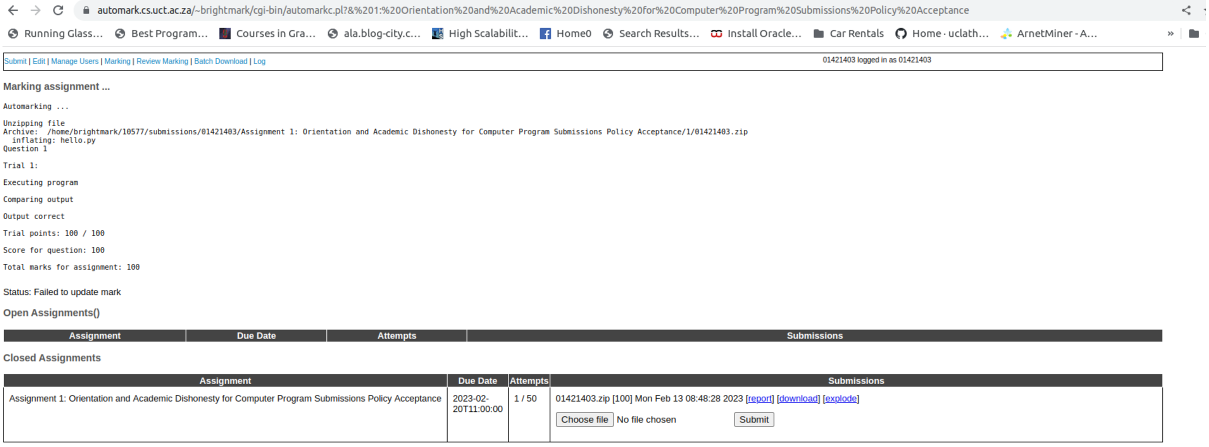
Assignments are listed as Open or Closed – Open assignments may still be submitted but the deadline has already passed for Closed assignments.

Click on *Choose File* and choose your Zip file.



Name	Date modified	Type	Size
hello.py	2014/02/13 02:16 ...	Python File	1
Orientation_SLMHUS001.zip	2014/02/13 02:25 ...	Compressed (zipp...	1

Then, click on *Submit* and your assignment will be submitted and marked automatically. The system unzips your file and then **executes** a battery of tests against it. In this case, there is only one question and only one trial that is done.


automark.cs.uct.ac.za/~brightmark/cgi-bin/automarkc.pl?&%201:%20Orientation%20and%20Academic%20Dishonesty%20for%20Computer%20Program%20Submissions%20Policy%20Acceptance
Running Glass...
Best Program...
Courses in Gra...
ala.blog-city.c...
High Scalabilit...
Home0
Search Results...
Install Oracle...
Car Rentals
Home · uclath...
ArnetMiner - A...
Submit | Edit | Manage Users | Marking | Review Marking | Batch Download | Log

01421403 logged in as 01421403

Marking assignment ...

```
Automarking ...

Unzipping file
Archive:  /home/brightmark/10577/submissions/01421403/Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance/1/01421403.zip
  inflating: hello.py
Question 1

Trial 1:

Executing program

Comparing output

Output correct

Trial points: 100 / 100

Score for question: 100

Total marks for assignment: 100
```

Status: Failed to update mark

Open Assignments()

