CS1101C
Briefing: UNIX and C Programming

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Start Off

- First of all, you need a SoC account to begin your programming journey (login to Sunfire). Apply for your SoC account at

  https://mysoc.nus.edu.sg/~newacct

  and follow instructions step by step.

- You will also need a CourseMarker account for submission of take-home labs, apply at

  https://mysoc.nus.edu.sg/~cmarker/get-password.cgi

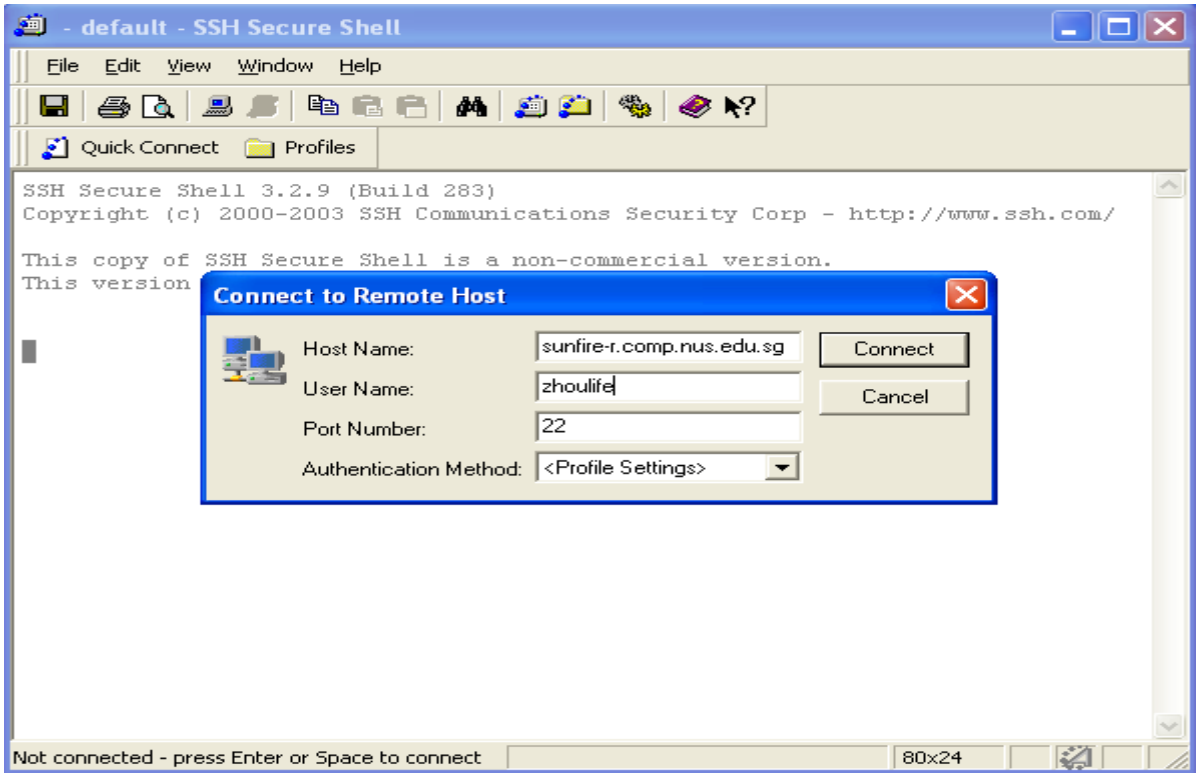
- You'd better get above two accounts ready by week 3 so that you can focus on course materials.

Sunfire Server

- Sunfire is a UNIX server located in the SoC Machine Room. It is the sole platform that we will carry out C programming (sit-in labs) in CS1101C.
- To connect to Sunfire, you need to install a software called “SSH Secure Shell” which is available in IVLE workbin.
- All computers in SoC PL labs have already pre-installed “SSH Secure Shell”.

