

AlphaZ has been only tested on Linux 64 bits and MacOS. There are several options that can be used to get a working eclipse instance with AlphaZ installed.

## Option 1 - Eclipse Setup on CS Department Machines

You must be a CSU student with access to the CS machines to do this. The eclipse environment with all necessary plug-ins is available in the AlphaZ project directory. The following script will start the eclipse with AlphaZ installed.

```
#!/bin/bash

#Path to the eclipse -- should NOT be changed
export ECLIPSE_HOME=/s/chopin/e/proj/AlphaZ/BinTree/eclipse-alphaZ-
bundle/eclipse/
#Path to the java used -- should NOT be changed
export JAVA_HOME=/usr/local/java64/bin/
export PATH=${JAVA_HOME}:${PATH}

${ECLIPSE_HOME}/eclipse $* -configuration ~/.eclipse_alphaz_config -vmargs -
d64 -Xms256m -Xmx1024m &
```

Save the above script as `eclipse.custom` on your home directory (say as `~/eclipse.custom`) and run it (don't forget to give execute permission to the script).

## Option 2 - Eclipse Setup using Docker

If you don't have access to the CSU machines or would rather run eclipse locally on your own machine, then you can use the following docker container:

<https://hub.docker.com/repository/docker/narmour/alphaz-user-image>

See the following for additional information if you want to use this option:

<https://github.com/lnarmour/alphaz-user-image>

## Option 3 - Eclipse Setup using Local Install

If you don't want to use docker, then you can use this option to install eclipse on your own machine and manually install the AlphaZ plugins directly.

1. AlphaZ requires Java 8 or later and a Unix system (Linux or Mac OSX). If Java 8 is not installed on your machine, install Java from <http://www.oracle.com/technetwork/java/javase/downloads/index-jsp-138363.html>.
2. Download Eclipse (2019-03 Release) from <https://www.eclipse.org/downloads/packages/release>
3. Launch Eclipse
4. Go to Help → Install New Software
5. In “Work with” text box, copy/paste the following URL:  
[https://www.cs.colostate.edu/AlphaZ/update-sites/2019\\_03-master](https://www.cs.colostate.edu/AlphaZ/update-sites/2019_03-master).

6. You should see several items including “AlphaZ Environment” and “AlphaZ Features”.
7. AlphaZ Environment has all the features required for AlphaZ
8. AlphaZ Features only have the features developed at CSU
9. Install “AlphaZ Environment”.
10. Hit next until Eclipse start installing the bundle.
11. Restart Eclipse.
12. To be able to check out project through svn with eclipse, please install the corresponding subclipse plugins using update-site <https://dl.bintray.com/subclipse/releases/subclipse/latest/>.

If you met some problems while using AlphaZ, please refer to the common pitfall section. We described some common problems that users met, and provided possible solutions.

## Checking out Sample Project

To get started with AlphaZ, a Java plug-in project with examples can be checked out from our repository.

- Select “File→New→Other” from the menu and select “Checkout Projects from SVN”
- Select “Create a new repository location” and click “Next”
- Use <http://www.cs.colostate.edu/AlphaZsvn/Development> as the URL and click “Next”
- Select “Alphabets” and click “Finish”

## What's Inside

Inside the Alphabets project, you will find two directories, AlphabetsExamples and CommandScripts. Alphabets is the programming language for programming in equations (with extension .ab), and CompilerScripts (.cs) are script files to use the scripting interface of AlphaZ.

Try running BasicScript.cs in the CommandScripts directory to make sure that the system is working on your machine.

ReadAlphabets loads .ab files and parses it to get a Program object. Objects returned by commands and strings/integers can be stored in untyped variables.

Show, AShow, PrintAST are all commands to print out the program in different formats.

generateXXX commands takes the program and generates executable C code.

## Common Pitfalls

You may have some error connecting to the repository through eclipse

- When you run a \*.cs file, if you see an error containing “com.google.common” then try again after removing “com.google.guava\_21.0.0.v20170206-1425.jar” file from Eclipse/plugins directory.
- When your connection gets lost while trying to connect:

- Go to “Preferences→Team→SVN” and change the SVN interface to “SVNKit (Pure Java)” and try again.
- The default SVN interface uses JNI bindings and it may not work depending on the machine. Pure Java version should.

Check the following if something does not work

- AlphaZ requires JRE1.8. Please make sure you have the Java 8 installed on your machine, and it is the default java version used by eclipse. Otherwise, the plugins installed will not be activated.
- Most of the machines in the department is 64bit linux, but some are 32bit. You won't be able to start eclipse in those machines.
- If Eclipse does not reflect the changes you made, try
  - Cleaning the project
  - Starting eclipse with -clean option so that plug-ins are refreshed

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