Assignment	Due Date	Attempts	Submissions

Closed Assignments

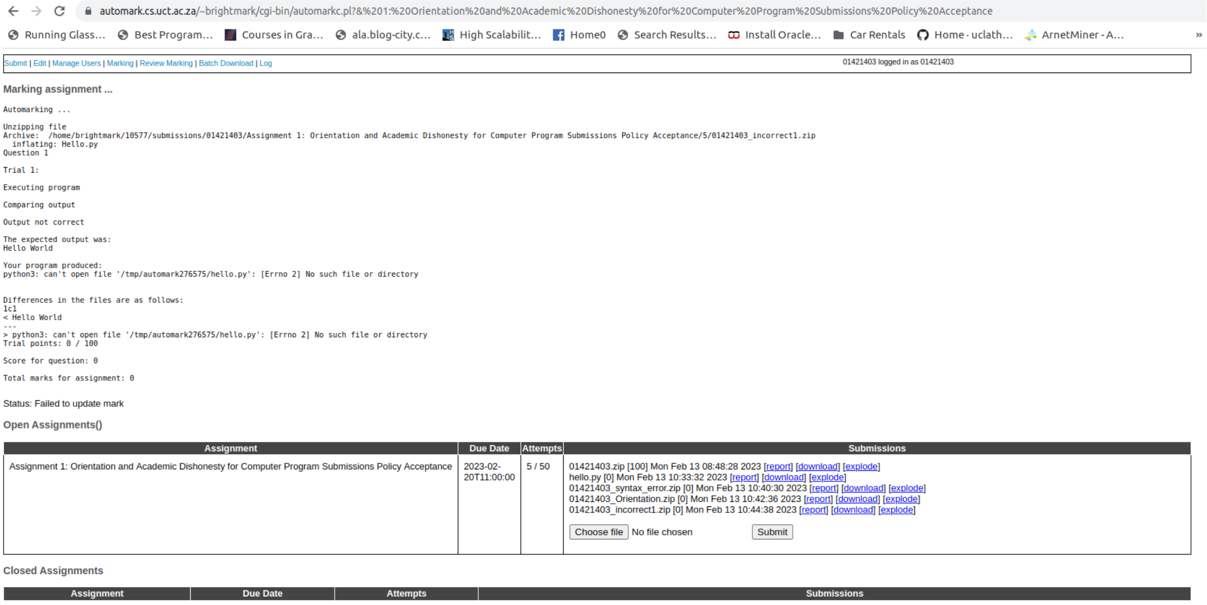
Assignment	Due Date	Attempts	Submissions
Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance	2023-02-20T11:00:00	1 / 50	01421403.zip [100] Mon Feb 13 08:48:28 2023 [report] [download] [explode] Choose file No file chosen Submit

The output should be as shown above, but it is possible that something went wrong and instead you got errors and less than 100 marks. In this case, study the error report closely as it will suggest what went wrong. The automatic marker will indicate what the expected output was, what output was produced when your program was run, and the differences between the 2.

7.1 The Automatic Marker Errors Checklist

The following errors are common on the automatic marker. Do study the automatic marker report closely and make corrections as suggested.

7.1.1 Incorrect naming of files



automark.cs.uct.ac.za/~brightmark/cgi-bin/automarkc.pl?&%201:%20Orientation%20and%20Academic%20Dishonesty%20for%20Computer%20Program%20Submissions%20Policy%20Acceptance
Running Glass…
Best Program…
Courses in Gra…
ala.blog-city.c…
High Scalabilit…
Home0
Search Results…
Install Oracle…
Car Rentals
Home · uclath…
ArnetMiner - A…
Submit | Edit | Manage Users | Marking | Review Marking | Batch Download | Log
01421403 logged in as 01421403

Marking assignment ...

```
Automarking ...

Unzipping file
Archive:  /home/brightmark/10577/submissions/01421403/Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance/5/01421403_incorrect1.zip
  inflating: Hello.py
Question 1

Trial 1:

Executing program

Comparing output

Output not correct

The expected output was:
Hello World

Your program produced:
python3: can't open file '/tmp/automark276575/hello.py': [Errno 2] No such file or directory


Differences in the files are as follows:
1c1
< Hello World
---
> python3: can't open file '/tmp/automark276575/hello.py': [Errno 2] No such file or directory
Trial points: 0 / 100

Score for question: 0

Total marks for assignment: 0
```

Status: Failed to update mark

Open Assignments()

Assignment	Due Date	Attempts	Submissions
Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance	2023-02-20T11:00:00	5 / 50	01421403.zip [100] Mon Feb 13 08:48:28 2023 [report] [download] [explode] hello.py [0] Mon Feb 13 10:33:32 2023 [report] [download] [explode] 01421403_syntax_error.zip [0] Mon Feb 13 10:40:30 2023 [report] [download] [explode] 01421403_Orientation.zip [0] Mon Feb 13 10:42:36 2023 [report] [download] [explode] 01421403_incorrect1.zip [0] Mon Feb 13 10:44:38 2023 [report] [download] [explode] Choose file No file chosen Submit