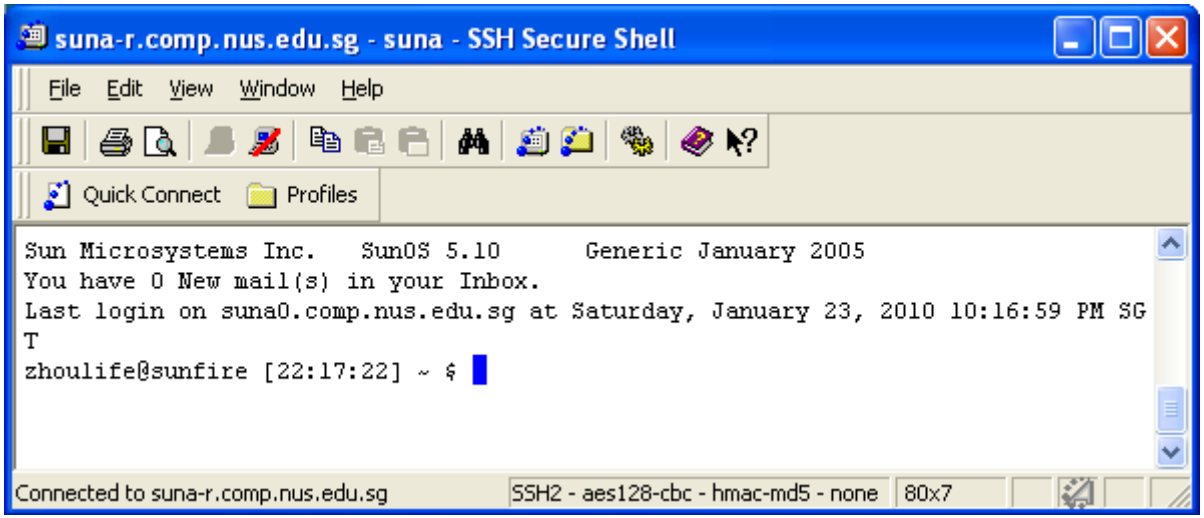
Connect to Sunfire from home

- Launch a “SSH Secure Shell Client” (typically available on desktop after installation), click “Quick Connect”
- Type Sunfire name and your SoC UNIX account (details on next page).



Connect to Sunfire from home (2)

- If you connect to Sunfire on campus, enter host name as: sunfire.comp.nus.edu.sg; if you connect to Sunfire off campus (e.g., at home), enter host name as: sunfire-r.comp.nus.edu.sg
- Enter user name as: your SoC UNIX account
- You will be prompted for password after you press "Enter" key; enter your UNIX account password and you are then connected to Sunfire.

