

# WELCOME TO COMPSCI 101 😊

## Principles of Programming

### Lecture 1 - Introduction

## Learning outcomes

At the end of this lecture, you will know:

- how to obtain information about CompSci 101,
- which parts of the CompSci 101 assessment contribute to the invigilated practical mark,
- which parts of the CompSci 101 assessment contribute to the theory mark,
- that to pass CompSci 101, both the invigilated practical part of the course and the theory part of the course need to be passed, and,
- what an algorithm is.

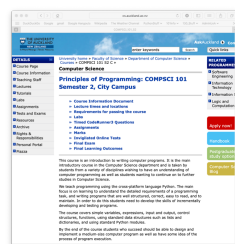
## We are using Canvas

We will be using the Canvas Learning Management system.

<https://canvas.auckland.ac.nz>

As well as using Canvas, CompSci 101 has a course website. All the material on the CompSci 101 website can be accessed through Canvas.

<https://www.cs.auckland.ac.nz/courses/compsci101s2c/>



## The CompSci 101 website

The CompSci 101 website can be reached by logging onto the Canvas website:

<https://canvas.auckland.ac.nz>

OR, by going directly to the CompSci 101 website:

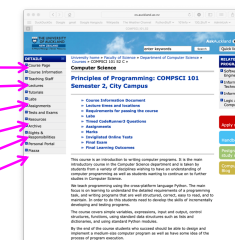
<https://www.cs.auckland.ac.nz/courses/compsci101s2c/>

- Here you will find all the information about our course set up.
- Get used to looking at this website for information about lecture slides, lab documents, assignment resources, assessment, people involved in the course and lots more.

Course Information Document  
People

Lectures  
Labs

Assignments  
Tests, Exams



## People in this course

### **Ann Cameron** (Course Coordinator and Lab Supervisor)

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## People in this course

### **Angela Chang** (Lecturer)

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## People in this course

### **Damir Azhar** (Lecturer)

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Phone: 9232391  
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## People in this course

### **Adriana Ferraro** (Lecturer)

Email: adriana@cs.auckland.ac.nz  
Phone: 9237113  
Room: 303.415



## Office Hours

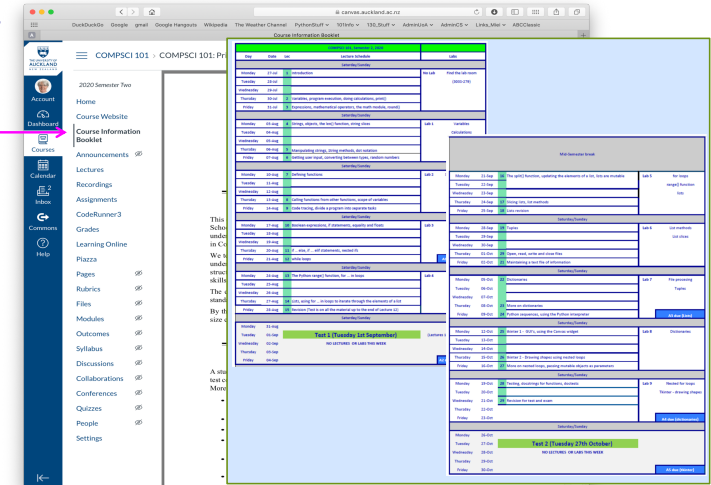
Open door policy – Visit any time



## Lecture schedule

On the course information booklet there is information about the CompSci 101 course set up and a schedule of the lectures for CompSci 101.

Course  
Information  
Document

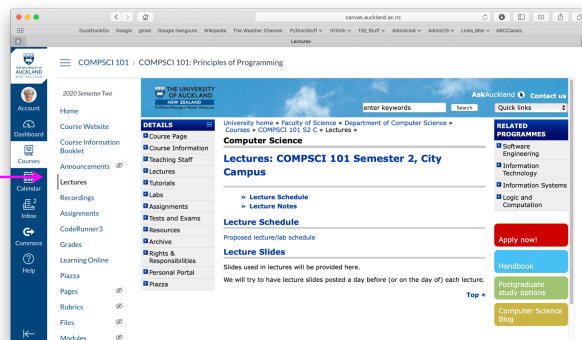


<https://www.cs.auckland.ac.nz/courses/compsci101s2c/info/CourseInformation.pdf>

## Lecture Slides

Lecture slides will be available on the web before each lecture.