Closed Assignments

Assignment	Due Date	Attempts	Submissions

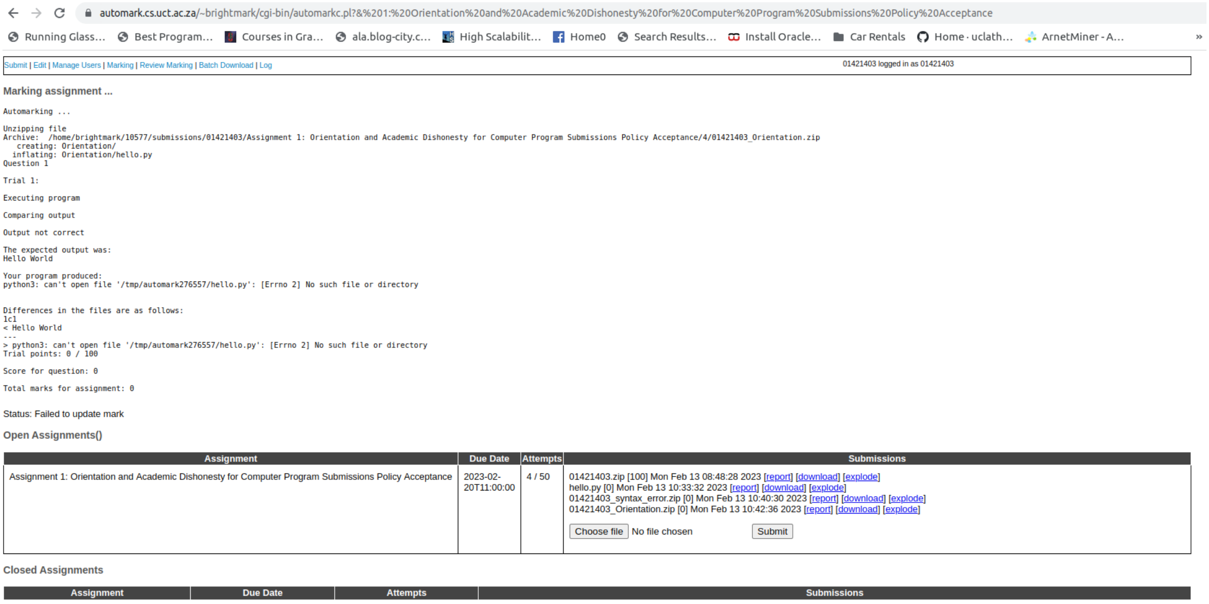
The screenshot above illustrates an example of a case where the file submitted to the automarker has a different name from what the automarker is expecting. The automarker is expecting a file named “hello.py” but instead it found “Hello.py”. Note that the file names are case sensitive. “H” and “h” are interpreted differently in this case. Furthermore, “hello” and “Hello” are two different names in Python. Usually, the automarker will give the following error message:

```
python3: can't open file 'hello.py': [Errno 2] No such file or directory
```

This means that the file that the automarker is expecting is “hello.py” (pay attention to the lowercase ‘h’). To fix this error, rename your file accordingly and resubmit to the automarker.

7.1.2 Compressing a folder instead of a file

When creating your ZIP archive, make sure that you compress a file and not a folder. To illustrate this, I have created folder called “Orientation” in which I have saved a file named “hello.py. Before submitting to the automarker, I compressed the folder “Orientation” and the screenshot below illustrates the automarker report I got:


automark.cs.uct.ac.za/~brightmark/cgi-bin/automarkc.pl?&%201:%20Orientation%20and%20Academic%20Dishonesty%20for%20Computer%20Program%20Submissions%20Policy%20Acceptance
Running Glass...
Best Program...
Courses in Gra...
ala.blog-city.c...
High Scalabilit...
Home0
Search Results...
Install Oracle...
Car Rentals
Home · uclath...
ArnetMiner - A...
Submit | Edit | Manage Users | Marking | Review Marking | Batch Download | Log
01421403 logged in as 01421403