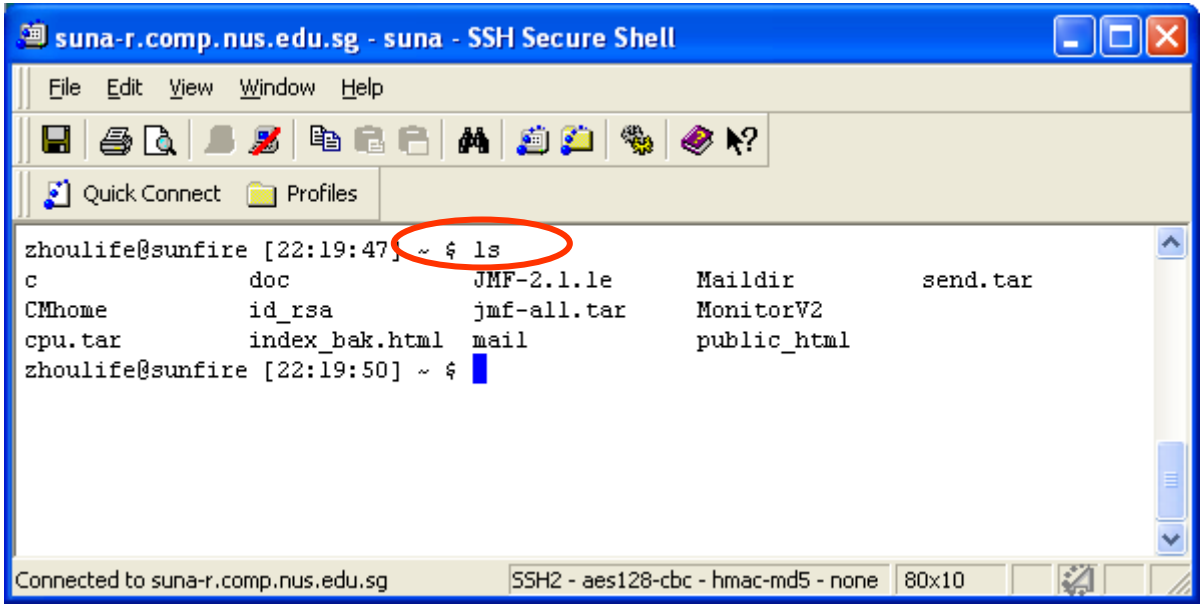


Basic Unix commands

- In a UNIX shell (like sunfire), you need a lot of typing but much less mouse clicking, compared with Windows operating system which you might be more familiar with.
- There are a few useful commands that you need to remember which will facilitate your navigation in the UNIX world.
- Practice is the best way to recognize UNIX commands. Gradually you will be more and more familiar with UNIX commands – so don’t worry too much at the beginning.

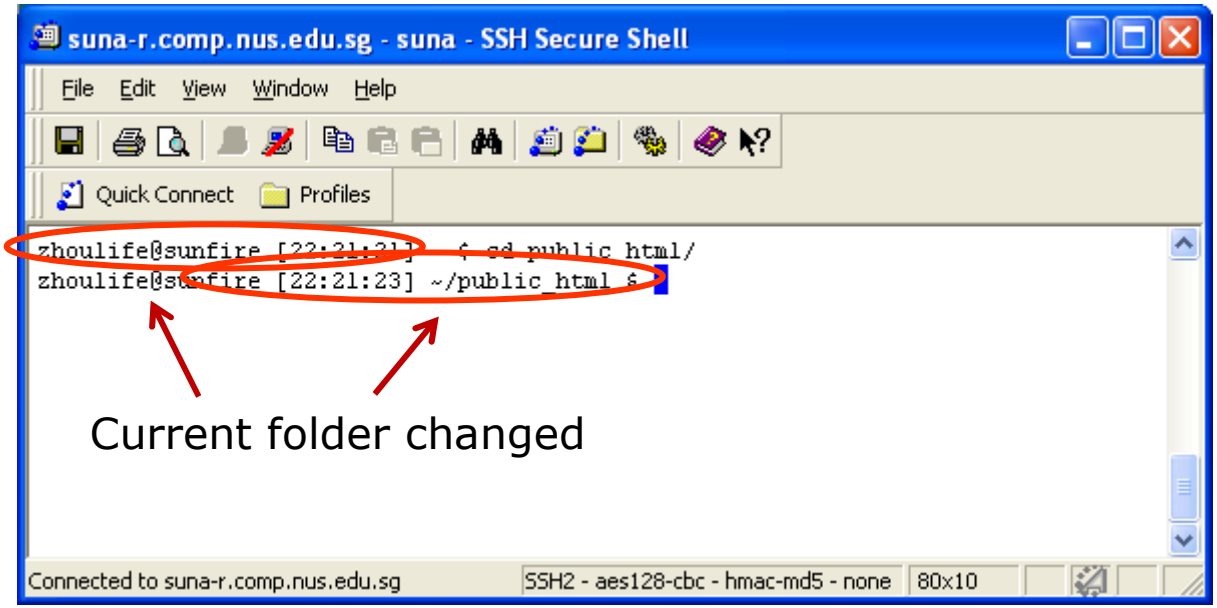
ls command

- ls command (means list directory contents) will enable you to see all the files and subfolders in current directory.
- There are a few more complex usage of ls, but first of all, be familiar with the simplest one – just "ls".



