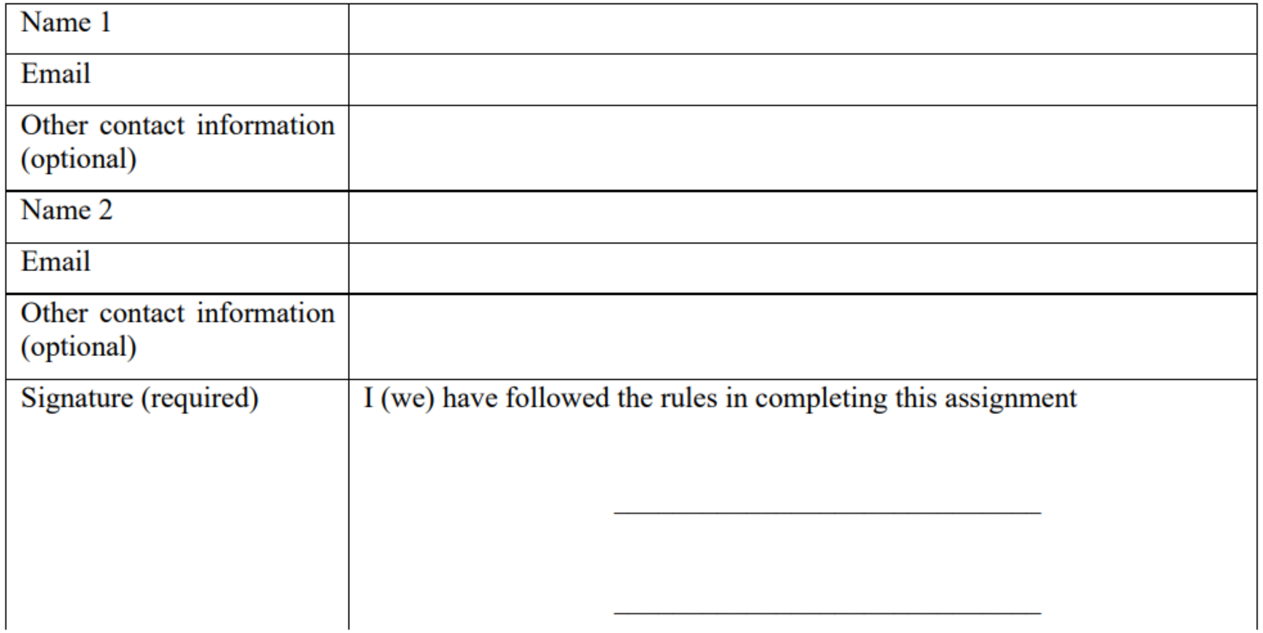
5 Programming Assignments

- the last PA is optional
- Gradescope: entry code XG25X7

  ("group functionality" for teams of 2)
- MATLAB, Python, C, C++

  (If another language → contact the TA first)

Signed cover sheet



Name 1	
Email	
Other contact information (optional)	
Name 2	
Email	
Other contact information (optional)	
Signature (required)	I (we) have followed the rules in completing this assignment ______________________________ ______________________________

Grading:

- Program (40 points)
- Results (20 points)
- Report (40 points)

Program (40 points)

- Design and overall program structure (20)

  → readable, efficient, consistent, works

    - Avoid duplicating code
    - Avoid deep nesting
    - Use consistent formatting
    - Use required PROGRAMS, OUTPUT directories --- ZIP / TAR
    - Make sure the code runs!
- Reusability and modularity (10)
    - Use short and focused functions
- Clarity of documentation and programming (10)
    - Use descriptive names for variables and functions
    - Provide enough clear and concise comments (variables' /objects' description, workflow steps)
    - Indicate purpose /objective, inputs, and outputs at the top of each source file
    - Provide "README.TXT" (the names of all source files + short description of each file)
    - Indicate the executable program
    - Provide "Instructions" for running the executable program
    - Indicate authorship of the code sections

PROGRAMS directory:

- All source files (including the executable)
- "README.TXT"
- "Instructions" to run the executable

Results (20 points)

→ Correctness and completeness, OUTPUT directory

- Provide output for debug datasets
- Provide output for unknown datasets
- Make sure the code generates files for the output
- Make sure that the output files' format is correct

Report (40 points) → A narrative!

- Summary of the problems to be solved
- Description of mathematical approach
- Description of algorithmic approach
  - Indicate the programming language used
  - Describe the algorithmic steps taken (variables / Pseudocode ≠ copy of the code / Inputs, Outputs)
  - Provide citations for any used libraries / packages

Description of formulation and algorithmic approach (15)

- Overview of program structure (10)
  - Hierarchy chart, table, or diagram + discussion
- Discussion of validation approach / program verification (5)
  - Component-level testing / unit testing using custom-made datasets
  - Entire program testing using given debug datasets
- Discussion of results (10)
  - Analysis (tabular summary, plots) + discussion of the results for debug datasets
    - Average error between the given and your outputs for each dataset
    - Error analysis
  - A tabular summary of the results for unknown data
  - Statement “Who did what”
- Citations for Dr. Taylor’s slides and all other used sources! (Points off otherwise. Applicable to the code and report)