



# Welcome to COMPSCI 101 Principles of Programming

Lecture 1 – Introduction



## Learning outcomes

At the end of this lecture, students should be able to:

- ▶ understand where to obtain information about COMPSCI 101
- ▶ understand which parts of the COMPSCI 101 assessment contribute to the invigilated practical mark
- ▶ understand which parts of the COMPSCI 101 assessment contribute to the theory mark
- ▶ understand that to pass COMPSCI 101, both the invigilated practical part of the course and the theory part of the course need to be passed
- ▶ understand an algorithm

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## We are using Canvas

We will be using the Canvas Learning Management system this system which can be accessed by logging onto the Canvas website:

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



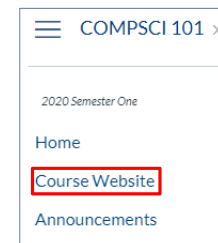
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## The COMPSCI 101 Website

As well as using Canvas, COMPSCI 101 has a course website:

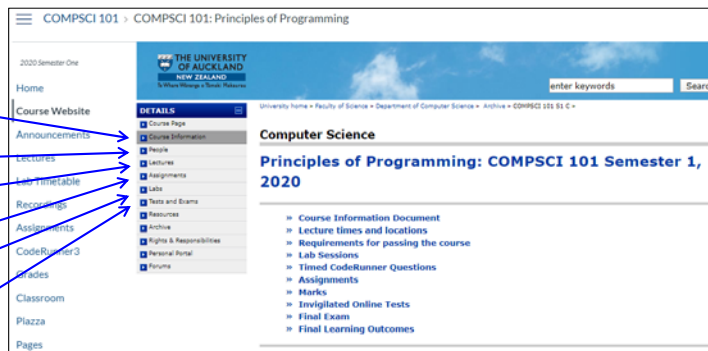
- ▶ <https://www.cs.auckland.ac.nz/courses/compsci101s1c/>
- ▶ Here you will find information about how our course is set up.
- ▶ Get used to looking at this website for information about lecture slides, lab documents, assignment resources, assessments, people involved in the course and lots more.
- ▶ The COMPSCI 101 website can also be reached by through the COMPSCI 101 Canvas page.



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## The COMPSCI 101 Website



Course Information Document  
 People  
 Lectures  
 Assignments  
 Labs  
 Tests, Exams



## People in this Course

### Ann Cameron (Lab Supervisor)

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## People in this Course

### Damir Azhar (Course Coordinator)

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## People in this Course

### Adriana Ferraro

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# People in this Course

## Angela Chang

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Room: 303.413



# Office Hours

Open door policy – Visit any time



# Lecture Schedule

The course information document gives an overview of the course assessment course along with a lecture schedule. Note that this is preliminary and may be subject to change

Course Information Document

The screenshot shows the course website for COMPSCI 101. On the left is a navigation menu with items like Home, Course Website, Announcements, Lectures, Lab Timetable, Recordings, Assignments, CodeRunner3, Grades, Classroom, Piazza, and Pages. The main content area is titled 'COMPSCI 101: Principles of Programming' and includes a 'Course Information Document' link. Below this is a table for 'COMPSCI 101, Semester 1, 2020' with columns for dates, topics, and lecturers.