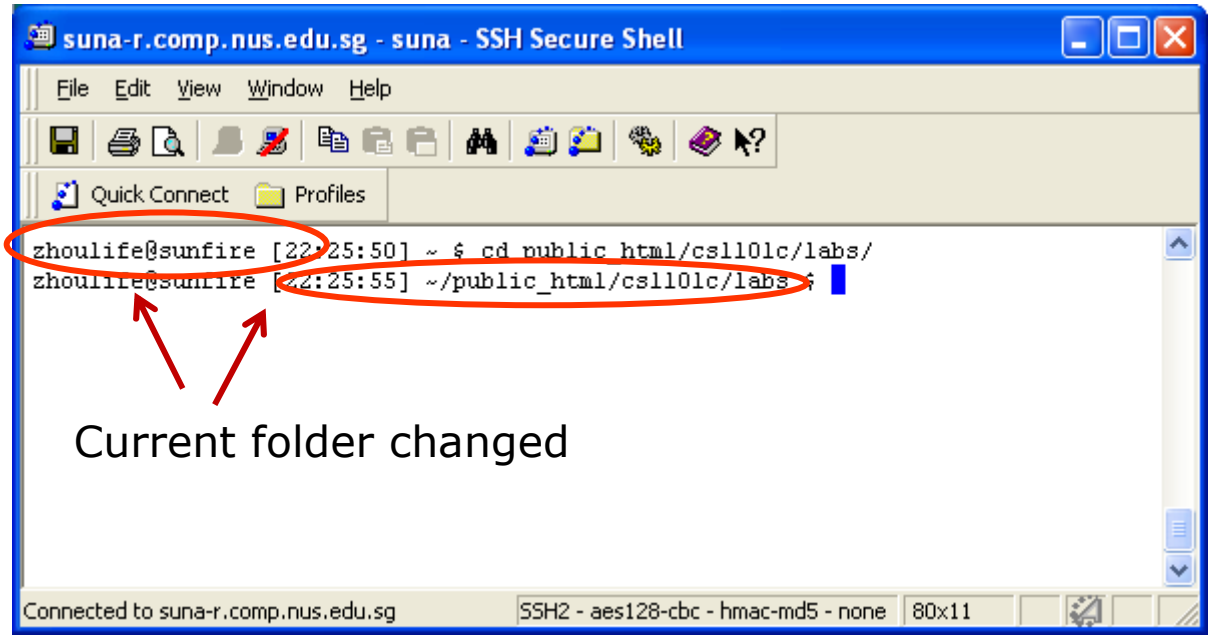
cd command (1)

- cd command allows you to enter a designated directory.
- e.g., cd public_html
- After that, your working directory will be changed to your desired one (see picture below).



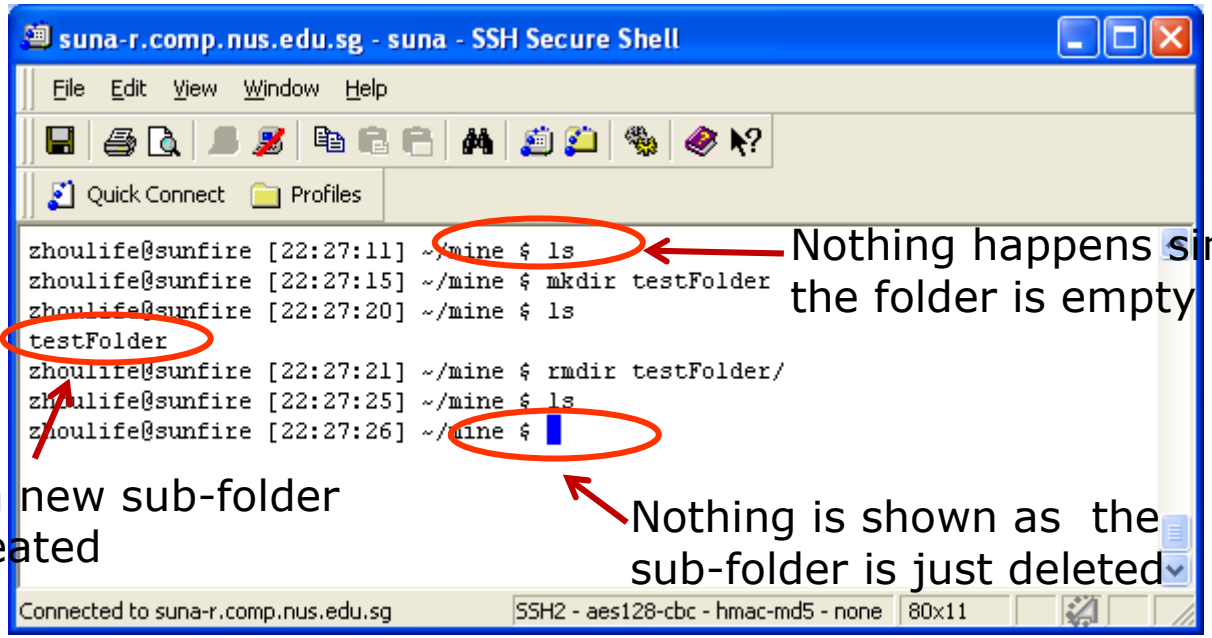
cd command (2)

