How to code JAVA program on Windows system?

You can install JAVA compiler and editor to your PC, and work directly on your PC. You will need the following free software. They work for all major windows versions, including XP and 7.

- Download the Java SE Development Kit (JDK) 7 *(or a more recent version, please note you must download JDK, not JRE)* (http://www.oracle.com/technetwork/java/javase/downloads/java-se-jdk-7-download-432154.html) to the Desktop (i.e., Click on either jdk-7-windows-i586.exe or jdk-7-windows-x64.exe (depends of whether your Windows system is 32 bits or 64 bits), check the *Accept License Agreement* box, and click *Windows Offline Installation, Multi-language*). To install, double click the file jdk-7-windows-x64.exe `(this name may be different depends on the version you downloaded)`. We recommend all of the default options. Note the installation directory for later - probably something like `C:\Program Files\Java\jdk1.7.0\bin (this path name may be different depends on the version you downloaded).`

- To make sure that Windows can find the Java compiler and interpreter:
  - For Windows 7, Select *Start -> Control Panel -> System -> Advanced -> Environment Variables -> System Variables -> PATH.*

    For Windows 8, Select *Settings -> Control Panel -> System and security ->System -> Advanced -> Environment Variables -> System Variables -> PATH.*

  - Prepend **`C:\Program Files\Java\jdk1.7.0\bin`**`;` to the *beginning* of the `PATH` variable (please make sure the path name matches the path where the files are stored).
  - Click OK three times.

You might need to switch to *Classic view* instead of *Category view* to discover all of the options.

- Go to website http://www.drjava.org/ , download **Current Stable Release** Windows App**.** Save the file to desktop. Double click the icon on desktop, we can use it edit JAVA file now.

- Once you edited a file in DrJava, and saved it some folder. You can compile it and test it. We suggest you use the command-line interface to compile the program and run it.

You will type commands in an application called the *Command Prompt*.

- Launch the command prompt via *Start -> Run* (for Windows 7) or Search (Windows 8), then type `cmd` in the box. You should see the command prompt; it will look something like:

  ```
  Microsoft Windows [Version 6.2.9200]
  (C) Copyright 2012 Microsoft Corp.
  ```

- To check that you have the right version of Java installed, type the text in boldface below. You should see something similar to the information printed below. (It's important that you see the number `1.5`, but the rest is not critical.)

  ```
  C:\Documents and Settings\Jikai Li>java -version
  java version "1.6.0_04"
  Java(TM) 2 Runtime Environment, Standard Edition (build 1.6.0_04-
  b12)
  Java HotSpot(TM) Client VM (build 1.6.0_04-b12, mixed mode, sharing)
  ```

  Then type:

  ```
  C:\Documents and Settings\wayne>javac -version
  javac 1.6.0_04
  javac: no source files
  ...
  ```

- Since you will be using the Command Prompt frequently, we recommend customizing the default settings. Right-click the title bar of an open Command Prompt window, select *Properties* and then:

  - Set *Layout -> Screen Buffer Size* to 80 x 500.
  - Select *Options -> Edit Options -> QuickEdit Mode*.
  - Select *Options -> Edit Options -> Insert Mode*.

  Click *OK* and check *Save properties for future windows with same title* to make the changes permanent.

You will use the `javac` command to convert your Java program into a form more amenable for execution on a computer.

- From the Command Prompt, navigate to the directory containing your `.java` files, say `C:\introcs\hello`, by typing the `cd` command below.

  ```
  C:\Documents and Settings\wayne>cd c:\introcs\hello
  C:\introcs\hello\>
  ```

- Assuming the file, say `HelloWorld.java`, is in the current working directory, type the `javac` command in boldface below to compile it.

  ```
  C:\introcs\hello\>javac HelloWorld.java
  C:\introcs\hello\>
  ```

  If everything went well, you should see no error messages.

You will use the `java` command to execute your program.

- From the Command Prompt, type the `java` command below.

```
C:\introcs\hello\>java HelloWorld
Hello, World
```

If all goes well, you should see the output of the program - `Hello,World`.

Tricks

In the command line window, you can type "cls" to clean window display. You can type "dir" to list the contents inside the current folder. You can type "cd .." to change folder to upper level. You can type "help" to list all possible commands.

If your program gets stuck in an infinite loop, type `Ctrl-c` to break out.

If you are entering input from the keyboard, you can signify to your program that there is no more data by typing `Ctrl-z` for EOF (end of file). On some DOS systems the first line of output sent to the screen after you enter EOF will be rendered invisible by DOS. This is not a problem with your code, but rather a problem with DOS. To help you debug your program, we recommend including an extra `System.out.println();` statement before what you really want to print out. If anyone knows of a better fix, please let us know!

Here are a few suggestions that might help correct any installation woes you are experiencing. If you need assistance, don't hesitate to contact a me.

When I type, "java -version" I get an error. Check that you edited your `PATH` environment variable as indicated. A missing `;` or an added `%` is enough to screw things up. Close and re-open a command prompt. Type `path` at the command prompt and look for an entry that includes `C:\Program Files\Java\jdk1.6.0_04\bin;`. Check that the version number `1.6.0_04` matches the one you installed since Sun updates Java periodically and you might have a more recent version. If this doesn't fix the problem, check if you have any old versions of Java on your system. If so, un-install them and re-install Java.

The command "java -version" works, but not "javac -version". Any thoughts? It's likely a path issue. Try the suggestions from the previous question. Also check that you installed the JDK properly by checking that the folder `Program Files\Java\jdk1.6.0_04\bin` exists.

How can I check the values of my `PATH` variable? Type the following at the command prompt.

```
C:\introcs\hello\> echo %PATH%
```

The `PATH` variable should begin with `C:\Program Files\Java\jdk1.6.0_04\bin;`.

