

Peer-to-Peer Systems and Security (IN2194)

Initial Project Report

1. Team

- Team Number : 8
- Team Name : AshHack
- Team Members:
Doğan Can Hasanoğlu: 03737136
Emin Sadikhov: 03778606

2. Programming Language & OS

- Python3 has been chosen for our P2P project due to its familiarity and efficiency for the team. Python's simplicity, readability, and extensive library support simplify the development of our Distributed Hash Table (DHT). Additionally, Python's cross-platform compatibility enables seamless execution on various operating systems.
- Since team members have familiarity with different operating systems such as Mac OS and Windows, Linux will be employed to establish a shared platform.
- Docker will be used for ensuring consistency and portability. By leveraging Docker, we can achieve a reliable and reproducible development and deployment environment, allowing consistent behavior across various platforms.

3. Build System

- Poetry will be used to help us to manage python packages.
- Docker will be used for ensuring consistency and portability. By leveraging Docker, we can achieve a reliable and reproducible development and deployment environment, allowing consistent behavior across various platforms.

4. Quality and Assurance

4.1. Test Cases

We will use pytest as our testing library for unit testing. pytest offers simple syntax, a powerful fixture system and automatic test discovery.

4.2. Quality Control

For quality control, we will primarily rely on Pylint and Bandit. Pylint offers static code analysis to identify bugs and errors, while Bandit specializes in security analysis to detect vulnerabilities and potential risks. Additionally, we will utilize Flake8 to further enhance our quality control efforts.

5. Libraries & Dependencies

We've decided to use Python for our project because it has a very comprehensive standard library (stdlib). One example of a useful module that comes with the standard library is hashlib, which helps us with cryptographic hash functions. To keep things efficient and straightforward, we want to minimize our reliance on external libraries and dependencies.

While it is challenging to determine all the required libraries at this preliminary stage, we have compiled a list of anticipated libraries and dependencies. The following are among the planned ones:

- MkDocs will be used in writing documentation.
- Numpy will be used for array operations, data manipulations and efficient storage

6. License

The MIT License will be used for simplicity and flexibility. It will allow other users to freely use, modify and distribute the software that can encourage collaboration for further improvement. Also, MIT License mitigates legal risks.

7. Experience

Both team members possess extensive experience in Computer Networking and Security. Emin brings previous expertise in working with Blockchain systems and has completed courses focused on Network and Privacy during his Bachelor's degree. Doğan Can has a background in developing cryptographic messaging applications and has completed courses in Advanced Computer Networks (ACN) and Network Security (NetSec) at TUM. Additionally, both team members possess strong proficiency in Python development and are well-versed in networking and cryptographic protocols.

8. Workload Distribution

Our primary approach will be to adhere to the Agile philosophy. To stay updated on the progress, we have scheduled weekly meetings. Contributions to GitLab will be shared equally and frequently among the team members. Our goal is to avoid intensive last-minute sessions and instead commit to working regularly in order to deliver a robust project.

9. References

- [1] Python. Available at: <https://www.python.org/>
- [2] Docker. Available at: <https://www.docker.com>
- [3] Python Poetry. Available at: <https://python-poetry.org/>
- [4] MkDocs. Available at: <https://www.mkdocs.org/>
- [5] Pylint. Available at: <https://pypi.org/project/pylint/>
- [6] Bandit. Available at: <https://pypi.org/project/bandit/>
- [7] pytest. Available at: <https://docs.pytest.org/en/7.3.x/>
- [8] NumPy. Available at: <https://numpy.org/>