Seeds Framework

August 22, 2012

Running the Workpool Template from
http://coitweb.uncc.edu/~abw/PatternProgGroup/WorkpoolTutorial.pdf using Multi-core Seeds.

The multi-core implementation deploys faster than the networked framework. The framework will not start the JXTA P2P network to run cluster nodes.

Replace seeds.jar with seeds_multicore.jar to the libraries on Eclipse.

Modify RunMonteCarloPiModule.java to this:

```
public class RunMonteCarloPiModule {
        public static void main(String[] args) {
                try {
                        MonteCarloPiModule pi = new MonteCarloPiModule();
                        Thread id = Seeds.startPatternMulticore(
                                        new Operand( (String[])null
                                        , new Anchor( args[0],
                                         Types.DataFlowRole.SINK_SOURCE)
                                        , pi ), 4 );
                        id.join();
                        System.out.println( "The result is: " + pi.getPi() ) ;
                } catch (SecurityException e) {
                        e.printStackTrace();
                } catch (IOException e) {
                        e.printStackTrace();
                } catch (Exception e) {
                        e.printStackTrace();
                }
        }
}
```

Notice that start() and stop() are not needed. The methods deploy and shutdown the P2P network so they are not needed for a multi-core run.

Also notice the PipeID is changed to a Thread object. The Thread object is the thread managing the source and sink threads for the pattern. The programmer can monitor when the pattern is done computing by checking id.isAlive() or can just wait for the pattern to complete using id.join().

Args[0] should be the local host name.

Getting the multi-core framework using code.google.com:

The jar seeds_multicore.jar is provided for convenience. However, the multi_core branch of the project can be checked out directly from code.google.com using the following steps.

These steps require the Git tool be installed on the development computer. Visit http://git-scm.com for more information about Git.

Retrieve the source code using the command:

```
>git clone https://code.google.com/p/seeds-parallel-pattern-framework/
```

Change directory (cd) into the path where the source was downloaded.
Type:

```
>git status
```

This command shows you are now using the branch called 'master'

```
>git branch -r
```

This shows the list of branches on this project:

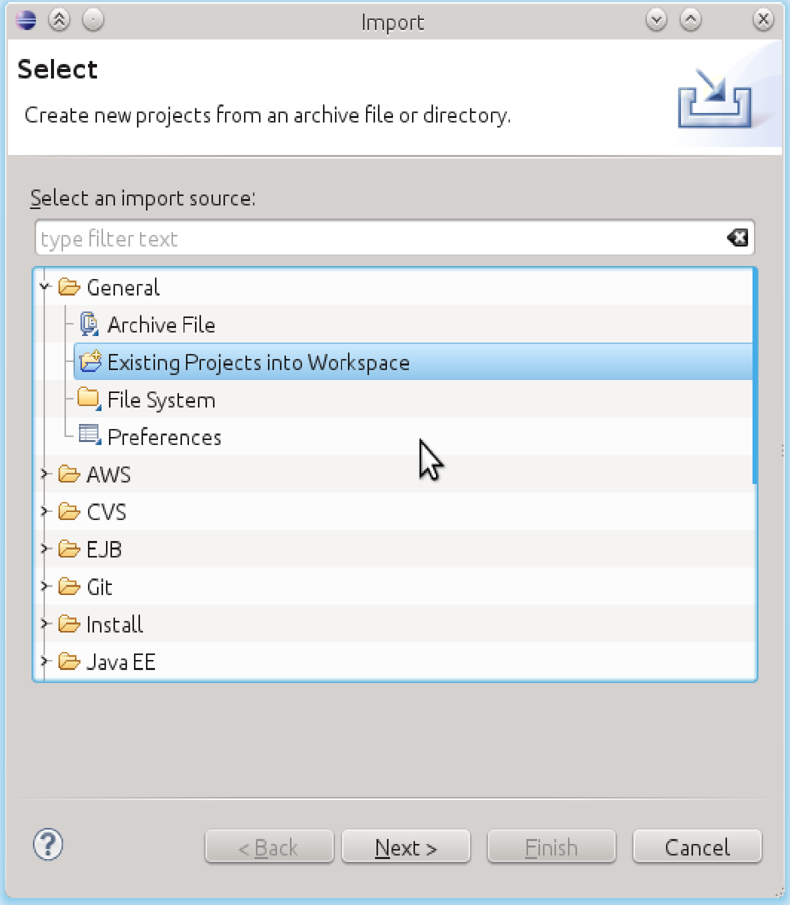
```
  origin/HEAD -> origin/master
  origin/master
  origin/multi_core
```

Type:

```
>git checkout multi_core
```

This checks out the branch multi-core.
Now you can open the PGAFramework project into your Eclipse workspace

Go to File->Import...
Select "Existing Projects into Workspace"