I can compile with javac, but I get the error message "Exception in thread "main" java.lang.NoClassDefFoundError: HelloWorld" when I try to execute it with java. First, be sure that `HelloWorld.class` is now in the current directory. Be sure to type `java HelloWorld` without a trailing `.class` or `.java`. Check that the command "`java -version`" works. Now try to execute with "`java -cp . HelloWorld`". If this works, you need to edit your classpath. (iTunes has a proclivity for changing the *classpath*, so if you recently upgraded iTunes, this is likely the source of the problem.)

Setting the Classpath in Java

To use our standard library files (`StdDraw.java`, `StdIn.java`, and `StdOut.java`), you can place them in the same directory as the main program you are writing. A drawback with this is approach is that you end up with many copies of the same library files, scattered in different directories. Java's *classpath* mechanism allows you to store and access the library files from a common directory.

Organizing the Shared Libraries

Place the shared library files (`StdDraw.java`, `StdIn.java`, and `StdOut.java`) in a commond directory, say `C:\introcs`. Go to that directory and compile them.

Setting the Classpath in DrJava

To set the classpath for DrJava:

- From DrJava, choose the menu option *Edit -> Preferences -> Resource Locations -> Extra Classpath -> Add* and select `C:\introcs`. Click the *Apply* button, then the *OK* button.

Setting the Classpath for the Windows Command Prompt

To set the classpath for the Windows 8 Command Prompt:

- Select *Setting -> Control Panel -> System and Security ->System -> Advanced -> Environment Variables -> System Variables -> CLASSPATH.*
- If the Classpath variable exists, prepend **`.;C:\introcs`** to the *beginning* of the `CLASSPATH` varible.
- If the `CLASSPATH` variable does not exist, select *New*. Type **`CLASSPATH`** for the variable name and **`.;C:\introcs`** for the variable value.
- Click OK three times.

Troubleshooting

Here are a few suggestions that might help correct any installation woes you are experiencing. If you need assistance, don't hesitate to contact a staff member.

How can I check the value of my `CLASSPATH` variable?

- *Windows Command Prompt* Type the following at the command prompt.

  ```
  C:\introcs\hello\> echo %CLASSPATH%
  ```

  The `CLASSPATH` variable should begin with `.;C:\introcs`.

Windows Command Prompt in 15 Minutes

This tutorial describes a few of the most important commands that you will use on the Windows command prompt.

What is Command Prompt?

Learning the Command Prompt also provides a gradual transition to Unix and Linux systems, which are prevalent in science, engineering, and industry. The Command Prompt works at a lower level than Windows. This means that you will have more control over the machine. The disadvantage is that it is less user-friendly.

To launch Command Prompt select *Search* and type `cmd` in the box.

The Command Prompt shows up as a black terminal window. The *command prompt* should look something like:

```
C:\>
```

This is where you type commands. The boldface type below (that follows the command prompt) is what you should type as you work through this tutorial. Windows does not care if you use upper or lower case. That means that command `cd` is the same as `CD`. It also means that, in Windows, file `HelloWorld.java` is the same as `helloworld.java`. This is *not* true in the system to which you will be submitting your files.

Some Useful Commands

- **javac:** To compile a Java program, use the `javac` command.

  ```
  C:\>javac HelloWorld.java
  ```

- **java:** To run a successfully compiled Java program, use the `java` command.

  ```
  C:\>java HelloWorld
  ```

- **more:** Display the contents of a file one screenful at a time.

-
  ```
  C:\>more HelloWorld.java
  ```

- **exit:** Exit the Command Prompt program and close the terminal window.

  ```
  C:\>exit
  ```

Working with Files and Directories

You can also use Command Prompt commands to organize files into a directory hierarchy. These commands are equivalent to corresponding commands that you access via the Windows point-and-click interface. It is useful to be familiar with both interfaces for managing files.

- **dir:** To view the contents of a directory, type `dir`. This command will list all the files and directories within the current directory. It is analogous to clicking on a Windows folder to see what's inside.

  ```
  C:\> dir
   Volume in drive C has no label.
   Volume Serial Number is C8C7-BDCD

   Directory of C:\

  10/26/2004  01:36 PM         0 AUTOEXEC.BAT
  10/26/2004  01:36 PM         0 CONFIG.SYS
  02/10/2005  01:36 PM       126 HelloWorld.java
  12/09/2004  12:11 AM    DIR    Documents and Settings
  02/10/2005  08:59 PM    DIR    introcs
  11/02/2004  08:31 PM    DIR    j2sdk1.4.2_06
  12/29/2004  07:15 PM    DIR    Program Files
  01/13/2005  07:33 AM    DIR    WINDOWS
                 3 File(s)           126 bytes
                    5 Dir(s)  32,551,940,096 bytes free
  ```

  There are 7 items in this directory. Some of them are files, like `HelloWorld.java`. Others are directories, like `introcs`.