Date	Topic	Lecturer
Monday 19/02	Introduction	Where's the lab?
Tuesday 20/02	Python, Lists, and Strings	
Wednesday 21/02	Python, Lists, and Strings	
Thursday 22/02	Python, Lists, and Strings	
Friday 23/02	Python, Lists, and Strings	
Saturday 24/02	Python, Lists, and Strings	
Sunday 25/02	Python, Lists, and Strings	
Monday 26/02	Python, Lists, and Strings	
Tuesday 27/02	Python, Lists, and Strings	
Wednesday 28/02	Python, Lists, and Strings	
Thursday 29/02	Python, Lists, and Strings	
Friday 30/02	Python, Lists, and Strings	
Saturday 01/03	Python, Lists, and Strings	
Sunday 02/03	Python, Lists, and Strings	
Monday 03/03	Python, Lists, and Strings	
Tuesday 04/03	Python, Lists, and Strings	
Wednesday 05/03	Python, Lists, and Strings	
Thursday 06/03	Python, Lists, and Strings	
Friday 07/03	Python, Lists, and Strings	
Saturday 08/03	Python, Lists, and Strings	
Sunday 09/03	Python, Lists, and Strings	
Monday 10/03	Python, Lists, and Strings	
Tuesday 11/03	Python, Lists, and Strings	
Wednesday 12/03	Python, Lists, and Strings	
Thursday 13/03	Python, Lists, and Strings	
Friday 14/03	Python, Lists, and Strings	
Saturday 15/03	Python, Lists, and Strings	
Sunday 16/03	Python, Lists, and Strings	
Monday 17/03	Python, Lists, and Strings	
Tuesday 18/03	Python, Lists, and Strings	
Wednesday 19/03	Python, Lists, and Strings	
Thursday 20/03	Python, Lists, and Strings	
Friday 21/03	Python, Lists, and Strings	
Saturday 22/03	Python, Lists, and Strings	
Sunday 23/03	Python, Lists, and Strings	
Monday 24/03	Python, Lists, and Strings	
Tuesday 25/03	Python, Lists, and Strings	
Wednesday 26/03	Python, Lists, and Strings	
Thursday 27/03	Python, Lists, and Strings	
Friday 28/03	Python, Lists, and Strings	
Saturday 29/03	Python, Lists, and Strings	
Sunday 30/03	Python, Lists, and Strings	
Monday 31/03	Python, Lists, and Strings	



# Lecture Slides

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

The screenshot shows the 'Lectures' section of the course website. It includes a 'DETAILS' sidebar with links to Course Page, Course Information, People, Lectures, Assignments, Labs, Tests and Exams, Resources, Archive, Rights & Responsibilities, Personal Portal, and Forum. The main content area is titled 'Computer Science' and 'Lectures: COMPSCI 101 Semester 1, 2020'. It lists 'Python tutor online' and 'Week 1'. Below this is a 'Lecture notes' section with the text: 'Slides used in lectures will be provided here. Lecture recordings are available on Canvas. If you miss a lecture, then please watch the lecture recording on Canvas.'



# 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** →

University home » Faculty of Science » Department of Computer Science » Courses » COMPSCI 101 51 C » Resources »

**Computer Science**

**Resources: COMPSCI 101 Semester 1, 2020**

- Python
  - Python Download (Remember to get version 3, not version 2 - the latest is version 3.8.2)
  - Python Documentation
  - The Python Tutorial
- Reference Book
  - Think Python (version 1.1.24+Kart (Python 3.2))
- Miscellaneous
  - Additional resources maybe available from the University's Library.

13 <https://www.cs.auckland.ac.nz/courses/compsci101s1c/resources/>



# Labs

You must attend **one** 2 hour tutorial lab sessions each week. You will have enrolled in your lab time through Student Services Online. 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.
- ▶ **Labs start in the second week: March 9<sup>th</sup> – 13<sup>th</sup>**

**Labs** →

University home » Faculty of Science » Department of Computer Science » Courses » COMPSCI 101 51 C » Labs »

**Computer Science**

**Labs: COMPSCI 101 Semester 1, 2020**

- Lab Supervisor
- Location of Lab
- Academic Honesty

**Lab Supervisor**

Any problems with the labs, please contact Ann Cameron.

14 <https://www.cs.auckland.ac.nz/courses/compsci101s1c/labs/>



# More about labs

- ▶ **Labs start in the second week: March 9<sup>th</sup> – 13<sup>th</sup>**
- ▶ There are 9 labs worth 9% of your final mark.
  - ▶ At your lab time you will be given programming problems to solve within the 2 hours for your lab.

**Labs** →

University home » Faculty of Science » Department of Computer Science » Courses » COMPSCI 101 51 C » Labs »

**Computer Science**

**Labs: COMPSCI 101 Semester 1, 2020**

- Lab Supervisor
- Location of Lab
- Academic Honesty

**Lab Supervisor**

Any problems with the labs, please contact Ann Cameron.

<https://www.cs.auckland.ac.nz/courses/compsci101s1c/labs/>



# Before the First Lab

Visit the lab on **Wednesday** between 1:30pm and 3pm.

- ▶ Before the first lab you need to complete the lab preparation sheet (I will hand this out).
- ▶ In order to fill the sheet you need to visit the COMPSCI 101 lab on Wednesday. Immediately after the lecture today I will be taking people across to the COMPSCI 101 lab.

**Computer Science** COMPSCI101 Preparation for First Lab

Task 1: Log into a computer in Room 279 on Wednesday 4<sup>th</sup> March (before Lecture 1pm and 2:30pm).

