EECS 498.003: Lab #1

Keshav Singh

Office Hours

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Office Hours: Monday 5:30-6:30pm @ DOW 1023

Lab Structure

- Recap of Lecture + Code Example
- Interactive Exercises: Collaborative
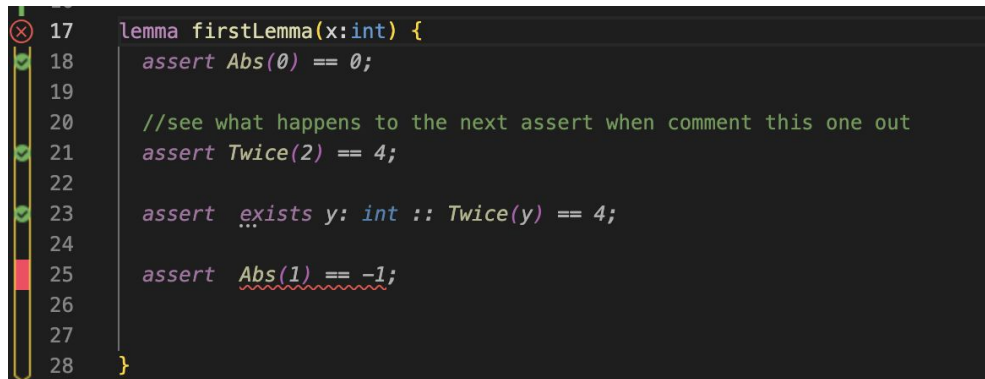- Office Hours (if time permits)

Running Dafny

1. Through VSCode (Preferred)
2. Through Command Line
3. Through Docker

Installing Dotnet

- Ubuntu:
  - Follow steps on https://learn.microsoft.com/en-us/dotnet/core/install/linux-ubuntu for your version
- MacOS
  - brew install dotnet-sdk or https://dotnet.microsoft.com/en-us/download
- Windows
  - https://dotnet.microsoft.com/en-us/download
- Try dotnet --version

VSCode Tool Installation

- In Visual Studio Code, press Ctrl+P (or ⌘P on a Mac), and enter ext install dafny-lang.ide-vscode
- If you open a .dfy file, Dafny VSCode will offer to download and install the latest Dafny (I uploaded lab1.dfy to try)
- Should get something like this:

```
17    lemma firstLemma(x:int) {
18      assert Abs(0) == 0;
19
20      //see what happens to the next assert when comment this one out
21      assert Twice(2) == 4;
22
23      assert  exists y: int :: Twice(y) == 4;
24
25      assert  Abs(1) == -1;
26
27
28    }
```

Installing for Command Line

- Follow Instructions for your OS:
  - Linux: https://dafny.org/dafny/Installation#linux-binary
  - Windows: https://dafny.org/dafny/Installation#windows-binary
  - Mac: https://dafny.org/dafny/Installation#Mac-binary
- Helpful to add $INSTALL/dafny to PATH
- Usage: $INSTALL/dafny/dafny lab1.dfy (or dafny lab1.dfy if you've added to PATH)
- Should get something like this:

```
Lab1.dfy(25,17): Error: assertion might not hold

Dafny program verifier finished with 0 verified, 1 error
```

Docker Installation

- Ubuntu
  - sudo apt -y install docker docker.io
- Mac
  - Download the appropriate .dmg file from here (link)

Running Dafny with Docker

- https://verification.eecs.umich.edu/#running-dafny-in-docker