Marking assignment ...

```
Automarking ...

Unzipping file
Archive:  /home/brightmark/10577/submissions/01421403/Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance/4/01421403_Orientation.zip
   creating: Orientation/
  inflating: Orientation/hello.py
Question 1

Trial 1:

Executing program

Comparing output

Output not correct

The expected output was:
Hello World

Your program produced:
python3: can't open file '/tmp/automark276557/hello.py': [Errno 2] No such file or directory


Differences in the files are as follows:
1c1
< Hello World
---
> python3: can't open file '/tmp/automark276557/hello.py': [Errno 2] No such file or directory
Trial points: 0 / 100

Score for question: 0

Total marks for assignment: 0
```

Status: Failed to update mark

Open Assignments()

Assignment	Due Date	Attempts	Submissions
Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance	2023-02-20T11:00:00	4 / 50	01421403.zip [100] Mon Feb 13 08:48:28 2023 [report] [download] [explode] hello.py [0] Mon Feb 13 10:33:32 2023 [report] [download] [explode] 01421403_syntax_error.zip [0] Mon Feb 13 10:40:30 2023 [report] [download] [explode] 01421403_Orientation.zip [0] Mon Feb 13 10:42:36 2023 [report] [download] [explode] Choose file No file chosen Submit

Closed Assignments

Assignment	Due Date	Attempts	Submissions

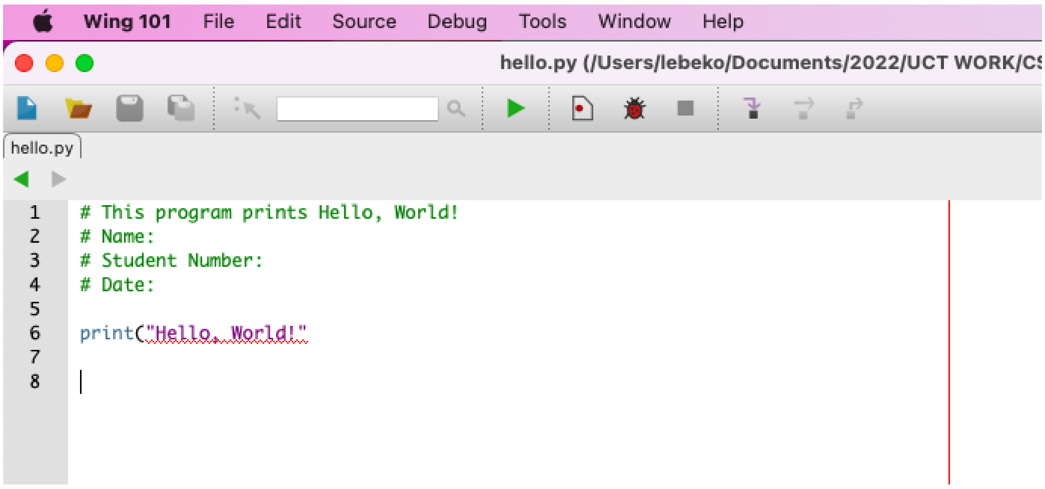
Again, I am getting the following error:

```
python3: can't open file 'hello.py': [Errno 2] No such file or directory
```

This is because the automarker could not find find the Python3 file “hello.py” after decompressing the ZIP archive. Instead, the automarker found the folder “Orientation”. To correct this error, make sure that you do not compress a folder before submitting your work to the automarker.