Task 2: Know WHEN your lab sessions are held and you are able to log into a computer, it is especially important that you have an email. Make sure you have the correct email address.

Task 3: Know WHERE your lab sessions are held.

Task 4: Know what to bring to your first lab session in Week 2.



## Assignments

The assignments are worth 15% of your final mark.

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

University home • Faculty of Science • Department of Computer Science • Courses • COMPSCI 101 S1 C • Assignments •

**Computer Science**

**Assignments: COMPSCI 101 Semester 1, 2020**

- » Dates
- » Assignment Dropbox
- » CodeRunner
- » Plagiarism/Cheating on Assignments

**Dates**

Assignments and the CodeRunner contribution will be worth 15% of the final grade. There will be 5 assignments with due dates (tentative) as follows:

- **Assignment 1:** Due 24th March (worth 3%)
  - TBA
- **Assignment 2:** Due 9th April (worth 3%)
  - TBA
- **Assignment 3:** Due 11th May (worth 3%)
  - Assignment Three is to be submitted using CodeRunner? (see the link to CodeRunner? lower down on this page).
- **Assignment 4:** Due 26th May (worth 3%)
  - Assignment Four is to be submitted using CodeRunner? (see the link to CodeRunner? lower down on this page).
- **Assignment 5:** Due 5th June (worth 3%)

Assignments must be submitted by the deadline **4:30pm on the due date**.

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

<https://www.cs.auckland.ac.nz/courses/compsci101s1c/assignments/>

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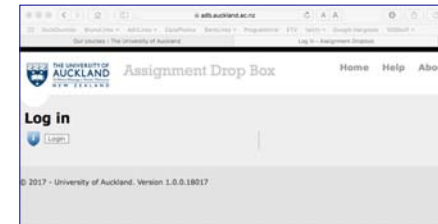
## Assignments – Assignment Drop Box

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 you are required to write and submit one or more programs.

- ▶ These parts of the five assignments are handed in using the **Assignment Drop Box**



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

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## Assignments – CodeRunner 3

For **parts** of these five assignments (a total of 6%), you are required to use **CodeRunner 3**.

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

The CodeRunner 3 tool is designed to help you practice 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) and comparing the output of your code (or short answers) with the expected output. CodeRunner3 uses the Moodle learning system.

Information about using CodeRunner 3 is available on COMPSCI 101 assignments web page:

<https://www.cs.auckland.ac.nz/courses/compsci101s1c/assignments/>

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## Timed CodeRunner Exercises

There are 9 timed CodeRunner 3 exercises. Each exercise consists of 1 or more questions and is worth 1%.

- ▶ Only the 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 minutes are allocated per question.

The timed CodeRunner exercises will become available after the end of the sessions for each lab (i.e. after 7pm on Fridays) and each exercise will be available for 24 hours only.

- ▶ These exercises are **closely aligned** to their corresponding lab

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# 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.

### Academic Integrity


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 CodeRunner 3.

Test 1: Morning of Saturday 2<sup>nd</sup> May – 20% of your final mark

Test 2: Morning of Saturday 6<sup>th</sup> June – 25% of your final mark

The tests are 90 minutes. 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/compsci101s1c/exams/>




# Written Exam

The exam is worth 25% of your final mark.

Information about missed exams, aegrotats, etc.






**Aegrotat and compassionate consideration**

Find out what to do if personal circumstances have affected your exam performance or preparation.

[See details >](#)



**Missed exam**

Find out what to do if you have missed an exam.

[More information >](#)

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



## Passing COMPSCI 101

<b>Assignments, Timed Exercises, Labs – 30%</b>	
Labs	9%
Assignments	15%
Timed Exercises	6%

<b>Two online tests – 45%</b>	
Test 1	20%
Test 2	25%

<b>Exam – 25%</b>	
Exam	25%

### To pass the course you need:

- ▶ To **pass the invigilated online test component**. You need to obtain at least 22.5 marks out of 45 as the combined total mark for both tests.
- ▶ To **pass the invigilated final written exam**. You need to obtain at least 12.5 marks out of 25 marks for the exam.
- ▶ An **overall mark of at least 50%** out of the full course total of 100%