- **cd:** It is frequently useful to know in which directory you are currently working. In order to find out, type `cd` at the command prompt.

```
C:\> cd
C:\
```

To change directories, use the cd command with the name of a directory.

```
C:\> cd introcs
```

Now, the command prompt will be:

```
C:\introcs>
```

To see what is in this directory type:

```
C:\introcs> dir
 Volume in drive C has no label.
 Volume Serial Number is C8C7-BDCD

 Directory of C:\introcs

02/10/2005  08:59 PM    DIR            .
02/10/2005  08:59 PM    DIR            ..
02/03/2005  11:53 PM               126 HelloWorld.java
01/17/2005  01:16 AM               256 readme.txt
               2 File(s)            382 bytes
               2 Dir(s)
```

To return to the previous directory, use the cd command, but this time followed by a space and two periods.

```
C:\introcs> cd ..
C:\>
```

- **mkdir:** To create a new directory, use the command mkdir. The following command creates a directory named hello, which you can use to to store all of your files associated with the Hello World assignment.

```
C:\introcs> mkdir hello
```

To see that it actually worked, use the dir command.

```
C:\introcs> dir
 Volume in drive C has no label.
 Volume Serial Number is C8C7-BDCD

 Directory of C:\introcs

02/10/2005  08:59 PM    DIR            .
02/10/2005  08:59 PM    DIR            ..
02/11/2005  02:53 PM    DIR            hello
02/03/2005  11:53 PM               126 HelloWorld.java
01/17/2005  01:16 AM               256 readme.txt
               2 File(s)            382 bytes
               3 Dir(s)
```

- **move:** Now, move the two files HelloWorld.java and readme.txt into the hello directory using the move command.

```
C:\introcs> move HelloWorld.java hello
C:\introcs> move readme.txt hello
C:\introcs> dir
 Volume in drive C has no label.
 Volume Serial Number is C8C7-BDCD
 Directory of C:\introcs

02/10/2005  08:59 PM    DIR            .
02/10/2005  08:59 PM    DIR            ..
02/11/2005  02:53 PM    DIR            hello
               0 File(s)              0 bytes
               3 Dir(s)
```

The two files are no longer visible from the current directory.

To access the two files, change directories with the `cd` command. Then use the `dir` command to see what is in this new directory.

```
      C:\introcs> cd hello
      C:\introcs\hello> dir
       Volume in drive C has no label.
       Volume Serial Number is C8C7-BDCD

       Directory of C:\introcs\hello

      02/10/2005  08:59 PM    DIR            .
      02/10/2005  08:59 PM    DIR            ..
      02/03/2005  11:53 PM               126 HelloWorld.java
      01/17/2005  01:16 AM               256 readme.txt
                     2 File(s)            382 bytes
                     2 Dir(s)
```

You can also use `move` to rename a file. Simply specify a new filename instead of a directory name. Suppose you accidentally messed up the upper and lower case and had saved HelloWorld.java as helloworld.java. Use two move commands to fix it.

```
      C:\introcs\hello> dir
       Volume in drive C has no label.
       Volume Serial Number is C8C7-BDCD

       Directory of C:\introcs\hello

      02/10/2005  08:59 PM    DIR            .
      02/10/2005  08:59 PM    DIR            ..
      02/03/2005  11:53 PM               126 helloworld.java
      01/17/2005  01:16 AM               256 readme.txt
                     2 File(s)            382 bytes
                     2 Dir(s)

      C:\introcs\hello> move helloworld.java temp.java
      C:\introcs\hello> move temp.java HelloWorld.java
      C:\introcs\hello> dir
       Volume in drive C has no label.
       Volume Serial Number is C8C7-BDCD

       Directory of C:\introcs\hello

      02/10/2005  08:59 PM    DIR            .
      02/10/2005  08:59 PM    DIR            ..
      02/03/2005  11:53 PM               126 HelloWorld.java
      01/17/2005  01:16 AM               256 readme.txt
                     2 File(s)            382 bytes
                     2 Dir(s)
```

It takes two moves because Windows won't let you move to an already existing filename and, to Windows, `helloworld.java` is the same as `HelloWorld.java`.

- **copy:** To make a copy of a file, use the `copy` command. The following command creates a backup copy of our HelloWorld.java program. This is especially useful when you modify a working program, but might want to revert back to the original version if your modifications don't succeed.

  ```
  C:\introcs\hello> copy HelloWorld.java HelloWorld.bak
  C:\introcs\hello> dir
   Volume in drive C has no label.
   Volume Serial Number is C8C7-BDCD

   Directory of C:\introcs\hello

  02/10/2005  08:59 PM    DIR            .
  02/10/2005  08:59 PM    DIR            ..
  02/03/2005  11:53 PM               126 HelloWorld.java
  01/17/2005  01:16 AM               256 readme.txt
                 2 File(s)            382 bytes
                 3 Dir(s)
  ```

- **del:** Subsequently, you might want to clean up useless files. The `del` command deletes a file.

  ```
  C:\introcs\hello> del HelloWorld.bak
  C:\introcs\hello> dir
   Volume in drive C has no label.
   Volume Serial Number is C8C7-BDCD

   Directory of C:\introcs

  02/10/2005  08:59 PM    DIR            .
  02/10/2005  08:59 PM    DIR            ..
  02/03/2005  11:53 PM               126 HelloWorld.java
  01/17/2005  01:16 AM               256 readme.txt
                 2 File(s)            382 bytes
                 3 Dir(s)
  ```

  WARNING: When you revise a file in jEdit, the jEdit program will automatically save a backup copy of your original file in the same directory. The name of the backup file will be the name of the original file with a `~` at the end. When you submit your program be careful to submit `HelloWorld.java` and not `HelloWorld.java~` which is an old version of the file and has the wrong name.

- **wildcards:** You can also apply the `copy`, `del`, and `move` commands to several files (or directories) at once. To create a new directory called `loops`, and copy all of the files in the `hello` directory `C:\introcs\hello\` into this newly created directory type:

  ```
  C:\introcs> mkdir loops
  C:\introcs> copy c:\introcs\hello\* loops
  ```

  Here the `*` matches all files in the `C:\introcs\hello` directory. It copies them to your newly created `loops` directory.