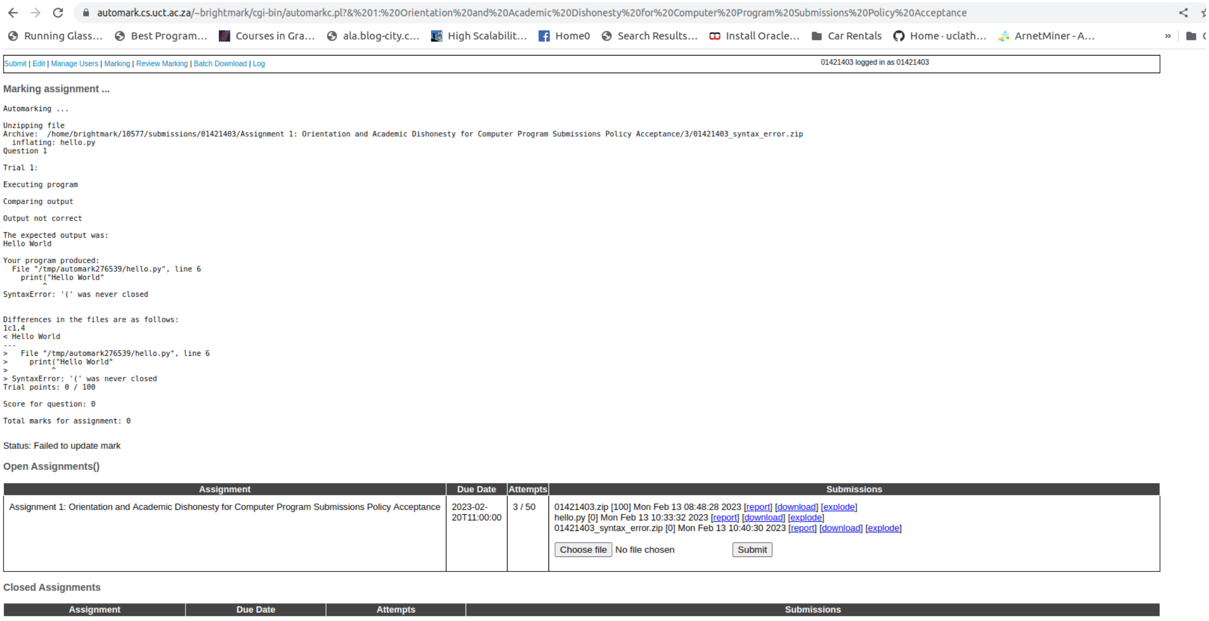
7.1.3 Submitting a Program with Syntax Errors

Consider the program in the screenshot given below. You will notice that I have omitted the closing bracket of the “print()” function therefore, the compiler continued to execute the program until it terminated at line 8 and it could not find the closing bracket as expected. This is a syntax error in Python.



```
1  # This program prints Hello, World!
2  # Name:
3  # Student Number:
4  # Date:
5
6  print("Hello, World!"
7
8  
```

If you submit a program that does not compile, such as the one on the previous page, the automarker will also indicate your errors as shown in the screenshot below.


automark.cs.uct.ac.za/~brightmark/cgi-bin/automarkc.pl?&%201:%20Orientation%20and%20Academic%20Dishonesty%20for%20Computer%20Program%20Submissions%20Policy%20Acceptance
Running Glass…
Best Program…
Courses in Gra…
ala.blog-city.c…
High Scalabilit…
Home0
Search Results…
Install Oracle…
Car Rentals
Home · uclath…
ArnetMiner - A…
Submit | Edit | Manage Users | Marking | Review Marking | Batch Download | Log
01421403 logged in as 01421403

Marking assignment ...

```
Automarking ...

Unzipping file
Archive:  /home/brightmark/10577/submissions/01421403/Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance/3/01421403_syntax_error.zip
  inflating: hello.py
Question 1

Trial 1:

Executing program

Comparing output

Output not correct

The expected output was:
Hello World

Your program produced:
  File "/tmp/automark276539/hello.py", line 6
    print("Hello World"
         ^
SyntaxError: '(' was never closed


Differences in the files are as follows:
1c1,4
< Hello World
---
>   File "/tmp/automark276539/hello.py", line 6
>     print("Hello World"
>          ^
> SyntaxError: '(' was never closed
Trial points: 0 / 100

Score for question: 0

Total marks for assignment: 0
```

Status: Failed to update mark

Open Assignments()

