

Lab 01: Basics, using DrRacket

The first few questions on this lab can be either very slow or very fast to complete, so don't worry if you don't complete the rest of the questions in your scheduled lab time. Do make sure that you work on them either on your own computer or on a lab computer at a free time. Instructions on how to download a free copy of DrRacket can be found on the "Helpful Tips" page on the course website. That page also has a collection of the tips included in labs.

If you complete this lab way before the end of the lab period, please make use of the time to complete Assignment 0 and/or work on other optional open-ended questions. Each lab will have questions of this nature to accommodate those who finish the other questions quickly.

1. **Logging in**

For your name, use the first 8 characters of your Quest user ID. If your Quest user ID is shorter than 8 characters long, use the entire user ID.

2. **Changing your password**

You must change your password; any accounts with unchanged passwords will be shut down after a week. Once changed, your new password will be used to log into any CS lab Mac or student.cs account.

To change your student.cs password, go to the website:

<https://www.student.cs.uwaterloo.ca/password/>

Enter your WatIAM (Quest) username and password, and click OK.

Read the instructions for choosing a password, then type your password in the first box. When you are finished typing in the box, read the message to the right of the box to determine if your password is acceptable according to the requirements. If it is not, you must try again until you get **Looks OK!**

Retype your new password in the second box. When you get **Looks OK!**, you can Save your password.

3. **Email forwarding**

When you request basic tests on your Racket code for labs or assignments, the resulting email goes to your student.cs account where it is automatically forwarded to whatever you have set as you WatIAM email address. To check or change your WatIAM email address, go to

<http://www.quest.uwaterloo.ca/help/howdoi/students/email.html>
and follow the directions there.

4. **Starting DrRacket**

There should be an icon in the dock (a red, blue and white circle) that you can click on. If not, under Applications in the Go menu along the top of the screen, choose the "Racket" folder with the highest version number to access the icon. You will see a two-part window. The bottom part is the Interactions window and the top part is the Definitions window.

5. Submitting files

Your lab instructor will demonstrate how to submit assignments.

6. Using the Interactions window

Make sure that the window indicates that the language is Beginning Student in the bottom left corner of the window. If not, look at Choosing a Language under Helpful Tips below.

For each step, type into the Interactions window and then press the return key. Be sure to start writing after the space following the last ">" in the window.

- Press the Run button.
- Type `-5` (no spaces). Now try again but with a space between `-` and `5`. Notice the error message that appears.
- Type `10/6` (no spaces). Now control-click on the answer you get (not after the answer, but on the answer) to bring up a dialog box that allows you to change the format. View the different formats.
- Type `(+ (* 3 2) 4 6)`. Notice what happens when you type each `)`.
- [Adapted from HtDP exercise 2.4.1] Type `(+ (10) 20)` and read the error message. Type `(10 + 20)` and read the error message. Type `(+ +)` and read the error message. If you don't understand any of the error messages, ask your lab instructor for help.
- [Adapted from HtDP exercise 2.4.3] Guess what will happen when you type `(+ 5 (/ 1 0))` and then find out. Do the same for `(sin 10 20)` and for `(somef 10)`.
- What happens if you type `(Sin 10)` instead of `(sin 10)`?
- Using the Help Desk (see Helpful tips) to find the function, find the least common multiple of 3425 and 3482.

7. Using the Definitions window.

For these exercises, type into the Definitions window (the top part of the window). After you have typed and pressed the return key, click on the Run button to see the result.

If you are using the Stepper and it warns you that the program has changed, close the Stepper window by clicking on the red button at the top left corner. Then use Run and Step to get to the Stepper again.

- Type `(+ (/ 1 (* 3 2)) (- 4 2) (- 2))` and click in the Stepper window (use the button with the label "Step" and a picture of a foot). Keep pressing on Step until the answer is found. Notice that you can step forward and back. Now click Run to see the answer in the Interactions window. You might wish to change the format so that the numbers match.
- Replace `(- 2)` by `(2)` and then click Run. Read the error message that is obtained.

8. Logging out from your Mac account

Don't do this until you are ready to leave the lab! It can take up to 30 minutes for your new password to be activated. Therefore, you may not be able to log in to a Mac or check your email immediately after changing your password. Before you leave the lab, log out of your Mac account by clicking on the apple in the top left, then selecting "Log Out. . .", and clicking "Log Out" on the dialog box which appears. But if you have time, we recommend you try the optional open-ended questions first.

9. Optional open-ended questions

Since you have a lab instructor in the room to provide assistance, you might consider getting started on Assignment 0; it is available on the "Assignments" page of the course website. After (or instead of) that, choose among the following suggestions. Using the manual for "Beginning Student Language" (see "Help Desk" under **Helpful tips** below), look up and try out various functions on numbers. Read the information on strings linked off the "Resources" page on the course website, and try using some string functions in the Interactions window, and some in the Definitions window. You can also read the information about potatoheads and try out those functions. It may also be helpful to learn more about using the Mac; follow the link off the "Helpful tips" page on the course website.

Helpful Tips

Choosing a language Under "Language" on the menu bar, select "Choose Language...". In the dialog box that pops up, click on the triangle next to "How to Design Programs" (in the category "Teaching Languages") to see the choices of teaching languages. Click on "Beginning Student" and then on the "OK" button. Then click on the "Run" button.

Help Desk Under "Help" on the menu bar, select "Help Desk". In the browser window that opens up, click on "How to Design Programs Languages" in the category "Languages". You can click on "1.4 (or 1.3) Pre-defined Functions" for functions in the Beginning Student Language.

Unhelpful help Avoid using the search box in the Help menu, as it does not confine the search to the documentation for DrRacket.