- You can also navigate to a subfolder of subfolder of subfolder… by giving full path. The folder structure of UNIX is similar to the Windows file system shown in a Windows explorer.
- e.g., cd public_html/cs1101c/labs (destination folder must exist)



mkdir and rmdir commands

- mkdir (means make directory) will create a sub-folder
- rmdir (means remove directory) will delete an *empty* sub-folder



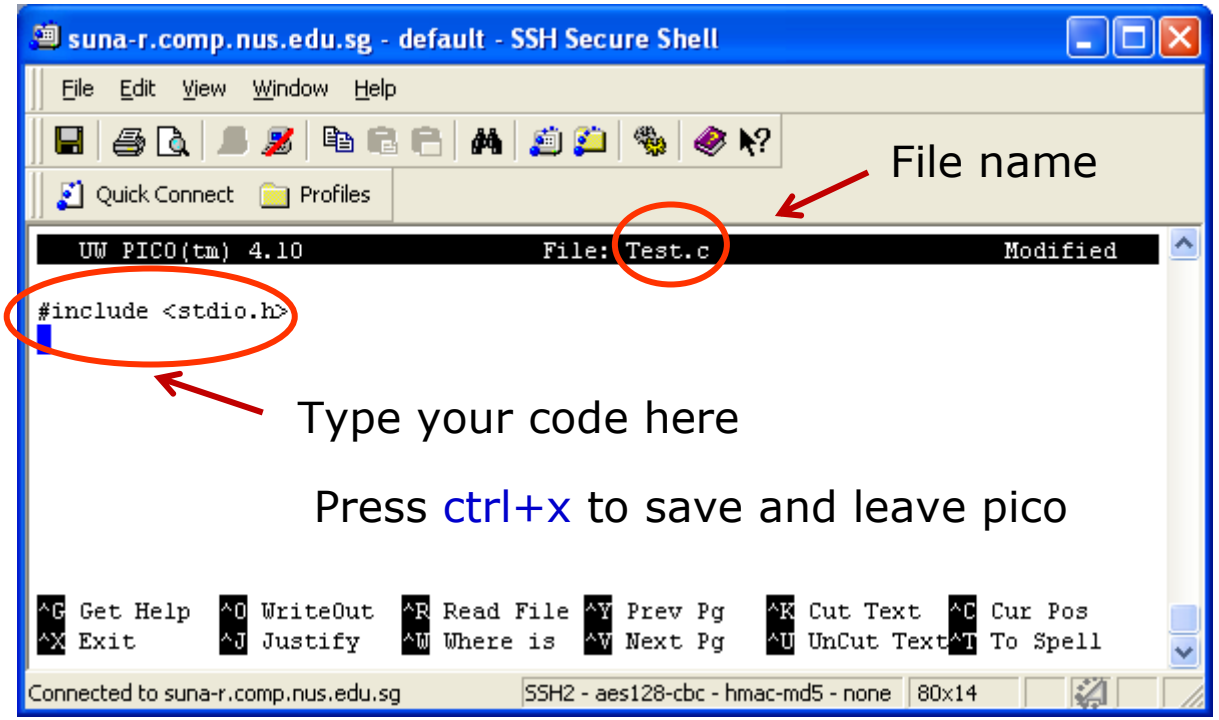
Nothing happens since the folder is empty now