Import

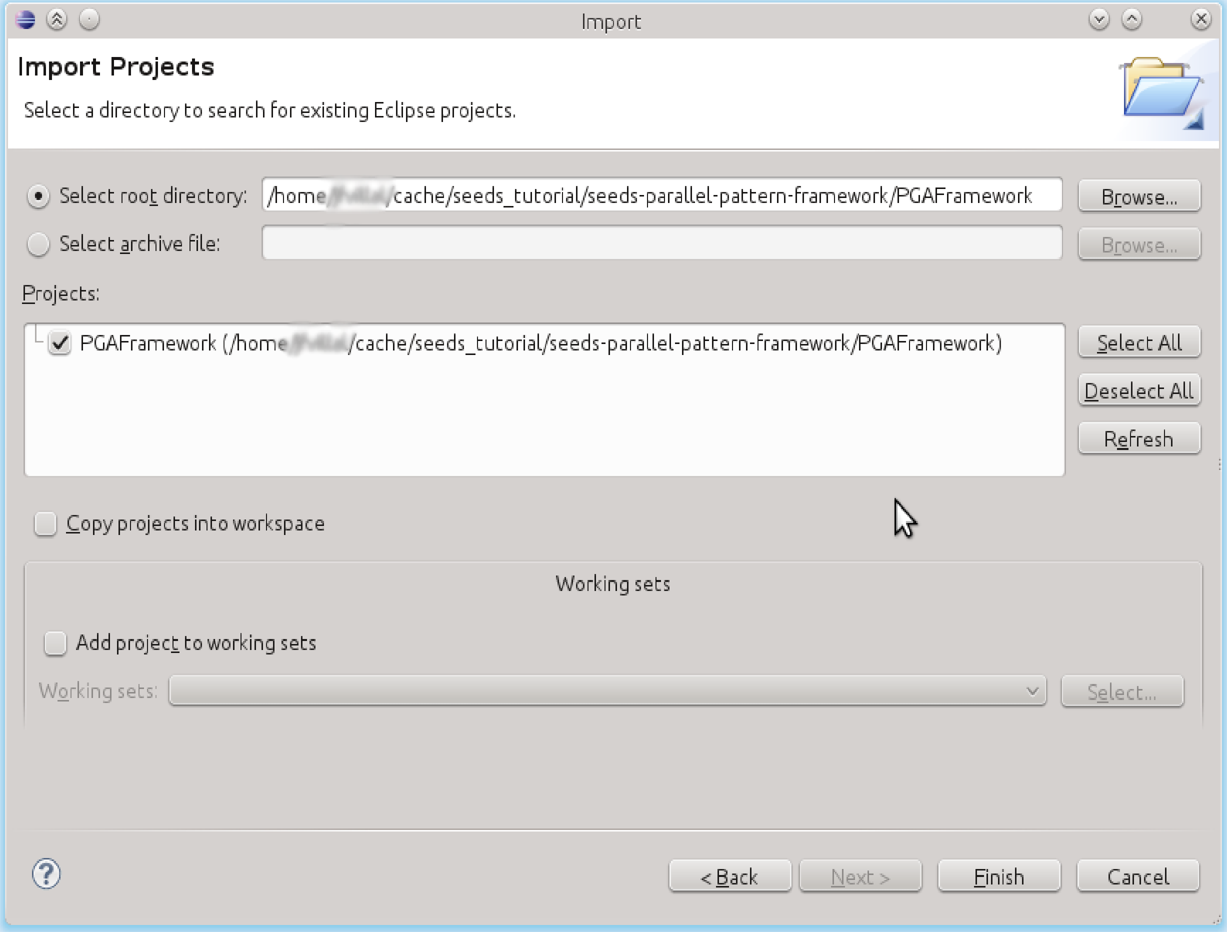
Select

Create new projects from an archive file or directory.

Select an import source:

type filter text

Browse to the location of the PGAFramework project



Import Projects

Select a directory to search for existing Eclipse projects.

● Select root directory: /home[redacted]/cache/seeds_tutorial/seeds-parallel-pattern-framework/PGAFramework

○ Select archive file:

Projects:

☑ PGAFramework (/home[redacted]/cache/seeds_tutorial/seeds-parallel-pattern-framework/PGAFramework)