Lectures



<https://www.cs.auckland.ac.nz/courses/compsci101s2c/lectures>

## There is no textbook for CompSci 101

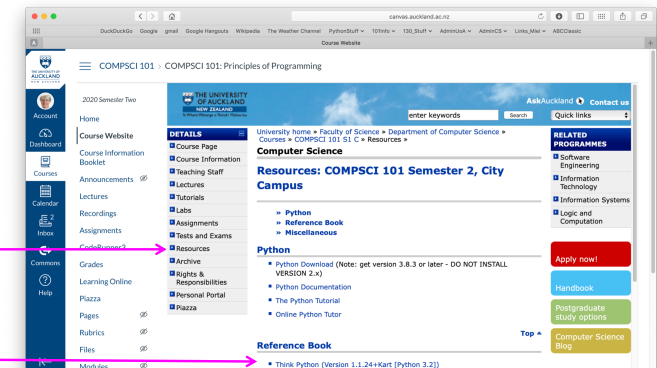
There is **no textbook** but we do have an online reference book,

**Think Python – How to think like a computer scientist.**

- Please be aware that we are teaching the CompSci 101 material in a different order to the ordering in this book. This book is a reference book, not a textbook for this course.

Resources

Online  
Reference  
Book

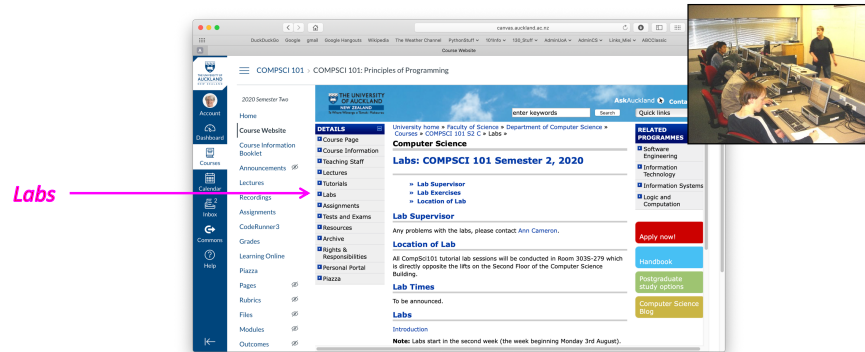


<https://www.cs.auckland.ac.nz/courses/compsci101s2c/resources/>

## Labs

### Labs start next week: Monday August 3

- Each week you will have **one two hour** laboratory session.
- You should attend the same lab time each week.
- Labs are held in room 279 (Building 303S) which is on the second floor of the Computer Science building.



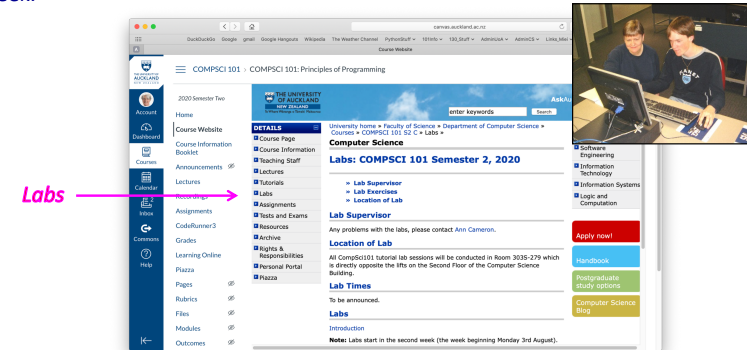
<https://www.cs.auckland.ac.nz/courses/compsci101s2c/labs/>

## More about labs

### Labs start next week: Monday August 3

There are 9 labs and each lab is worth 1% of your final mark.

