MONASH University

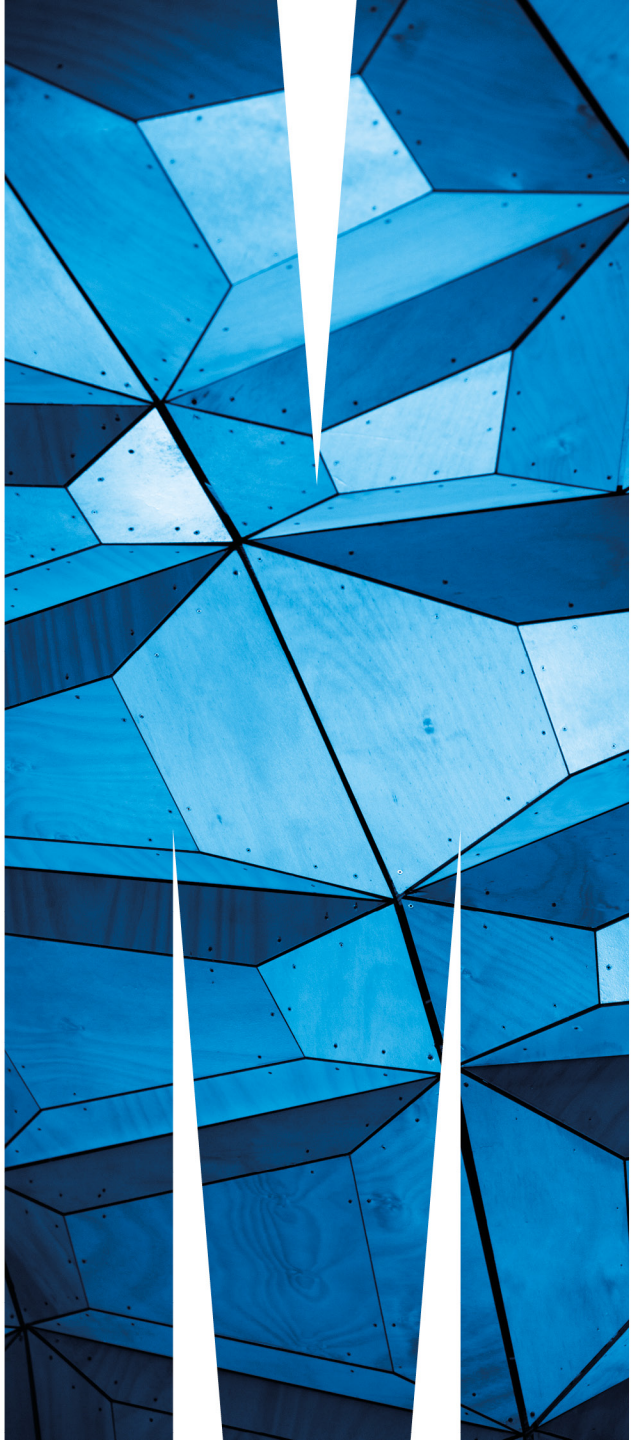
MONASH
INFORMATION
TECHNOLOGY

FIT9136 Semester 2 2020 Algorithms and programming foundations in Python

Unit Introduction

Shirin Ghaffarian Maghool

GROUP OF EIGHT AUSTRALIA



FIT9136 Overview

- What this unit is about?
  - To provide you with a foundation understanding of how to implement a solution for a computational problem by building a computer program.

- What are you going to learn?
  - To learn about the fundamental concepts of programming as well as the Python programming language.

FIT9136 Learning Outcomes

- Upon successful completion of this unit, you should be able to:
  - Design, construct, test and document computer programs using Python
  - Recognise the relationship between a problem description and a program design
  - Demonstrate how basic data structures and data types function
  - Investigate different strategies for algorithm development and evaluate them to select an appropriate solution to a given problem

FIT9136 Unit Schedule

- Week 1: Introduction to Programming and Algorithms Python Basic Data Types
- Week 2: Python Basic Elements
- Week 3: Control Structures
- Week 4: Built-in Data Structures
- Week 5: Classes and Variable Scope
- Week 6: Abstract Data Types
- Week 7: Binary Trees and Binary Search Trees
- Week 8: Testing, Exception Handling, and External Libraries
- Week 9: Complexity, Searching and Sorting Algorithms
- Week 10: Recursion and Divide-and-Conquer
- Week 11: Greed, Brute-force, Backtracking
- Week 12: Review of the Unit