Redirection

Two important abstractions in Command Prompt are *standard input* and *standard output*. By default standard input is your keyboard, and standard output is your computer screen. For example, in Assignment 1, we write a program `CenterofMass.java` that reads input using StdIn.java and writes output using System.out.println(). To run our program, the user types the command "`java CenterofMass`" and enters double type values in triplets: `xposition yposition mass` from the keyboard. The results appear in the terminal window.

```
C:\introcs\loops> java CenterofMass
0 0 10
1 1 10
0.5  0.5  20
```

- **Redirecting standard input.** As an alternative, we can create a file that consists of the same six input numbers. Using a text editor (like jEdit), create a file named `input.txt`, and type in the six numbers. After saving the file in the `loops` directory, type the following command to verify that you entered the integers correctly:

  ```
  C:\introcs\loops> more input.txt
  0 0 10
  1 1 10
  ```

  Then to read the integers from the file instead of the keyboard, we use the redirection symbol "<".

  ```
  C:\introcs\loops> java CenterofMass < input.txt
  0.5  0.5  20
  ```

  This produces exactly the same result as if the user had typed the numbers, except that the user has no opportunity to enter numbers from the keyboard. This is especially useful for two reasons. First, if there are lots of input values (there are over 700 inputs for Assignment 2) it would be tedious to retype them in each time we run our program. Second, it allows programs to be automated, without waiting for user interaction. This means that your grader can process your homework programs without typing in the input values by hand each time.

- **Redirecting standard output.** Similarly it is possible to redirect the output to a file instead of to the screen. Continuing with the same example, if we want to save the output permanently, we can use the output redirection symbol '>'.

  ```
  C:\introcs\loops> java CenterofMass > output.txt
  0 0 10
  1 1 10
  ```

  The user still types in the input values from the keyboard, but instead of sending the output to the screen, it is sent to the file named `output.txt`. Note that all printf output is sent to the file, even the statement that tells the user what to do. Be careful, if the file `output.txt` already exists, it will be overwritten. (To append use '>>' instead.)

  ```
  rhea.tcnj.EDU% more output.txt
  ```

- **Redirecting standard input and standard output.** It is often useful to use both redirection operations simultaneously.

  ```
  C:\introcs\loops> java CenterofMass < input.txt > output2.txt
  ```

  After executing this command, no output appears on the screen, but the file output2.txt now contains exactly the same data as `output.txt` above.

Piping

Another useful abstraction is *piping*. Piping is when the output of one program is used as the input of another program. For example, suppose we want to view the output of a program, but there is so much that it whizzes by on the screen too fast to read. (The program `RandInts.java` prints out a bunch of random integers.) One possible way to accomplish this is to type the following two commands.

```
C:\introcs> java RandInts > temp.txt
C:\introcs> more < temp.txt
```

Note that `more` will work by redirecting the file temp.txt to standard input (as is done here) or by simply using the filename (as is done at the beginning of the document). Instead, we could do this in one line using the pipe symbol '|'

```
C:\introcs> java RandInts | more
```

This is often useful when debugging a program, especially if your program goes into an infinite loop and you want to see the first few values that it prints.

How to work from home/dorm?

If you live off-campus and want to use the SUN workstations in Holman 117 and you are using *Windows XP or Windows 7*, you should download the following software first. All of them are free.

- **PuTTY**, which is available from http://www.chiark.greenend.org.uk/~sgtatham/putty/ . Click “Download” on the webpage, download “putty.exe”, save it to you desktop.

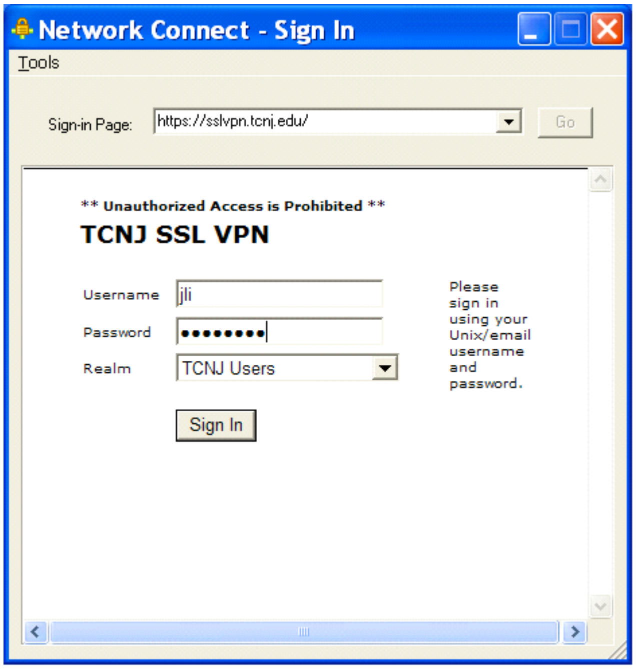
- **Bitvise Tunnelier** is available from http://www.bitvise.com/tunnelier-download/. It is a user friendly software. I strongly suggest you use it. This software can not only setup SSH connection, but also upload/download files.

- **VNC Viewer**, which is available from http://www.realvnc.com/products/free/4.1/download.html . Fill out the form on the webpage, you will receive an email instructing you how to download. This free software is compatible with Windows XP. However, if your PC is running *Windows 7*, you need download/buy the Personal Edition. The cost of this Personal Edition is about $30. The link to Personal Edition is http://www.realvnc.com/products/download.html .

- **TCNJ SSL VPN**, which is available from http://www.tcnj.edu/~nts/sslvpn.html . Click “Using the TCNJ SSL VPN”, download the manual. Click “Manual SSL VPN Install”, then download NCInst.exe if your system is 32 bits, otherwise download NCInst64.exe if your system is 64 bits. If you have no idea how many bits your CPU has, try NCInst.exe first. Follow the manual you just downloaded, ***Install*** TCNJ SSL VPN.