- At your lab time you will be given programming problems to solve within the 2 hours for your lab.
- Lab exercises must be submitted to CodeRunner3 before 4:30pm (NZ Time) on Thursday of each week.



<https://www.cs.auckland.ac.nz/courses/compsci101s2c/labs/>

## Before the First Lab

Visit the lab on **Wednesday July 29**, between 1pm and 2:30pm.

- Before the first lab you need to complete the lab preparation sheet (I will hand this out).
- In order to complete the sheet you need to visit the CompSci 101 lab.

CompSci 101 Preparation for First Lab

Welcome to CompSci 101!

ANALYSIS

The purpose of this pre-lab is to help you become familiar with:

- Using the Computer Science laboratories
- Course information document

COMPULSORY READING

- Course information document on the CompSci 101 website
- <https://www.cs.auckland.ac.nz/courses/compsci101s2c/>

GETTING STARTED

**TASK 1:** Know WHERE your lab sessions are held

Every lab session is held in room 303S-279 on level 2 of the Computer Science Extension to the Maths and Physics Building (Building 303S). Please go along to room 279 on Wednesday 29th July between 1pm and 2:30pm.

What message is written on the door of room 279 on Wednesday 29th July?

**TASK 2:** Log into a computer in room 279 on Wednesday 29th July, go along to the lab (room 303S-279) and make sure that you have internet and passworded work correctly in that lab.

What is your username?

**TASK 3:** Know WHEN your lab sessions are

How that you know where your lab sessions are held and you are able to log into a computer, it is equally important that you turn up on time. Marks are awarded for arriving to your lab on time.

You will have booked your lab time when you enrolled using Student Services Online. Check your lab times on Student Services Online, and write down the day and the time of the lab session that you will attend each week.

Your name: \_\_\_\_\_ Surname: \_\_\_\_\_ First name: \_\_\_\_\_

Your Lab Time: \_\_\_\_\_ Lab Day: \_\_\_\_\_ Lab Time: \_\_\_\_\_

**TASK 4:** Know what to bring to your first lab session in Week 2

You need to bring along the following items to your first lab session in Week 2 (the week beginning Monday 29th August):

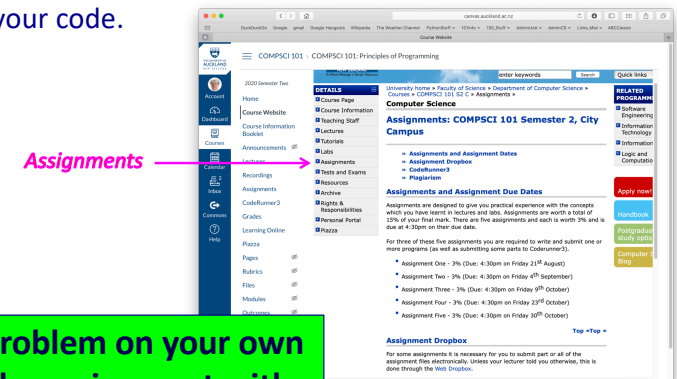
- ✓ USB Flash Drive
- ✓ This pre-lab sheet (completed)
- ✓ A pen

## Assignments

Assignments give you the experience of solving problems on your own.

The assignments are worth 15% of your final mark.

Never share your code.



**Solve the problem on your own – discuss the assignment with others but **never** share code.**

<https://www.cs.auckland.ac.nz/courses/compsci101s2c/assignments/>



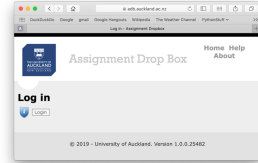
## Assignments

There are 5 assignments in total worth 15% of your final mark.

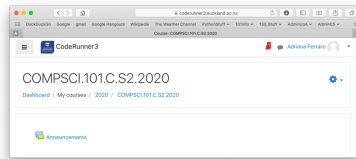
All assignments are due at 4:30pm on the due date.

For **parts** of these five assignments, your programs will be handed in using the **Assignment Drop Box** :

<https://adb.auckland.ac.nz/Home/>



For other **parts** of these five assignments you will be required to write and **submit** one or more programs using **CodeRunner3**.



