

# Semestral Project



## PV286 – Secure Coding Principles and Practices

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Cryptography and Security

# Project introduction

- Implementation of a specification in a team of three
- Programming language from the following set
  - C, C++, Rust, Go, C#, Java
- Four phases
- Up to 45 points awarded (**23 minimum** for passing)
  - Bonus points possible for exceptional contribution
- Questions
  - Put general questions in this [discussion forum](#)
  - Email other to [kvapil@mail.muni.cz](mailto:kvapil@mail.muni.cz) (Start the subject with [PV286]) or your to-be assigned reviewer
- Phase deadlines are strict
  - One day extensions possible for 20% point loss
- All team members are expected to contribute equally
  - Learning to cooperate is part of the project goals
  - E.g., commits, textual description, presentation, etc.

# Project idea

- Implement a command line wrapper around [BIP380](#)
  - Put you in the shoes of an open-source project maintainers
- [CLI application](#) (TBA) that includes
  - Input parsing (CLI arguments, files)
  - Data manipulation and data structures, no state
  - Output formatting
- Use only the **standard** library
  - Possibly previously agreed upon relevant 3rd party BIPs
- Focus on functional **and secure** implementation
  - Use defensive programming (strict user input and return values checking,...)
  - Write unit and integration tests, write **your own** tests (Test-driven development)
  - Use code analysis tools (fuzzing, static and dynamic analysis, symbolic analysis,...)

# Project phase outputs

Loosely based on [Build it Break it Fix it](#)

1. Teams formation – deadline in the 3rd week
  - 3 students, chosen programming language
2. Build It – deadline in the 8th week
  - Major part of the specification implemented, video presentation and release provided
3. Break It – deadline in the 10th week
  - Breaking another team's implementation, disclosing the issues, writing PR fixes
4. Fix It – deadline in the 12th week
  - Found issues fixed and a final PDF report submitted

Points assigned for each phase separately.

# Teams Formation

# 1 Teams Formation

- Three students
- Agree on your programming language
  - C, C++, Rust, Go, C# or Java
- Submit <https://forms.gle/QoXaotGmAFsECmXQ8>
  - Use <UCO>@mail.muni.cz Google account see [here](#)
  - Later, you will be assigned a reviewer
  - And a repository at <https://gitlab.fi.muni.cz/pv286/teams>
- Check access to <https://gitlab.fi.muni.cz>
- Deadline: **Monday 3th 23:59 March 2024**
  - Don't wait for the deadline ([shared calendar](#))
  - No points assigned for this phase

