2WF90: Software Assignments - General Guidelines

Andreas Hülsing, Benne de Weger

September 2021

Contents

1 Introduction

There are two software assignments:

	deadline	**% of final grade**
Integer Arithmetic	end of week 3 (Sep. 26)	$7\frac{1}{2}\%$
Polynomial and Finite Field Arithmetic	end of week 8 (Oct. 31)	$12\frac{1}{2}\%$

For both assignments the following guidelines apply.

2 Guidelines

2.1 Doing the assignment

- The assignment is carried out in groups of 4 students (the same groups the homework is done in). The work should be your own, but, of course, you may use results from the lecture notes and lectures (include proper references).
- The deliverables are twofold:
  - Software: python source code that runs on a typical Windows or Linux PC,
  - Documentation including a mathematical description and a user guide.

Note that an output file is not to be delivered.

- Make sure that every group member has contributed a fair share of the assignment.
- There will be a separate assignment folder in Canvas to submit your work.
- Deadlines will be strictly enforced.

2.2 Software

- Include (short) comments in the code explaining what happens at various places.
- Your python code should run without problems on a standard Linux or Windows system. If you nevertheless use any non-standard libraries, provide install instructions using pip, or directly include them in your submission. While we will try to install the libraries this is entirely your risk. If we fail to do so with reasonable effort, you fail.
- You cannot expect us to debug your code.
- Failure to deliver working code may lead to a 0 grade for the software part.
- Your code should support input from, and output to, files in a specific exercise format. This format is described in the ASN.1 model given in the file `operations.asn`, and the input / output files are encoded in JSON format. Example python code to deal with these formats is provided in the file `student_example_code.py`.
- You need to import the `asn1tools` library. For more details on this library and ASN.1, visit `https://pypi.org/project/asn1tools/`. The library can be installed by the command `pip install asn1tools` (or `pip3 install asn1tools` if you have also Python2 installed). Note: There might be problems when trying to use `asn1tools` with Python2.
- Each exercise is represented by an operation (like `add` or `multiply`) with a few parameters. See the ASN.1 model for details. For each operation, the parameters involved are represented as strings or integers, and you can use them in your code as shown in the example code. Parsing (reading the input) and serialization (formatting the output) is taken care of by the provided ASN.1 and JSON tools, so you don't have to worry about that: just follow the example code.
- An example file with test exercises and (most) answers is provided:
  `test_exercises_students_answers`.
  This file can be used directly as input file.
- For debugging purposes you may wish to also send pretty formatted output to screen or some other file, this will be ignored by the graders.

- If you want to make your JSON output file prettier, do
`python -m json.tool my_JSON_file > my_pretty_JSON_file.txt`.

2.3 Documentation and user guide

- All documentation, including the user guide, is to be placed in one document. Only files in the pdf format are accepted. We encourage the use of LaTeX.
- Include an explanation on how to install and run the software on a Windows or Linux platform (non-standard libraries, file locations, etc.).
- The document should at least contain:
  - A title page with names, student id's, assignment title (such as 'Assignment 2WF90, Integer Arithmetic, September 2021');
  - Table of contents, division in sections, section numbers, page numbers.
  - Where relevant references to literature and the lecture notes. List of references at the end of the document.
  - A mathematical description of how your code works and what it can do.
  - A description of the limitations (including those required by the assignment) of your code.
  - Illustrative examples.
  - Each member's contribution.

3 Grading

You will be graded on the following basis:

- **Software** (50%)
  Working python code for all the objects and forms of arithmetic mentioned in the assignment. Source code contains comment lines so that readers can find their way easily.
- **Documentation** (50%)
  - 10% : Your text document is well-structured and includes a title page with title (project name), student name(s), student id's, date; table of contents, section and page numbers references at appropriate places referring to the lecture notes or other literature or web sources, list of references.
  - 40%: Description, in well written English, and mathematically sound. Your text explains your approach and the way a user can use the code. Examples of questions that one can answer given the code are included. Limitations of the code are clearly mentioned.