
Note: To make this more of a live document, which may benefit both this quarter and also future quarters of cse403, you are allowed to insert comments. These can be corrections (new and dead tools, new and dead web sites, etc.), added details (limitations on academic accounts for the integrated hosting sites, e.g.), comments on the “good news” and “bad news” of particular tools (to help later students choose more effectively), etc. Insert the comments wherever you think is appropriate, and we’ll respond by editing the document as appropriate. If you prefer, send your suggestions to the course staff by email.

Introduction to software tools for CSE403

In CSE 403, you have a great deal of latitude in choosing your own toolset. Your team is ultimately responsible for choosing and learning these tools. Your whole team should work together to choose, understand, and use your tools — just like in the real world. Over time, you need to become comfortable with reading documentation that is sometimes incomplete or confusing, and with installing and using new software. (We will try to help with tool problems, of course, and don’t hesitate to ask us. However, be aware that we don’t know every tool that you might choose.) In any case, these are skills that will stand you in good stead, no matter where your career takes you.

You may use any programming language you like. However, your project must obey professional standards of modularity and abstraction. Some languages make this very difficult to guarantee, and we strongly recommend against them.

Integrated development hosting

We *strongly recommend* that you use one of the reliable project hosting websites that conveniently integrate the most important development tools such as version control, defect tracking, wikis, etc. The wiki is a good place to host your development homepage. Teams have had success with sites including [Google Code](#), [SourceForge](#), [GitHub](#), and [Bitbucket](#). Unless you want to pay for using these sites, be careful to look at their varying rules for free accounts, which limit things like repositories (how many, public vs. private), about sharing (team size), etc. Most or all of them have better deals for students and other people from universities.

Version control

You must use a version control system for your team. This is a requirement for you, not us! If you try to do this with version control, you’ll regret it. Really. So don’t try. It would be a mistake. Really. Don’t even think about doing this. Really. We’re not kidding. Really.

We strongly recommend that you use a distributed version control system, such as [Mercurial](#) or [Git](#). You might find this [Mercurial tutorial](#) useful if you’re unfamiliar with distributed version control, or want to brush up. More details appear in [Mercurial: The Definitive Guide](#).

We recommend that you use the [Crystal conflict detector](#), which informs you about potential future conflicts in your codebase; this can prevent costly conflicts and merges. Here are some

[student quotes](#) from previous quarters that motivate why you would want to use it, and a [quick start guide](#) for Crystal.

CSE, UW and Other Services

If you need additional resources (a mobile phone, etc.), please tell the staff as soon as possible. We will do our best to accommodate such requests, but cannot make any guarantees. Also remember, that it is required that your team project can be installed, by a staff member, on a fresh [CSE virtual machine](#) image (or on other readily available resources such as attu, cubist, or Amazon Web Services). If you have written a mobile device app, it must run both on an emulator and on some mobile device, but it does not have to run on arbitrary mobile devices.

- CSE's cubist server can host your team's website, database, etc. Please refer to [this page](#) to see what facilities are available, then talk to the staff about your specific needs and we'll send them along to CSE support as required. Do this early because it can take a couple of days to set up.
- Simple web pages can be served via [Google Sites](#), directly from Google Code (serve .html files in your repository directly), SourceForge, and many other sites.
- If you need more sophisticated processing, or a database, or just compute cycles, you can use Amazon Web Services; the CSE 403 staff can provide you an account with \$200 of credit, if you ask well in advance.
- The staff will create a Unix group (for file system permissions) per team on request.
- We require that your team has a mailing list with archives. All CSE 403 staff members must have permission to post to your list and to read its archives, but they should not receive email from your list. You can create a team mailing list through [Mailman/C&C](#), [Google Groups](#), and similar services.
- Mercurial and Git are installed at CSE, and you can also set up a private repository at CSE if you choose not to use a project hosting service. Ask the course staff for details.
- You may create a team wiki page (a good way for a team to share notes) using [MediaWiki](#) from the [CSE 403 wiki](#). The hosting services also generally provide a wiki.
- The staff will set up one [Bugzilla](#) instance for each team who requests it. The hosting services also provide bug trackers.
- The CSE lab machines have a full complement of development environments/tools, including most or all of the following.
 - IDE: [Eclipse](#)
 - Compilers/interpreters: C, C++, C#, Java, Python, PHP, Ruby(-on-rails), etc.
 - Unit test frameworks: Java ([JUnit](#), TestNG, JUnitEE), JavaScript ([JsUnit](#)), C# and .NET ([NUnit](#), csUnit), C ([CUnit](#)), PHP (PHPUnit, SimpleTest; CakePHP incorporates its own unit testing primitives), Ruby (Test::Unit, RSpec, ZenTest), Python (PyUnit)
 - Code coverage: NoUnit, EMMA, Cobertura, Hansel
 - Replay user actions in a browser: [Selenium](#)
- There are a number of diagramming tools that can help with UML diagrams including: [Violet](#), [Dia](#), [UMLet](#), [ArgoUML](#), [ESSModel](#), [Rational Rose](#), [Visual Paradigm](#), Microsoft Visio