Create a new Python virtualenv and install maturin into the virtualenv.

$ mkdir secret\_sharing

$ cd secret\_sharing

$ python -m venv .env

$ cd .env

$ ./Scripts/activate

$ pip install maturin

Initialize a new RUST package with PyO3 bindings.

$ maturin init

Specify metadata about the new package in the [manifest](https://doc.rust-lang.org/cargo/appendix/glossary.html#manifest) file “secret\_sharing/ Cargo.toml”. Set the crate-type as “cdylib”, and add pyo3 to the dependencies.

[lib]

name = "secret\_sharing"

crate-type = ["cdylib"]

[dependencies]

pyo3 = { version = "0.16.5", features = ["extension-module"] }

Annotate the RUST function with #[pyfunction] to turn it into a PyCFunction and wrap the result in a PyResult.

#[pyfunction]

fn reconstruct\_private\_key(filename: &str) -> PyResult<String> {

let shares = 5;

let threshold = 3;

let private\_key = reconstruct::<GF256, CompactShamir>(filename, threshold);

Ok(private\_key)

}

Add the function to the #[pymodule]

#[pymodule]

fn secret\_sharing(\_py: Python<'\_>, m: &PyModule) -> PyResult<()> {

m.add\_function(wrap\_pyfunction!(reconstruct\_private\_key, m)?)?;

Ok(())

}

The above will expose the reconstruct\_private\_key function in the Python module called secret\_sharing.

Build the package and install it into the Python virtualenv previously created and activated.

$ maturin develop

The secret\_sharing package is then ready to be used from Python.

$ python

>>> import secret\_sharing

>>> secret\_sharing.split\_private\_key("privateKey.txt")

Shares:

1|6ca345ec3b5f5432cf66e1e7dc8d1ff4ca7bad5ff254dcede49d31f60ffc1c7b

2|24c0c1fe5a27a8a0a8cf9fc4fba05e58b7521ea430bb44d2514850c6f535f675

3|86097316f7d1086c927700c7d1fe9afc52fafdba00abe3357edee7afca4dfe34

4|a7dbd65f52393310ee7ec03d8b0ce0475193b4ec6cc3c4e2ea36c80256e01b94

5|051264b7ffcf93dcd4c65f3ea15224e3b43b57f25cd36305c5a07f6b699813d5

>>> secret\_sharing.reconstruct\_private\_key("shares.txt")

Private Key: ce6af70496a9f4fef5de7ee4f6d3db502fd34e41c2447b0acb0b869f3084143a