Once you have done the above, you can try to connect to beast.tcnj.edu or the computers in Holman 117.

- Start TCNJ SSL VPN. Click *All Programs* -> *Juniper Networks* -> *Network Connect 6.0.0* -> *Network Connect*. Then you will see the following window,



Sign-in Page: https://sslvpn.tcnj.edu/

** Unauthorized Access is Prohibited **

TCNJ SSL VPN

Username: jli

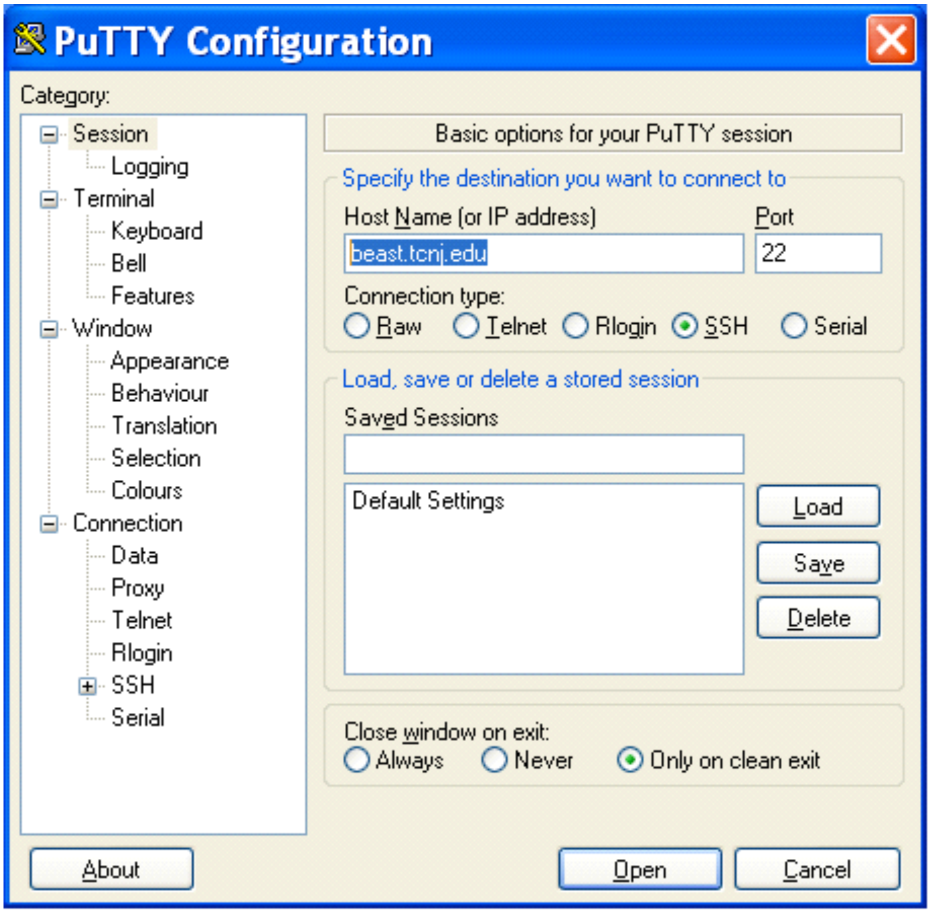
Password: ••••••••

Realm: TCNJ Users

Please sign in using your Unix/email username and password.

Type in your TCNJ username and password, then VPN connection will be setup automatically.

- Double click “PuTTY” icon on your desktop, you will see



PuTTY Configuration

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address): beast.tcnj.edu

Port: 22

Connection type: ○ Raw ○ Telnet ○ Rlogin ● SSH ○ Serial

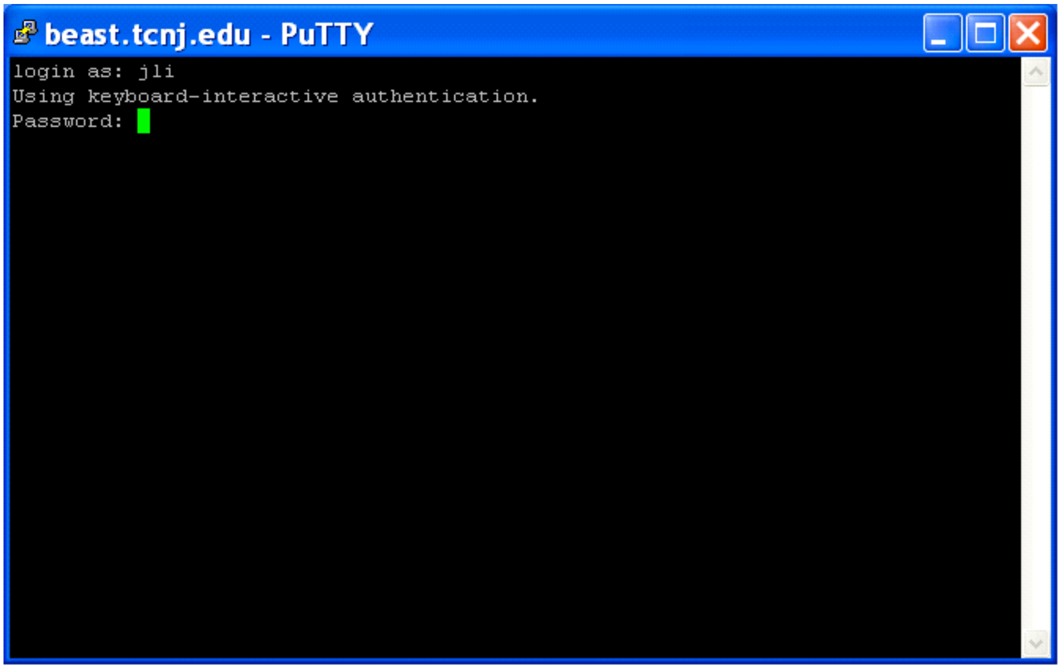
Load, save or delete a stored session

Saved Sessions

Default Settings

Close window on exit: ○ Always ○ Never ● Only on clean exit

Please type “beast.tcnj.edu” or “beauty.tcnj.edu”into Host Name field. Press return key (or “Open”). You will see another window looks like:



```
login as: jli
Using keyboard-interactive authentication.
Password: 
```