<https://www.cs.auckland.ac.nz/courses/compsci101s2c/assignments/>

## CodeRunner3

The CodeRunner3 tool is designed to help you practise by presenting you with a set of coding and other exercises. Submissions are graded by running a series of test cases on your code (or short answers) in a sandbox and comparing the output of your code (or short answers) with the expected output. Coderunner3 uses the Moodle learning system.

<https://www.coderunner3.auckland.ac.nz/moodle/>

Information about using CodeRunner3 is available on CompSci 101 Assignments web page:

<https://www.cs.auckland.ac.nz/courses/compsci101s2c/assignments/>

## Timed CodeRunner3 Questions

There are 9 timed Coderunner3 exercises. Each question (or set of questions) is worth 1% but only your best 6 marks will be counted towards your final grade.

These exercises are timed which means that you will have to develop and implement your solution within a certain amount of time (usually 15 - 30 minutes). Each of these exercises will be closely aligned to each lab.

The timed CodeRunner3 questions (or set of questions) will become available after the end of the sessions for each lab (i.e. after 3pm on Wednesdays) and the Timed exercises must be submitted to CodeRunner3 before 4:30pm (NZ Time) on the Saturday of the same week that the lab is held.

## Plagiarism

### Plagiarism

**Plagiarism:** Any work that you take credit for, but which is done by someone else. This is treated very seriously in an academic environment.

#### Policy

- All assignments will be checked for copying
- Everyone involved is penalised
- Disciplinary action will be taken in all cases of plagiarism



#### Advice

- Don't ever copy an assignment (or part of an assignment) from anyone
- Don't ever allow anyone to copy your assignment

<https://www.academicintegrity.auckland.ac.nz>

## Academic Integrity



<https://www.academicintegrity.auckland.ac.nz>

## Two Invigilated Online Tests

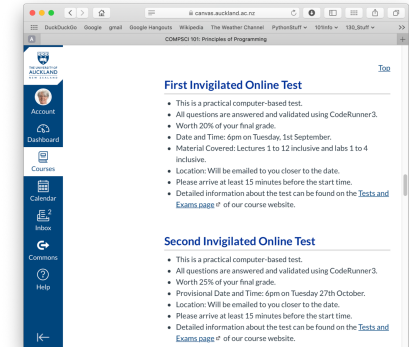
There are two practical invigilated tests. The tests are answered and validated on CodeRunner3.

Test 1: 6pm on **Tuesday, 1st September** - 20% of your final mark

Test 2: 6pm on **Tuesday, 27th October** - 25% of your final mark

You should arrive 15 minutes before the test start time.

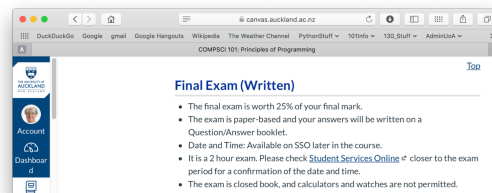
There is more information about the invigilated tests on the "Tests and Exams" web page:



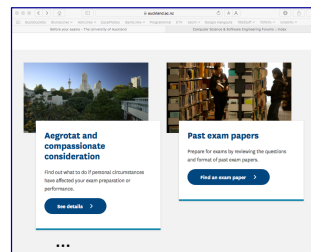
<https://www.cs.auckland.ac.nz/courses/compsci101s2c/exams/>

## Written Exam

The final exam is worth 25% of your final mark.