□ Copy projects into workspace

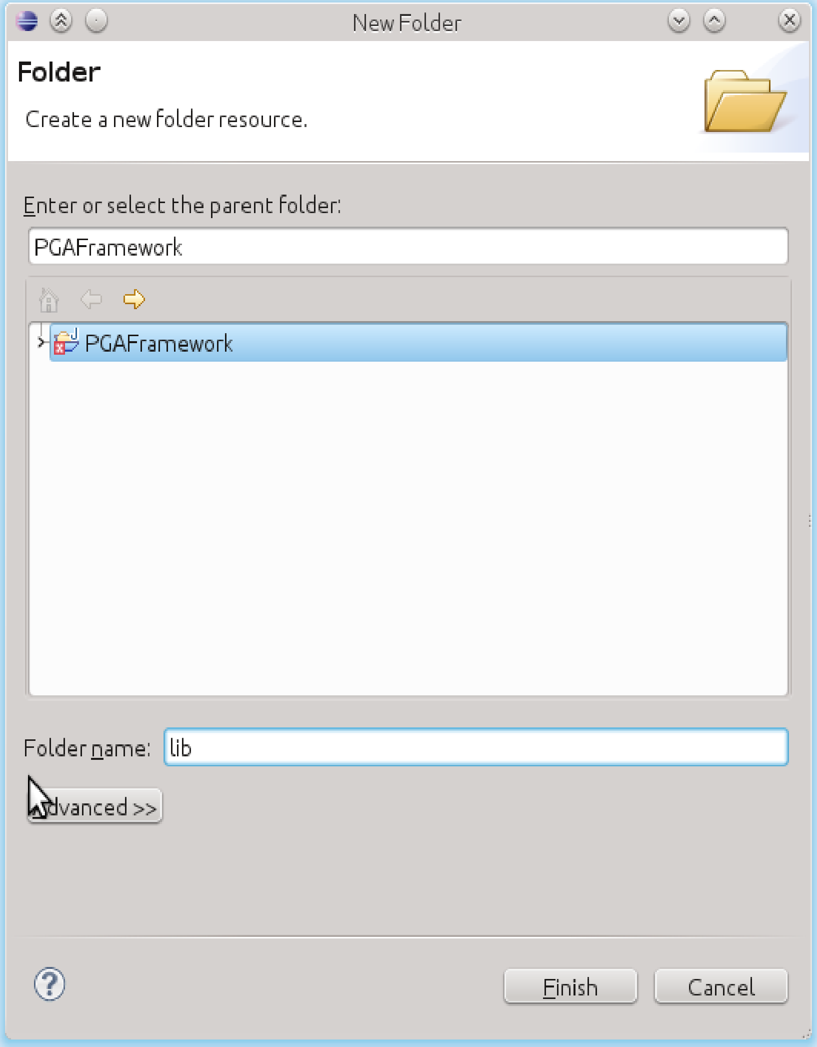
Working sets

□ Add project to working sets

Working sets:

Click finish.

Create the folder lib on the project root directory. To do this, right-click on the project->New->Folder