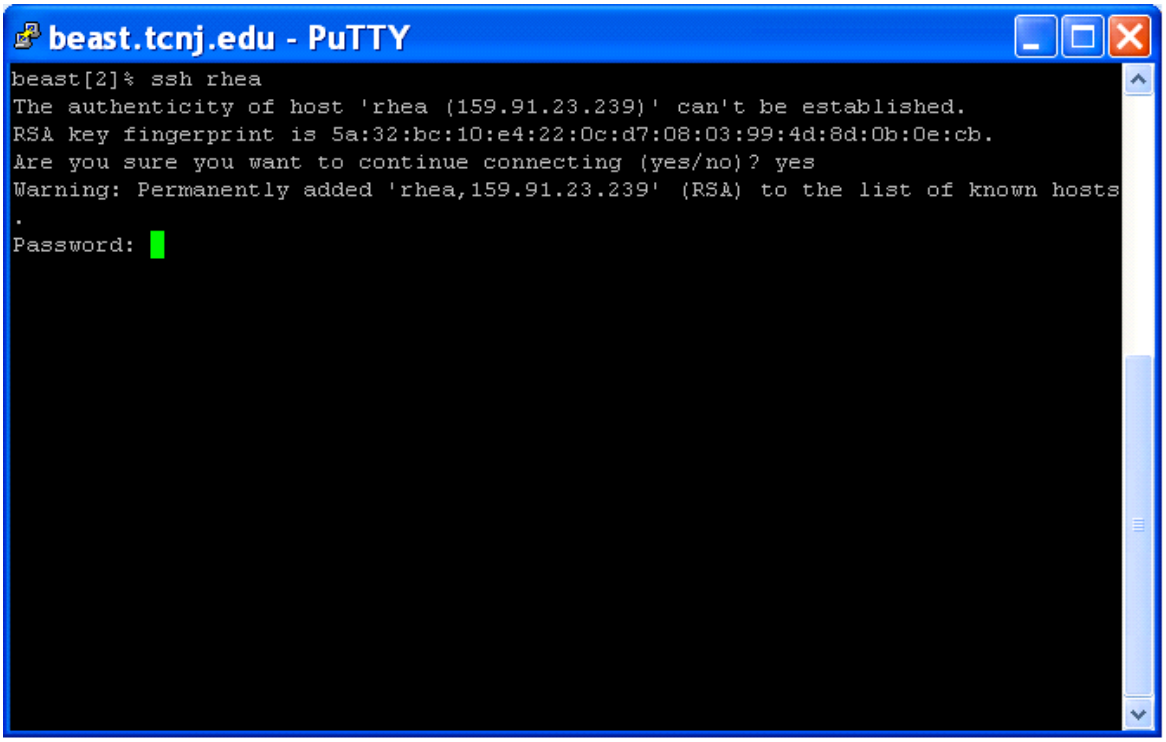
Please type in your TCNJ username and password. If the information typed is correct, you will be presented with Beast prompt. Choose one computer from Holman 117. You can the following command to check the computer name in lab:

```
uname -a
```

You are suggested to choose the computer you used in lab. Without loss of generality, in the following discussion, we choose *rhea* as our target machine. In the PuTTY window, you can type the following command at Unix prompt

```
ssh rhea
```

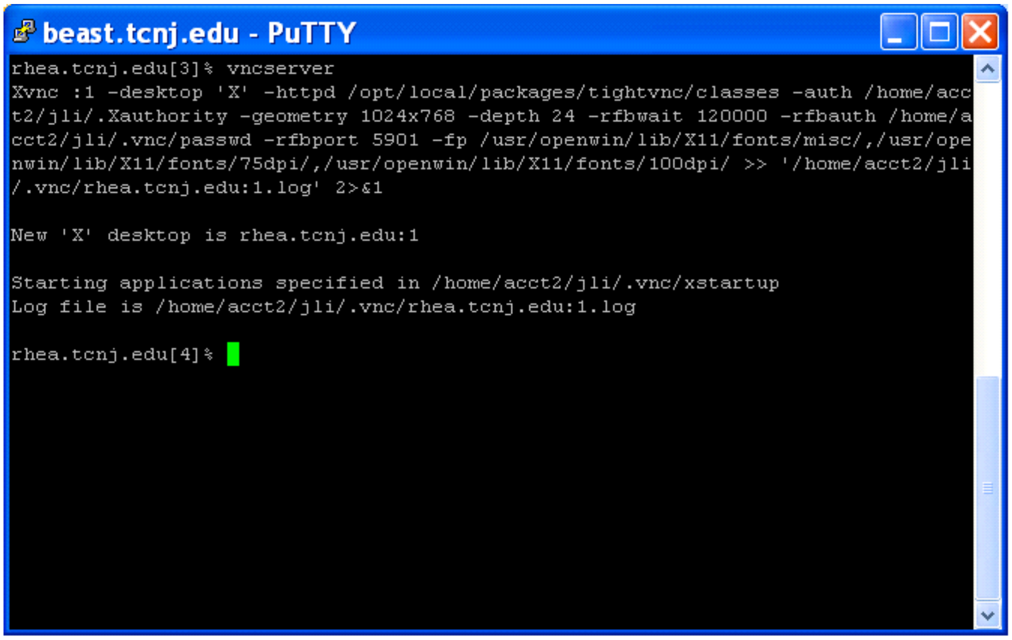
Then, type “yes” and your password. You will log into computer, rhea, in Holman 117.



```
beast[2]% ssh rhea
The authenticity of host 'rhea (159.91.23.239)' can't be established.
RSA key fingerprint is 5a:32:bc:10:e4:22:0c:d7:08:03:99:4d:8d:0b:0e:cb.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'rhea,159.91.23.239' (RSA) to the list of known hosts
.
Password: 
```