Links to information about missed exams, aegrotats, etc. →



<https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams.html>

## Passing CompSci 101 Assessment

**Assignments, timed questions, labs – 30%**

Labs 9%  
Assignments 15%  
Coderunner 6%

**Two online test - 45%**

Test 1 20%  
Test 2 25%

**Exam - 25%**

Exam 25%

## To pass the course, you need

- to **pass the invigilated online tests component**, you need to achieve a pass (i.e. at least 22.5 marks out of 45) in the combined total of both invigilated tests.
- to **pass the invigilated final written exam**, you need to achieve a pass (i.e. at least 12.5 marks out of 25).
- an overall mark of at least 50%** out of the full course total of 100%

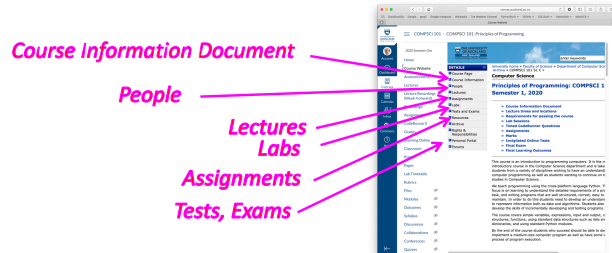
## The CompSci 101 website

Most of the resources you will need (e.g., lecture slides, lab material, assignments, course information) can be found on the CompSci 101 website:

<https://www.cs.auckland.ac.nz/courses/compsci101s2c/>

The CompSci 101 website can also be accessed from Canvas:

<https://canvas.auckland.ac.nz>

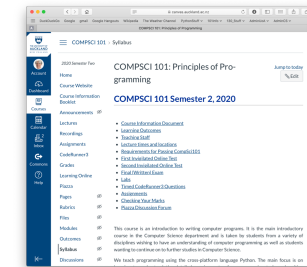


## Canvas

On Canvas you will find:

- information about the course set up
- your marks
- class announcements
- lecture recordings
- a link to the CompSci 101 website

<https://canvas.auckland.ac.nz>



## Computing resources

### Undergraduate Labs:

There are demonstrators in these labs to help you

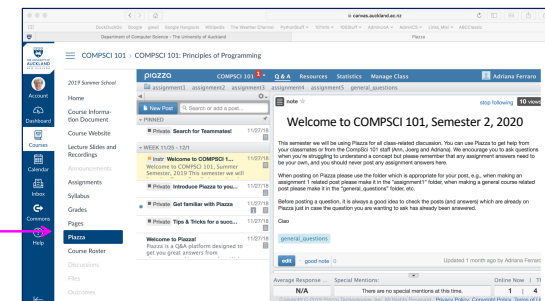
**GCL (room 303S.G91) –  
Ground Floor Computer Lab**



## Piazza

We will be using Piazza as our class forum (available in Canvas) for class discussions, i.e. for questions about lectures, assignments, labs and tests.

Link to Piazza



## Learning outcomes for CompSci 101

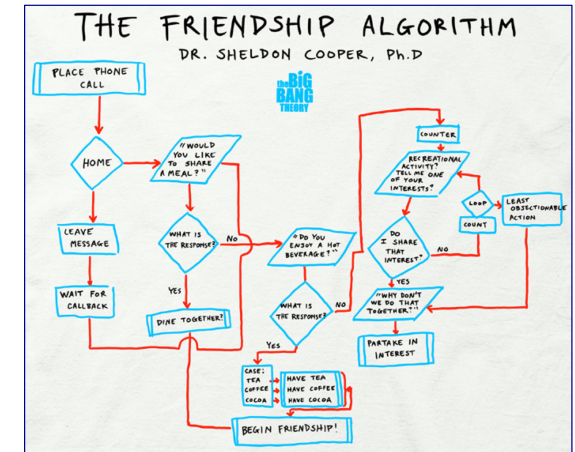
- determine the state of the program both during and after execution, given a code listing that may include functions and parameters, loops, conditionals and sequences.
- implement a given algorithm using Python.
- show that a program meets given specifications by writing appropriate tests.
- provide a useful level of documentation, in the form of program comments, for all programs developed.
- decompose a simple problem into several smaller tasks, given a brief textual description of the problem.
- add functions that perform a specified task into a program that solves a given problem.

## Algorithms

A finite set of steps that specify a sequence of operations to be carried out in order to solve a specific problem.

A better definition:

An algorithm is a well-defined, **unambiguous** sequence of steps



30

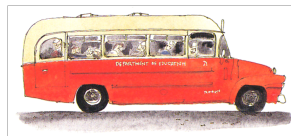
## Algorithms – what kind of steps?