Assignment	Due Date	Attempts	Submissions
Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance	2023-02-20T11:00:00	3 / 50	01421403.zip [100] Mon Feb 13 08:48:28 2023 [report] [download] [explode] hello.py [0] Mon Feb 13 10:33:32 2023 [report] [download] [explode] 01421403_syntax_error.zip [0] Mon Feb 13 10:40:30 2023 [report] [download] [explode] Choose file No file chosen Submit

Closed Assignments

Assignment	Due Date	Attempts	Submissions

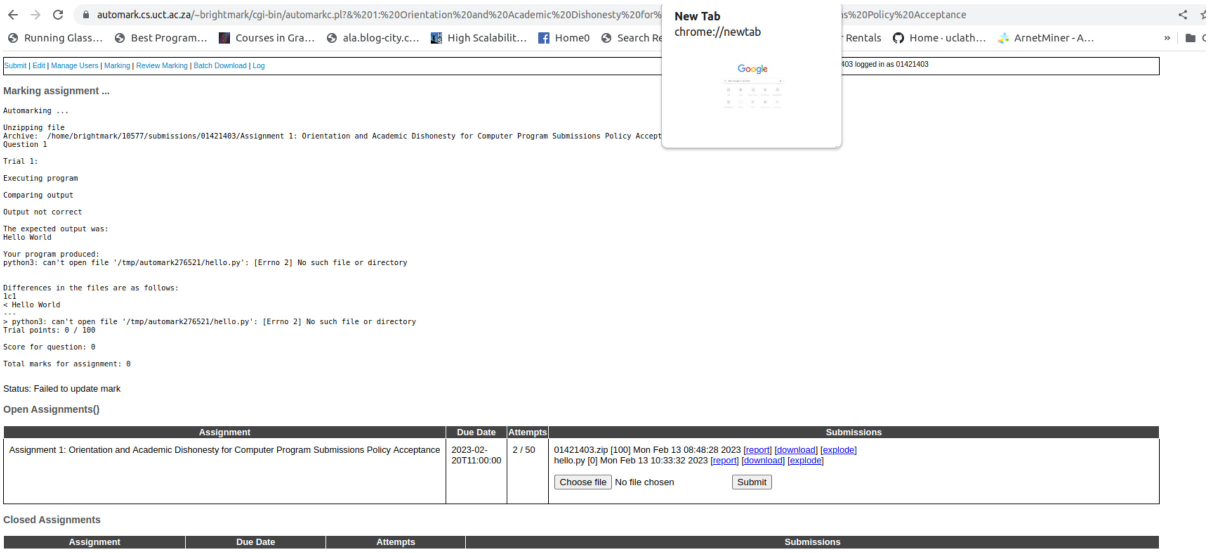
When reading the automarker report, you will notice that it will tell you where your error lies in the program by giving you the line number and the type of error it is. See the frame below:

```
The expected output was:
Hello World

Your program produced:
  File "/tmp/automark276539/hello.py", line 6
    print("Hello World"
         ^
SyntaxError: '(' was never closed
```

In this case, you need to go back to your program and check line number suggested. However, take note that sometimes the error might be on a different line from the one that has been suggested. In this case, the error is actually on line 6 where there is a missing closing bracket. The compiler has picked up line 8 because that was where it hit the terminal line in the execution of the program while looking for the closing bracket. This is an unexpected end of file (EOF) error.

7.1.4 Submitting an uncompressed file to the Automatic Marker


automark.cs.uct.ac.za/~brightmark/cgi-bin/automarkc.pl?&%201:%20Orientation%20and%20Academic%20Dishonesty%20for%
s%20Policy%20Acceptance
New Tab
chrome://newtab
Google
Running Glass…
Best Program…
Courses in Gra…
ala.blog-city.c…
High Scalabilit…
Home0
Search Re
Rentals
Home · uclath…
ArnetMiner - A…
Submit | Edit | Manage Users | Marking | Review Marking | Batch Download | Log
403 logged in as 01421403