Once you logged into the remote machine (in this example, we are using rhea, however, you are encouraged to use the computer you used in your labs). Type the following command at Unix prompt

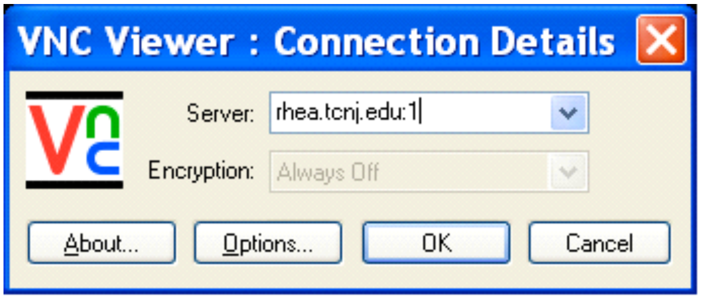
vncserver



```
rhea.tcnj.edu[3]% vncserver
Xvnc :1 -desktop 'X' -httpd /opt/local/packages/tightvnc/classes -auth /home/acc
t2/jli/.Xauthority -geometry 1024x768 -depth 24 -rfbwait 120000 -rfbauth /home/a
cct2/jli/.vnc/passwd -rfbport 5901 -fp /usr/openwin/lib/X11/fonts/misc/,/usr/ope
nwin/lib/X11/fonts/75dpi/,/usr/openwin/lib/X11/fonts/100dpi/ >> '/home/acct2/jli
/.vnc/rhea.tcnj.edu:1.log' 2>&1

New 'X' desktop is rhea.tcnj.edu:1

Starting applications specified in /home/acct2/jli/.vnc/xstartup
Log file is /home/acct2/jli/.vnc/rhea.tcnj.edu:1.log

rhea.tcnj.edu[4]% 
```

The The window will looks like the above. Of all these output lines, we are interested in the line: “New ‘X’ desktop is rhea.tcnj.edu:1”. More specifically, we are interested in “rhea.tcnj.edu:1”. Please note that you may get a different output every time you type “vncserver”.

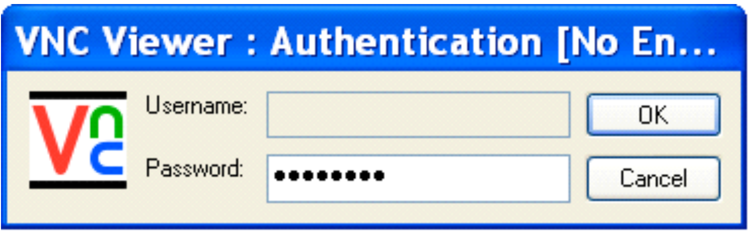
- Double click “VNC Viewer” on desktop.



Server: rhea.tcnj.edu:1

Encryption: Always Off

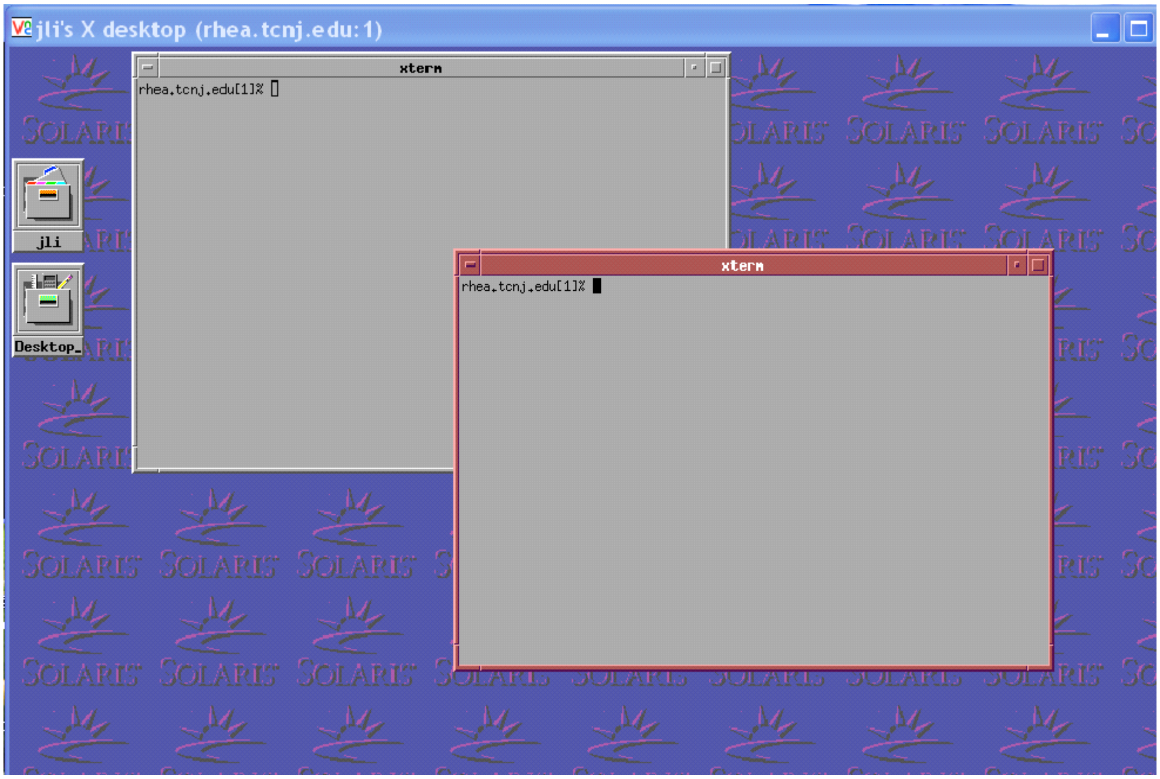
Type the output line we get from above. In this example, it is “rhea.tcnj.edu:1”. Then click “OK”. You will get the following popup