Find overview on Moodle > Unit Previews

FIT9136 S1 2020 Assessments

- In-Semester Assessments:
  - 50% of the overall unit mark
  - Two assignments:
    - Assignment 1 (15%) due on Week 6 (interviews in Week 7)
    - Assignment 2 (25%) due on Week 11 (interviews in Week 12)
  - Pre-lecture quizzes (5%)
    - due weekly prior to the lecture (Weeks 2 to 11)
  - Lab activities (5%)
    - due weekly (Weeks 3 to 12).
    - Monday 5pm of the following week.
- Examination:
  - 50% of the overall unit mark
  - 2-hour written exam
  - 10 minutes of reading time

Find overview on Moodle > Unit Previews

FIT9136 Unit Hurdles

- To pass a unit, you must obtain:
  - 45% or more of the exam mark
  - 45% or more of the total mark for all the in-semester assessments
  - An overall unit mark of 50% or more

- If you do not pass any of these hurdles, and your overall unit mark is:
  - equal to or greater than 50%, then a mark of 49 N will be recorded
  - less than 50%, then the actual mark will be recorded

FIT9136 Teaching Staff

- Chief Examiner:
  - Dr. Chunyang Chen
- Lecturer:
  - Ms. Shirin Ghaffarian Maghool
- Head Tutors:
  - Ms. Xiaojia Du
  - Mr. Deep Mendha

Find details on Moodle > Unit Information

FIT9136 Weekly Activities

- Lecture:
  - Weekly recording
  - Would be available on Mondays of week 1-12

- Labs: [start from week 2]
  - Tuesday, Wednesdays, Thursdays, Fridays
  - Check your timetable on Allocate+

You are highly encouraged to attend the practical classes each week.

FIT9136 Consultations

- By the lecturer:
  - By appointment via e-mail
  - Week 2 onwards
- By the tutors:
  - Week 2 onwards
  - Refer to Moodle for the available consultation times

Find on Moodle > Consultation Times

FIT9136 Learning Materials

- Types of materials:
  - Readings (available a week before lecture)
  - Lecture notes & recording (available on Mondays of teaching weeks)
  - Lab activities i.e., Programming Exercises (available Tuesday of teaching weeks)

FIT9136 Communication with the Teaching Team

- Ed Discussions - class Q&A
  - For asking general questions regarding the subject matter or assignment.
- Email Your Tutor Directly
  - For asking private questions.
- Email Unit Admin Team:(FIT9136.Clayton-x@monash.edu)
  - For asking questions related to extensions, temporary lab changes, absences, or even complaints about tutors.

Please refrain from e-mailing CE or Lecturer directly.

Find details on Moodle > Unit Information

FIT9136 Prescribed Reading

- Peter Wentworth, Jeffrey Elkner, Allen B. Downey, and Chris Meyers (2012). How to Think like a Computer Scientist (RLE) (The Rhodes Local Edition).

- Brad Miller, David Ranum, Jeffrey Elkner, Peter Wentworth, Allen B. Downey, Chris Meyers and Dario Mitchell (2012). How to Think like a Computer Scientist: Interactive Edition

- Brad Miller and David Ranum (2014). Problem Solving with Algorithms and Data Structures (Interactive Edition).

FIT9136 Recommended Reading

- Bill Lubanovic (2014). *Introducing Python*. O'Reilly Media, Inc.
- Mark Lutz (2013). *Learning Python*. O'Reilly Media, Inc.
- John Guttag (2016). *Introduction to Computation and Programming using Python: with Application to Understanding Data* (2nd Edition). The MIT Press. (Noted: 1st Edition is applicable.)
- Rance D. Necaise (2011). *Data structures and Algorithms using Python*. Wiley.
- Michael T. Goodrich, Robert Tamassia, Michael H. Goldwasser (2013). *Data Structures and Algorithms in Python*. Wiley.
- Google Python Style Guide, http://google.github.io/styleguide/pyguide.html
- Zed Shaw (2013). *Learn Python the Hard Way. O'Reilly Media, Inc.*

Most of the texts are available as e-book via Monash library.