HOW TO GET TO UNI

An algorithm is a well-defined, **unambiguous** sequence of steps

sequential operations

- Walk to the bus stop at the shops up the road
- Get on bus number "101"
- Pay the bus driver \$4.50
- Get off at the Symonds St bus stop
- Walk 200m to the Computer Science building



## Algorithms – what kind of steps?

HOW TO WALK TO THE BUS STOP

An algorithm is a well-defined, **unambiguous** sequence of steps

conditional operations

- Open the front door
- IF** it is raining **THEN** take an umbrella
- Walk down the driveway and turn left
- Walk 50m down the street



## Algorithms – what kind of steps?

HOW TO PAY  
THE BUS  
FARE

An algorithm is a well-defined, **unambiguous** sequence of steps

iterative  
operations

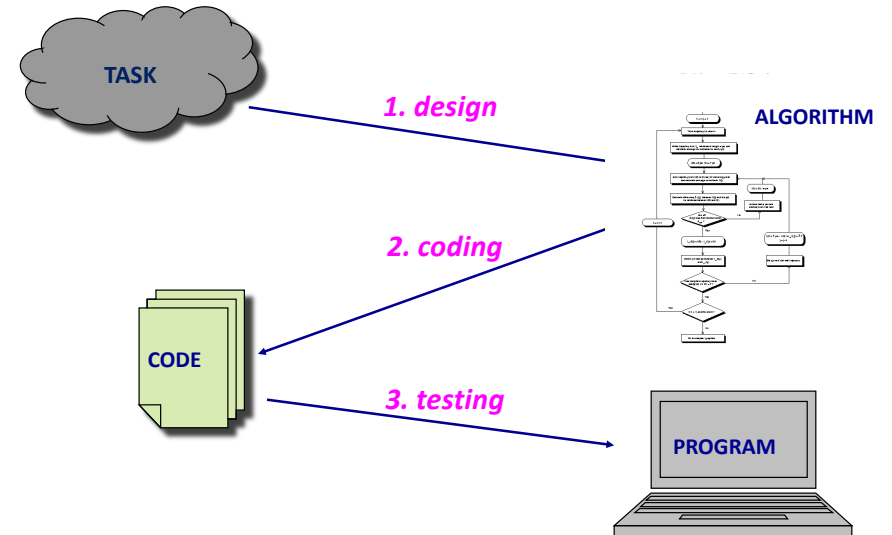
Open wallet

**WHILE** you still haven't paid enough  
give the driver another coin

Take a seat

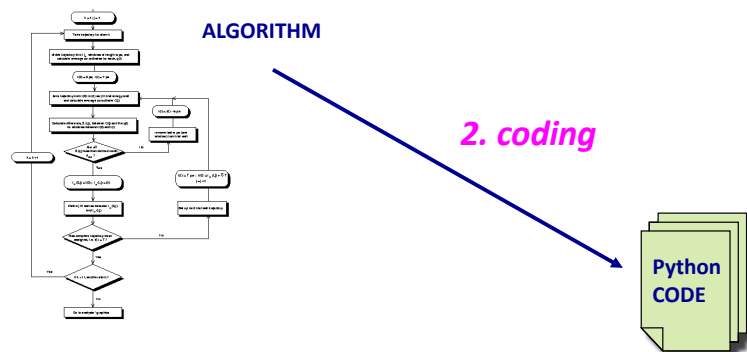


## Basic programming steps



## Programming - Step 2 - write the code

We will use the **Python 3 programming language** to implement our algorithms



## Hangman algorithm



Enter a letter: **d**

```

+---+
|
0
/ \
/ \
=====

Word: l a _ _ b o n e s

Letters Missed: r m k c u d
Letters Guessed: a e s n o l b
Letters Available: fghijpqtvwxyz

Word: _ _ _ _ _

Letters Missed:
Letters Guessed:
Letters Available: abcdefghijklmnopqrstuvwxyz
Enter a letter: a

```

Sorry, you have lost in the game of Hangman...

The word was lazybones