COMP2049 Languages and Computation

Dr. Yuan Yao & Dr. Qiao Lin

University of Nottingham Ningbo China (UNNC)

Module Information

Teaching Team

Module Convener

- Dr. Yuan Yao
- Email: Yuan.Yao@nottingham.edu.cn
- Office: PMB 438
- Office Hours:
  - Thursday 15:00 - 16:00
  - Friday 10:00 - 11:00

Lab Assistant

- Dr. Qiao Lin
- Email: Qiao.Lin@nottingham.edu.cn
- Office: PMB 123

Teaching Plan

Lectures:

- Two hours per week
- Thursday 13:00 - 15:00
- DB-C05+

Labs:

- One hour per week, two groups
- Friday 12:00 - 13:00, 13:00 - 14:00
- PMB-306

Assessment

Coursework (25%):

- In-lab quiz: 10%
- Written Coursework 15%

Exam (75%):

- Two hours written exam.

Textbook

- The textbook for this module is:
  - **An introduction to formal languages and automata (7th Edition)**, *Peter Linz and Susan H. Rodger, 2023.*

- You may also find the followings useful:
  - **Introduction to Languages and The Theory of Computation(4th Edition)**, *John C. Martin, 2011.*
  - **Introduction to the Theory of Computation (3rd Edition)**, *Michael Sipser, 2013.*
  - **Programming Language Foundations**, *Aaron Stump, 2014.*

Content of the Module

Subject of the module

Two **fundamental** concepts in computer science:

- Languages
  - What is a language?
  - What a language consists of?
  - Why we need languages?
  - How to use languages?

- Computation
  - What is computation?
  - What are possible models of computation?
  - How to decide whether a computation will terminate or not?

Related subjects

The knowledge gained in LAC is essential for subjects such as:

- Compilers
- Computability
- Linguistics
- Natural Language Processing

Applications: Compilers

- Compiler: a special program that translate the code written in the source language into the target languages.
- Consider a Java compiler, we need to answer the following questions:
  - How to describe the set of valid Java programs?
  - Given a source code, how to determine if it is a valid Java program?
  - How to recover the structure of a Java program from the given source code (unstructured string of symbols)?