Marking assignment ...

```
Automarking ...

Unzipping file
Archive:  /home/brightmark/10577/submissions/01421403/Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Accept
Question 1

Trial 1:

Executing program

Comparing output

Output not correct

The expected output was:
Hello World

Your program produced:
python3: can't open file '/tmp/automark276521/hello.py': [Errno 2] No such file or directory


Differences in the files are as follows:
1c1
< Hello World
---
> python3: can't open file '/tmp/automark276521/hello.py': [Errno 2] No such file or directory
Trial points: 0 / 100

Score for question: 0

Total marks for assignment: 0
```

Status: Failed to update mark

Open Assignments()

Assignment	Due Date	Attempts	Submissions
Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance	2023-02-20T11:00:00	2 / 50	01421403.zip [100] Mon Feb 13 08:48:28 2023 [report] [download] [explode] hello.py [0] Mon Feb 13 10:33:32 2023 [report] [download] [explode] Choose file No file chosen Submit

Closed Assignments

Assignment	Due Date	Attempts	Submissions

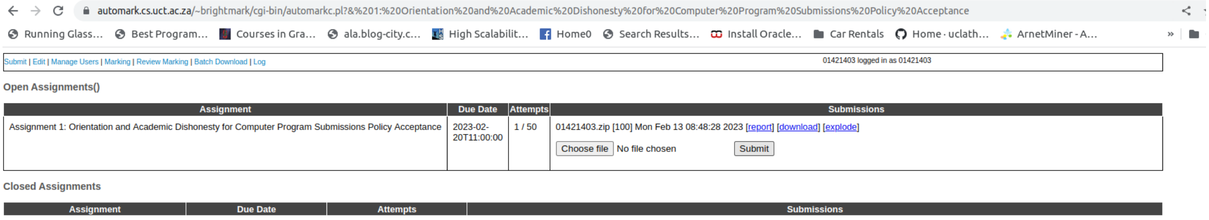
If you forget to add your Python file to a ZIP archive prior to submitting it to the automarker, you will get the following error:

```
python3: can't open file 'hello.py': [Errno 2] No such file or directory
```

This is because when the automarker gets to the "unzipping file" stage, it could not find any ZIP archive to unzip. As a result, you will get an error.

VERY IMPORTANT: Make sure that the files listed in the unzipping step are in fact what should be in the Zip file and that you have submitted a Zip file and not something else. If you are not able to fix the problem, ask for help.

At the bottom of the screen is the table of assignments and now it indicates your submission and the mark you got. The submit button is still there because you have not exhausted your permitted submissions and the assignment deadline has not passed. If you got less than 100, and you have time to try again and resubmit, you should do so!



automark.cs.uct.ac.za/~brightmark/cgi-bin/automarkc.pl?&%201:%20Orientation%20and%20Academic%20Dishonesty%20for%20Computer%20Program%20Submissions%20Policy%20Acceptance
Running Glass...
Best Program...
Courses in Gra...
ala.blog-city.c...
High Scalabilit...
Home0
Search Results...
Install Oracle...
Car Rentals
Home · uclath...
ArnetMiner - A...