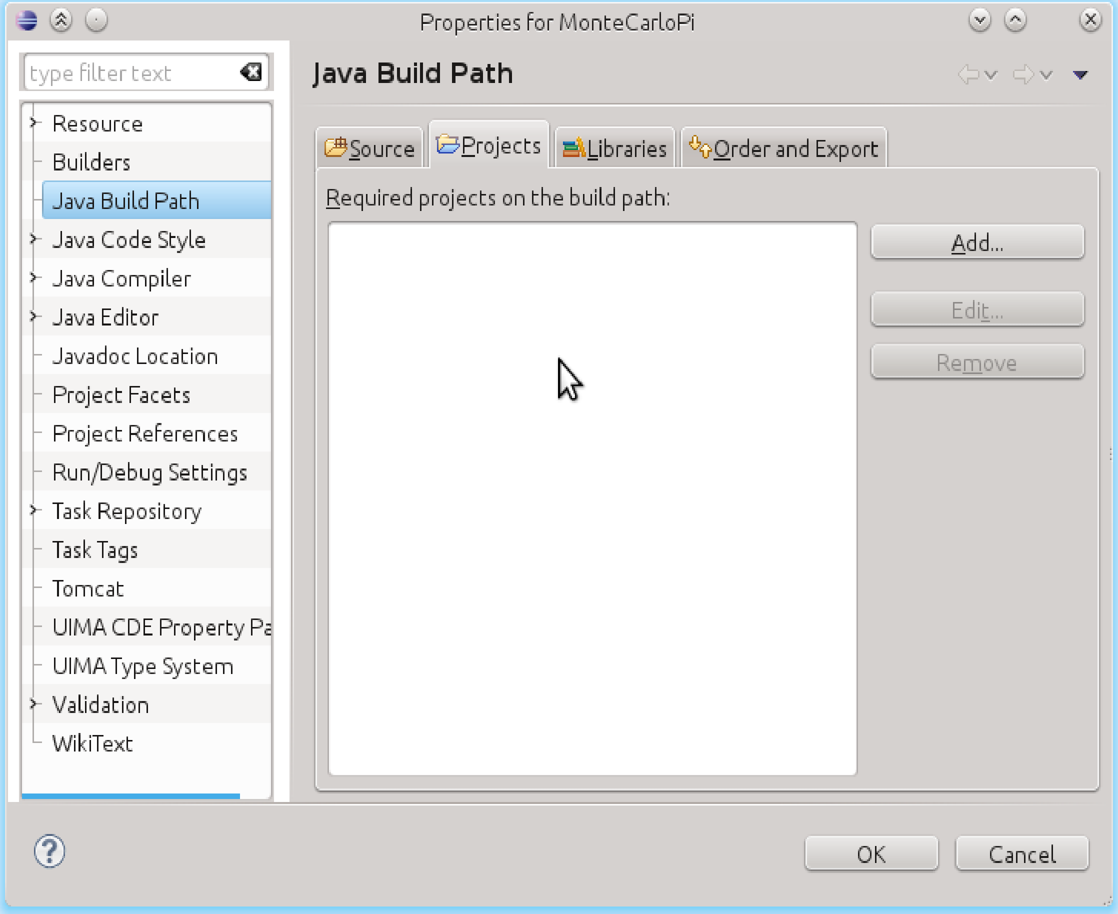


Drag and drop all the jar files from the shuttle folder's lib directory into the new lib folder created for PGAFramework except the file 'seeds.jar'.

You now have the source for the Seeds framework multi-core branch.

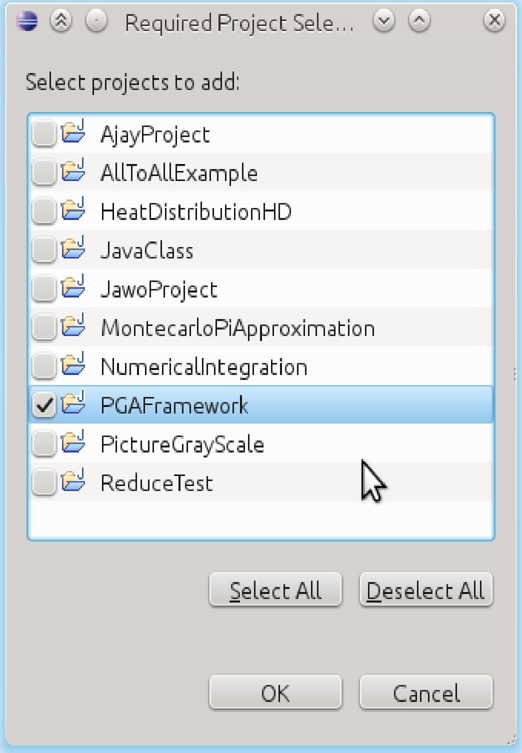
Use the PGAFramework project as a dependency for your multi-core Seeds projects.

Right-click on your project->Properties.



Select the “Projects” tab.

Click the check-box beside the PGAFramework project to add the project as a dependency to your project.

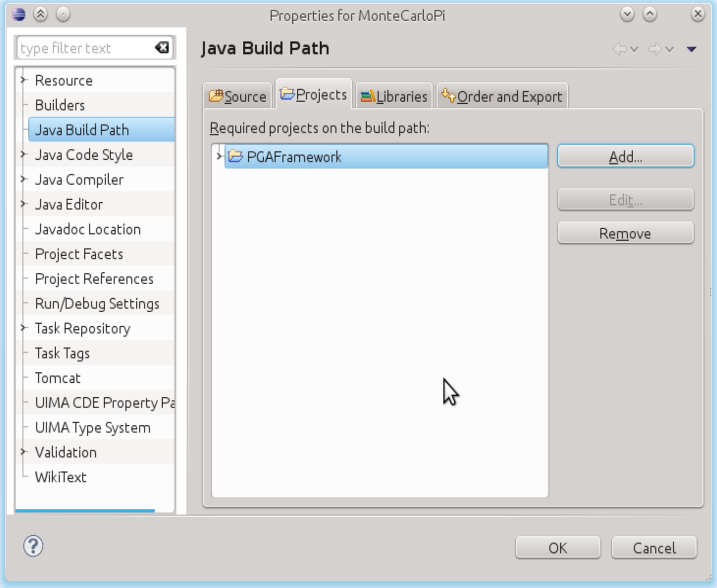


Required Project Sele...

Select projects to add:

- ☐ AjayProject
- ☐ AllToAllExample
- ☐ HeatDistributionHD
- ☐ JavaClass
- ☐ JawoProject
- ☐ MontecarloPiApproximation
- ☐ NumericalIntegration
- ☑ PGAFramework
- ☐ PictureGrayScale
- ☐ ReduceTest

Click OK button.



Properties for MonteCarloPi

Java Build Path

Required projects on the build path:

PGAFramework

Click OK again.
Now you are ready to develop parallel multi-core Java programs using the Seeds framework.

Bugs:

Use the tab called “Issues” at code.google.com to report problems with the framework.