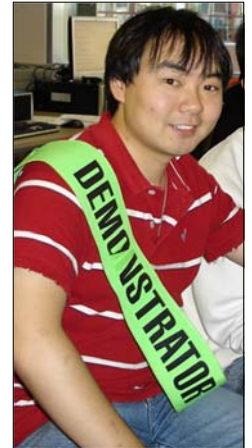


## Computing Resources

### Undergraduate Labs

- ▶ There are demonstrators in these labs to help you

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

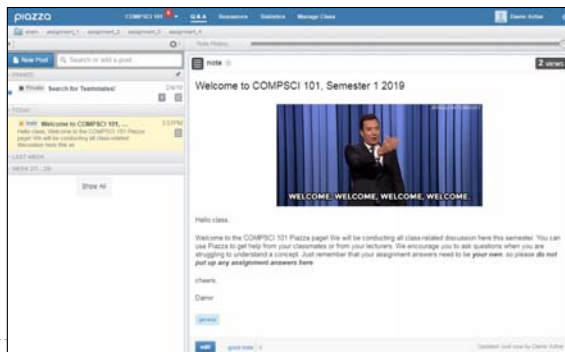


## Piazza

Piazza is a Q&A web service integrated into Canvas.

You can use Piazza to ask questions that the lecturers and your classmates can discuss and answer.

Please never post your own code up on 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.
- ▶ Compose functions that perform specified tasks into a program that solves a given problem.

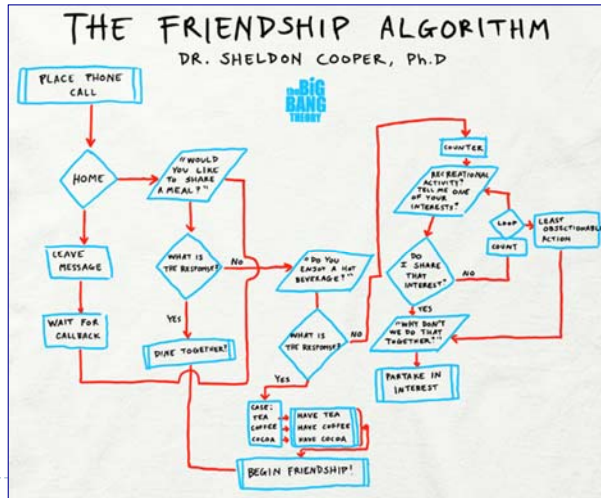


# Algorithms

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



# Algorithms – What Kind of Steps?



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?



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?



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

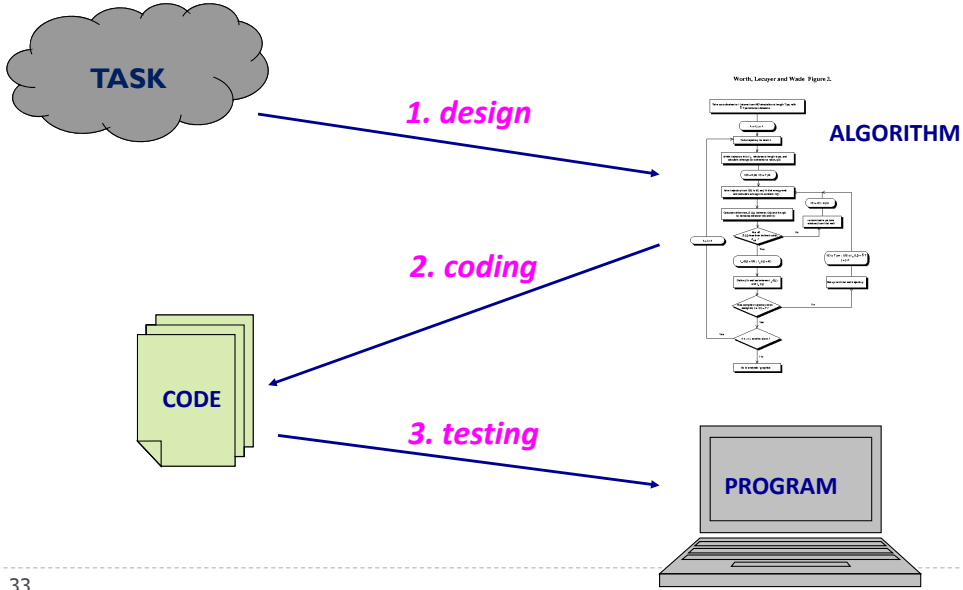
Take a seat







# Basic Programming Steps



# Programming - Step 2 - write the code

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