Show a new sub-folder just created

Nothing is shown as the sub-folder is just deleted

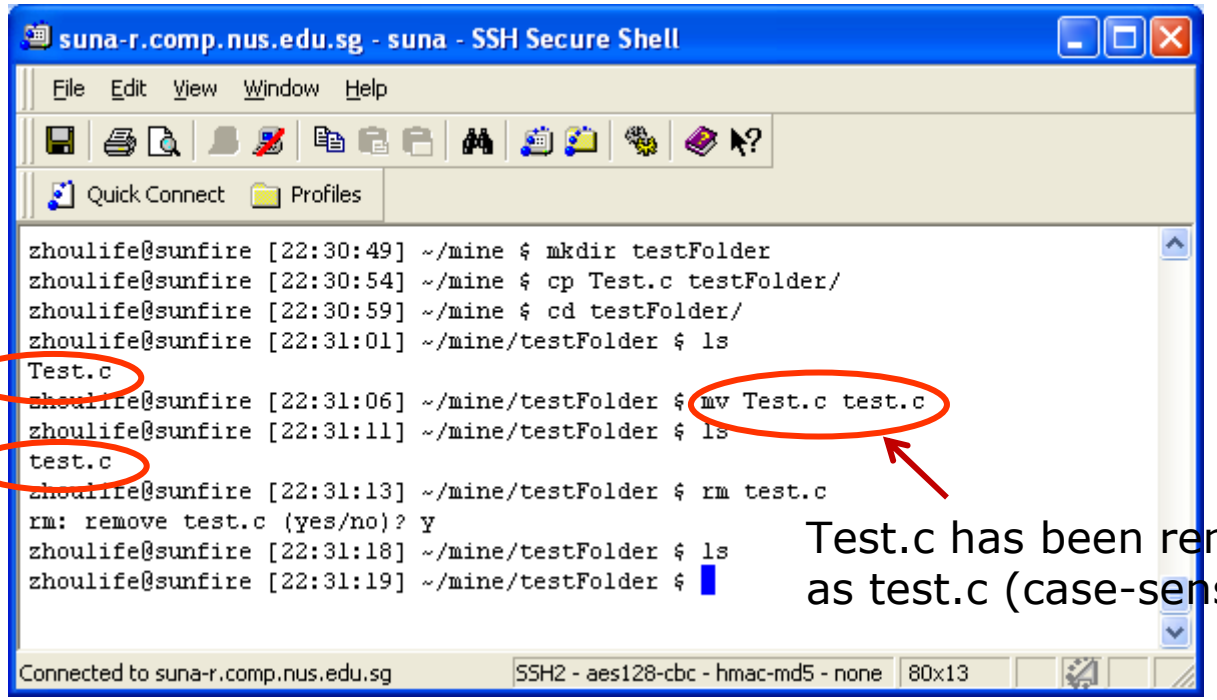
Create a file

- You can either use “pico” or “vim” command to create a file or open an existing file.
- Basic usage: pico filename or vim *filename*
- E.g., pico Test.c (see picture below)



cp, mv and rm commands

- cp command copies a file to another folder.
- mv command move a file to another folder.
- mv command is also used to rename a file.
- rm command deletes a file.