FIT9136 Technological Requirements

- Software required:
  - Python 3.6 (or higher)
  - Anaconda (Jupyter Notebook)
  - IDE for Python (IDLE, Pycharm)

Find details on Moodle > Week 0 (Software Requirment)

Plagiarism and Collusion

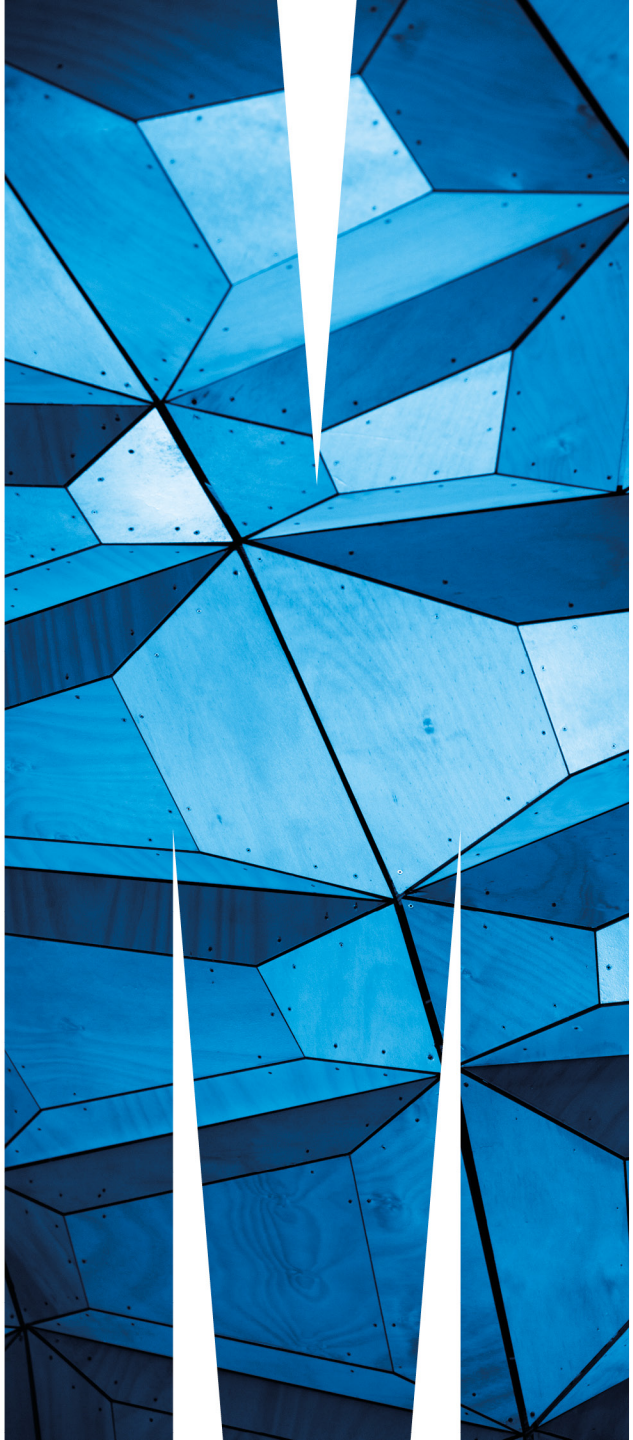
- Student responsibilities:
  - Undertake studies and research responsibly and with honesty and integrity
  - Ensure that academic work is in no way falsified
  - Seek permission to use the work of others, where required
  - Acknowledge appropriately the work of others
  - Take reasonable steps to ensure other students can't copy or misuse your work

- Student Academic Integrity Policy: [Please read this!!]
  - Academic integrity, plagiarism and collusion

MONASH University

MONASH
DISABILITY
SUPPORT
SERVICES

SEEKING ASSISTANCE & DISABILITY SUPPORT SERVICES



GROUP OF EIGHT AUSTRALIA

Take the following relevant preventative measures as soon as possible, if you are falling behind in your studies:

- Study difficulties: Discuss any difficulties you are experiencing with your course leader, unit coordinator, lecturer or tutor.
  - These staff members can assist you in identifying your problem areas and explore the options available to you in your course.
- Language and learning online can help you with study methods, language skills and work presentation.
  - http://www.monash.edu.au/lls/llonline/
- Student life and support services can be found at:
  - http://monash.edu/students/support/
  - Include: Health services, support and services, clubs and sports, etc.

Do you have a disability, medical or mental health condition that may impact on your study?

Disability Support Services provides a range of services for registered students including:

- Note takers and Auslan interpreters
- Readings in alternative formats
- Adaptive equipment and software
- Alternative arrangements for exam and class tests

Disability Support Services also support students who are careers of a person with a disability, medical or mental health condition, or who is aged and frail.

For further information and details about how to register:

T: 03 9905 5704
E: disabilitysupportservices@monash.edu
monash.edu/disability

FIT9136 Disclaimer

- This unit is new (in its second offering).
- The teaching team is still striving to improve the unit.
- Please be patient with us and your feedback is high appreciated.

THANK YOU FOR YOUR UNDERSTANDING!