Username:

Password: •••••••••

Type your password. You will get the Unix window! Please note that you may get a window with different layout. It depends on the Operating System of the remote computer.



```
rhea.tcnj.edu[1]%
```

```
rhea.tcnj.edu[1]%
```

How can I transfer data from computer in Holman 117 (or any other Unix machine on campus, like Beast) to my PC?

After install the software and connect your PC to the machine in Holman 370, you can work on your labs and projects in a remote location. After finishing lab/project, you need upload the programs to SOCS. However, because of some unknown technical reason, Firefox does not support VNC Viewer very well. As we are writing this guideline, an attempt to open firefox in VNC window will CLOSE your VNC connection. In fact, this is not big deal, we can use a free and secure software to download the files from Holman 370 to your PC first, then upload the file to SOCS from your PC. In fact, you can use the this software to upload file from PC to remote computer (such as computers in Holman 117) as well.

- The easy way to do that is to **Bitvise Tunnelier**. Open the file transfer window.

Or, you can use a more tedious way to do it. As a Computer Science major, you'd better know this tedious way.

- Go to the following website http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

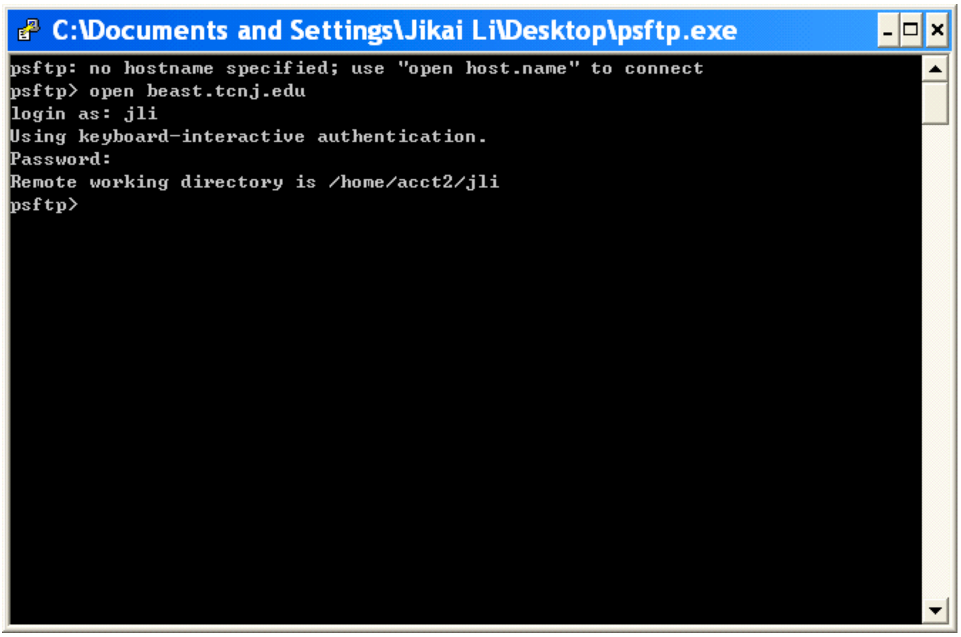
  Download **psftp.exe** to your desktop.

- Double click **psftp.exe** to your desktop, type the following command

  open beast.tcnj.edu

  Please note that your **must** use beast.tcnj.edu as target machine.

  Then type your username and password.



```
psftp: no hostname specified; use "open host.name" to connect
psftp> open beast.tcnj.edu
login as: jli
Using keyboard-interactive authentication.
Password:
Remote working directory is /home/acct2/jli
psftp>
```

Now, psftp is connected to the remote machine beast, which has your files to be downloaded. Because all Unix machines on campus, including the ones in Holman 117 and beast, share the same user files, what you have changed on rhea (or any other computer in Holman 117) will be reflected in computer beast automatically. As a result of that, you can download file from **beast** directly even you worked on a different computer in Holman 117.

Inside the psftp window, you need to change directory to the place where has your files. For example, if your remote directory is csc220/lab2, you can type

cd csc220/lab2

If you want to move to the upper directory, just type

```
cd ..
```

If you want to move back to your home directory, just type

```
cd
```

If you are not sure what is your current directory, type the following command

```
pwd
```

Another useful command is **ls**, which lists all the file names under current directory.

```
ls
```

Once you are inside the right directory and you have already JARed the files in VNC window, type following command to transfer the file to your PC

```
get lab2.jar
```

The file will be saved on your desktop. If you do not need this software anymore, type

```
exit
```

In fact, you can use the same software upload files from PC to remote computer. For example, if you have file somefile.java on your desktop, and you want to upload it to the csc220/lab2 directory in remote machine, just type

```
put somefilejava
```

The file will be uploaded to the directory under csc220/lab2.

In case you need help when you are using Psftp, just type

```
help
```