Submit | Edit | Manage Users | Marking | Review Marking | Batch Download | Log

01421403 logged in as 01421403

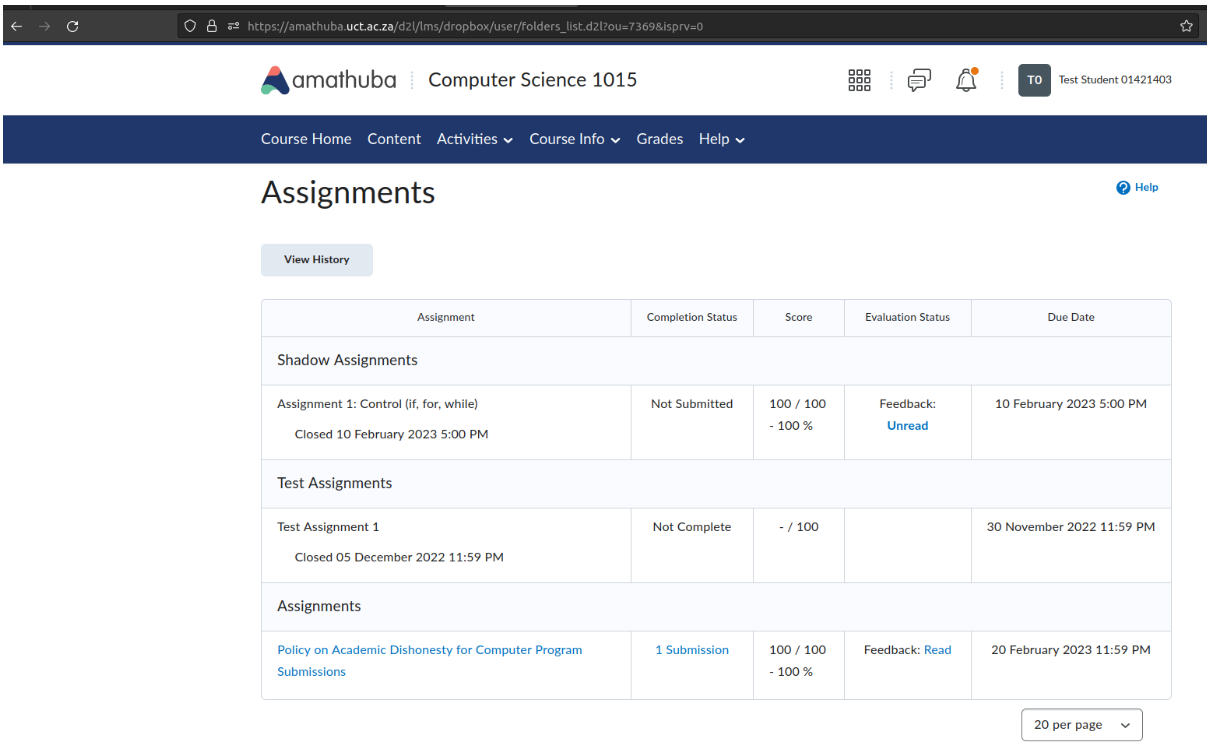
Open Assignments()

Assignment	Due Date	Attempts	Submissions
Assignment 1: Orientation and Academic Dishonesty for Computer Program Submissions Policy Acceptance	2023-02-20T11:00:00	1 / 50	01421403.zip [100] Mon Feb 13 08:48:28 2023 [report] [download] [explode] Choose file No file chosen Submit

Closed Assignments

Assignment	Due Date	Attempts	Submissions

You can also check that Amathuba knows about your mark – if you click on *Activities* and then *Assignments* you will see the list of Assignments, and the mark you just obtained against each assignment. In general, this section is where the questions for assignments can be obtained.



https://amathuba.uct.ac.za/d2l/lms/dropbox/user/folders_list.d2l?ou=7369&isprv=0

Assignments

Assignment	Completion Status	Score	Evaluation Status	Due Date
Shadow Assignments				
Assignment 1: Control (if, for, while) Closed 10 February 2023 5:00 PM	Not Submitted	100 / 100 - 100 %	Feedback: Unread	10 February 2023 5:00 PM
Test Assignments				
Test Assignment 1 Closed 05 December 2022 11:59 PM	Not Complete	- / 100		30 November 2022 11:59 PM
Assignments				
Policy on Academic Dishonesty for Computer Program Submissions	1 Submission	100 / 100 - 100 %	Feedback: Read	20 February 2023 11:59 PM

(Note: The Amathuba Assignment section also can be used to submit assignments that are not automatically marked – this is used in other courses.)

That's it folks! This is essentially the end of the orientation exercise.

The following sections contain a couple of garnishes. You will need to use this information for your assignments – it is not optional!

8. Editing an Existing Program

If you want to modify an existing program, open *WING IDE* and select *File / Open* from the menu. Then choose the program file and you should be presented with its content as before.

9. Python Documentation

In *WING IDE*, under *Help*, there is a link to Python documentation and some tutorials. Please be careful as, each time you use this, it will use some of your Internet bandwidth! Instead, consider downloading the PDF version and storing it on your USB drive.

Alternatively, here is a link to the UCT Computer Science Python Programming Documentation: http://docs.cs.uct.ac.za

END

Stephan Jamieson, March 2021

Lebeko Poulo, February 2023