Setup

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1 Initial Setup

Before you get a copy of the code you need to make sure that you have the following things installed on your machine. If you have any trouble installing them contact me.

Open SSH: To connect to the remote repository. You can verify you have it if `which ssh` returns something

Git: To get a copy of the source code. `which git`

Java 6: We are using java 6 for a number of reasons. If `java -version` says "1.6" somewhere then you have java 1.6 installed, but you may have it even if that says "1.7" or "1.8."

Ant: To compile java. If you have java you probably have ant.

2 Connecting to the repository

The repository for the HFT simulation system is hosted on `hft.eecs.umich.edu`. If you need an account on this machine in order to run simulations, please email me. To access the repository, you will need to generate a public RSA key:

1. Generate a public/private rsa key pair with the following command:

   ```
   ssh-keygen -t rsa -C "<youremailhere>"
   ```

2. Press enter when prompted for the name to save under. Do not change the name from `id_rsa.pub`, and do not change the location where it is saved.

3. Enter a non-empty passphrase when prompted.

4. Email me the `.ssh/id_rsa.pub` file located in your home directory.

5. I will need to authorize your key to connect. After I've notified you to let you know this is done, proceed to the next step.

6. Create a directory to hold all of your hft work, and then enter it by running the following (or similar) command:

```
cd
mkdir hft_project
cd hft_project
```

7. Clone the git repository to get a copy of the source code

```
git clone git@hft.eecs.umich.edu:hft.git
```

8. Move to the repository directory and switch to the reorg branch

```
cd hft
git checkout reorg
```

3 Setting up Eclipse

It will be easiest to debug any new code added to the simulation system using an IDE. The following instructions are for Eclipse, but any other IDE for Java will suffice. Note that instructions are based on the Eclipse for Linux, and may differ depending on your OS. For the rest of the instructions we will assume that the source code is in `~/hft_project/hft`. If you checked out the code somewhere else, make the necessary changes.

1. Download and unzip "Eclipse for Java Developers" (eclipse.org/downloads)
2. Start up Eclipse. For your workspace, select the directory that contains the `hft` folder cloned from the repository (e.g. `~/hft_project`).
3. Set Eclipse to auto-refresh the workspace
   (a) Select Window from the top bar and go down to Preferences
   (b) Expand "General" and then click on "Workspace"
   (c) Check "Refresh using native hooks or polling" and "Refresh on access"
   (d) Click OK
4. From the File menu, select New Project.
5. Select "Java Project from Existing Ant Buildfile."
6. Browse for the Ant buildfile; select the `build.xml` file located in the top level directory of the repository (`~/hft_project/hft/build.xml`). Leave the project name unchanged and click Finish.
7. At this point, the project will be imported automatically.
8. Fix the project build path:
   (a) Click File » Properties.

(b) Click Java Build Path in the left panel, then select Libraries (at the top). Remove the JRE System Library.

(c) Click "Add Library" and add a JRE System Library (make sure you add a java 6 library!).

(d) Select Source at the top (next to libraries).

(e) Click Add Folder and select "test."

(f) Click OK and close the window.

9. Before getting setup to run the simulator, you need to create a directory to run your simulations in. To keep the repository organized, run all of your simulations within the `simulations` directory.

   (a) Created a folder in the root of the repository called `simulations`.

   (b) Create a folder within simulations (e.g. `simulations/test`).

   (c) Copy `docs/simulation_spec.json` into the folder you just created.

10. In the Properties window setup run/debug configurations:

    (a) Right click on the project again and select Properties.

    (b) Select Run/Debug Settings in the left panel. Add a new launch configuration (Java Application).

    (c) At the top, change the name to "Run Simulator." To select the correct main class, click "Search..." and select SystemManager.

    (d) Select the Arguments tab and enter something like the following into the "Program Arguments" window:

    ```
    simulations/test 1
    ```

    The first argument is the path to the simulation directory that you created above. This can be any directory as long as it has a `simulation_spec.json` file in it.

    The second argument represents what run number to use. In this case we're specifying run 1, but it can be any arbitrary number. This number is appended to the name of generated observation files.

11. Save your settings and you should now be able to run the simulator in Eclipse!

12. Test that everything worked:

    (a) Click the down arrow next to the green arrow Run icon and select "Run Configurations..."

    (b) Select "Run Simulator" from the left hand column and click Run

    (c) Check that there's an observation file called `simulations/test/observation1.json`, and a log file in `simulations/test/logs`.