# RUU-THESIS-PROJECT-PORT MANUAL

***Manual page for the repo:***

*Last edited: 2025-05-19*

*By: Group 12*

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**REQUIREMENTS:**

**Haskell:**

GHC 9.4.8, found here: https://www.haskell.org/ghc/blog/20231110-ghc-9.4.8-released.html

Cabal 3.12.1.0. It is recommended to install it via GHCUP: https://www.haskell.org/ghcup/

Otherwise it can be found here: https://www.haskell.org/cabal/download.html

**Python:**

Python: 3.10

`requirements.txt` for project dependencies.

**INSTALLATION:**

**For Windows and MAC users It is highly recommended to use the Dockerfile in the root folder of the repo. See the end of the document.**

**Haskell:**

Follow the official docs to install **GHC** and **Cabal** on **Linux/macOS/Windows**.

**Python Dependencies:**

**Create a python virtual environment:**

(not necessary but recommended, otherwise just run`pip install -r requirements.txt`, this will install the python dependencies locally on your machine).

```
> python -m venv .venv
```

**Activate the virtual environment:**

```
> source .venv/bin/activate        // Linux/macOS
```

```
> .venv\Scripts\activate           // For windows
```

```
> .venv\Scripts\Activate.ps1       // For windows Powershell
```

**Install the project dependencies:**

```
(venv) > pip install -r requirements.txt
```

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**RUNNING:**

**Running the Python model**

```
> make python-run
```

**NOTE: For windows users:**

```
> python3 python/main.py
```

Prompts user to select sdp implementation. The implementation will be loaded into a python shell as an instance of the selected sdp, the instance is called “sdp”. All functions and instructions will be exposed by running:

```
> sdp.public_api()
```

**Testing the Python model**

```
> make python-test
```

**NOTE: For Windows users:**
**Navigate to the `/python` directory (> cd /python)**

```
> python3 tests/run_tests.py
```

Prompts the user to select sdp to test. Tests will run for the selected sdp. The test suite running is found in `python/tests/test_properties.py` for MatterMost and `python/tests/test_propertiesMemo.py` for the other sdps.

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**Running the Haskell model**

```
> make haskell-run
```

**NOTE: For windows users:**

```
> cabal run; cabal repl
```

Compiles the code using `cabal run`, and opens an interactive GHCI shell.

**Testing the Haskell model**

```
> make haskell-test
```

Runs `cabal test` which opens `RunTest.hs` file to prompt the user for which instance to test, runs a test-suite written using QuickCheck.

**NOTE: For windows users:**

```
> cabal test
```

**DOCKER INSTALLATION**

**WINDOWS, macOS:**

1. **Install Docker Desktop**

- Download from: https://www.docker.com/products/docker-desktop
- Follow the installer. Restart if needed.

2. **Enable WSL2 (if prompted)**

- Docker uses WSL2 as backend on Windows.
- Install/update WSL2 from: https://learn.microsoft.com/en-us/windows/wsl/

3. **Navigate to the project root folder.**
4. **Build the Docker image**

```
> docker build -t ruu-thesis .
```

5. **Run the container**

```
> docker run -it -rm ruu-thesis
```

**Alternatively, open the docker application on the Desktop and find the container, click “run”.**

**LINUX:**

1. **Install Docker**

```
> sudo apt update
> sudo apt install docker.io -y
> sudo systemctl start docker
> sudo systemctl enable docker
```

2. **Navigate to the project root folder.**
3. **Build the Docker image**

```
> docker build -t ruu-thesis .
```

4. **Run the container**

```
> docker run -it -rm ruu-thesis
```