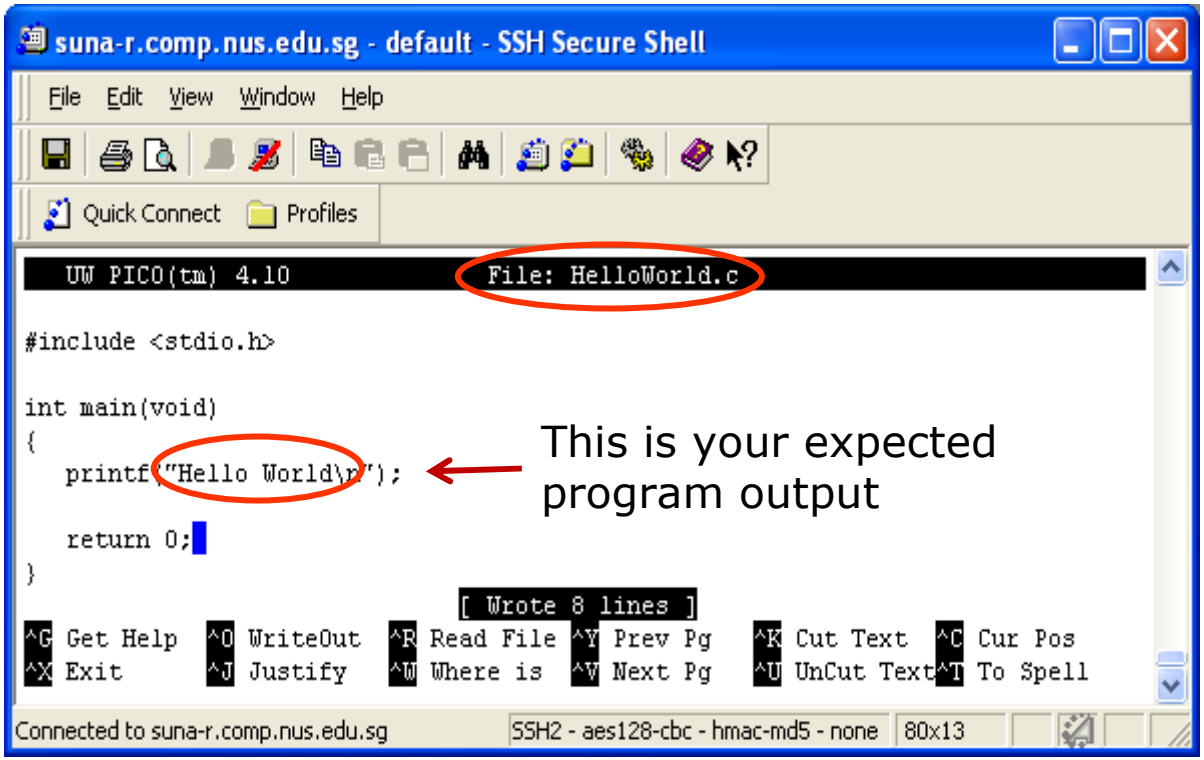


C Programming on Sunfire

- The next few slides will show you two examples of simple C programming on Sunfire.
- First example will show you how to create a text file to store your program, compile it and run it.
- Second example will show you how to open an existing C program, modify it, save it, compile it and run it again.

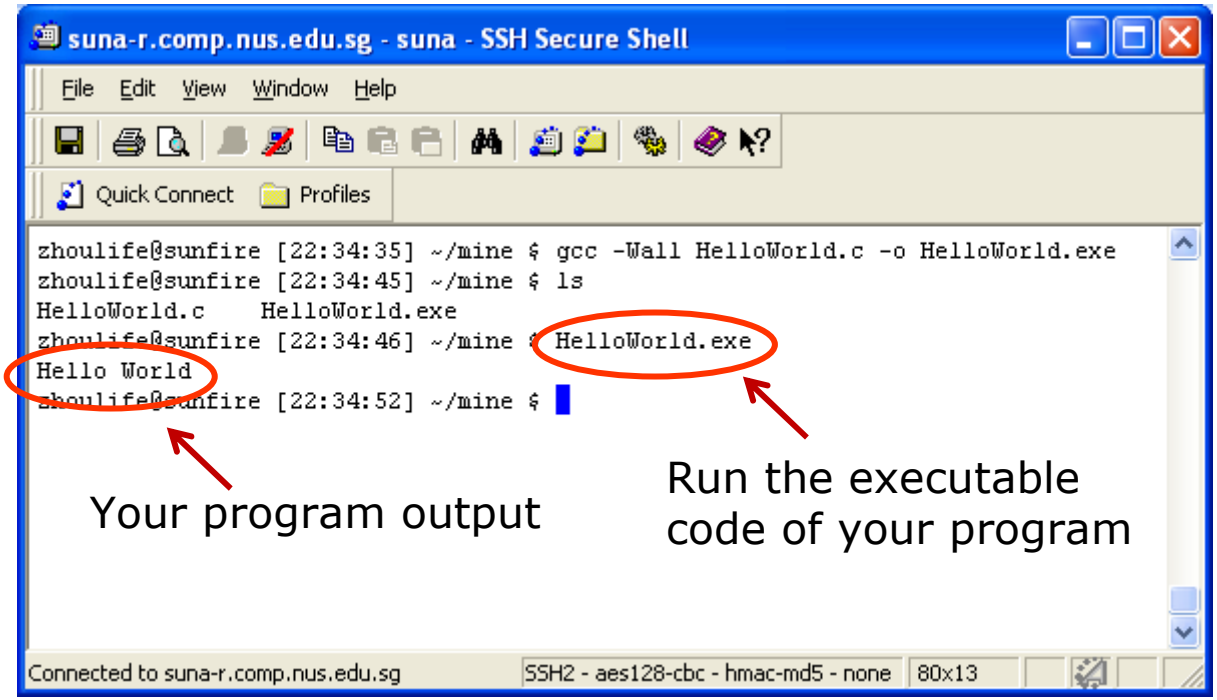
Create and edit HelloWorld.c

- The picture below shows the editing interface of pico (by using command pico HelloWorld.c)
- All the code is typed in manually.
- Press ctrl+x to save your work and leave pico.



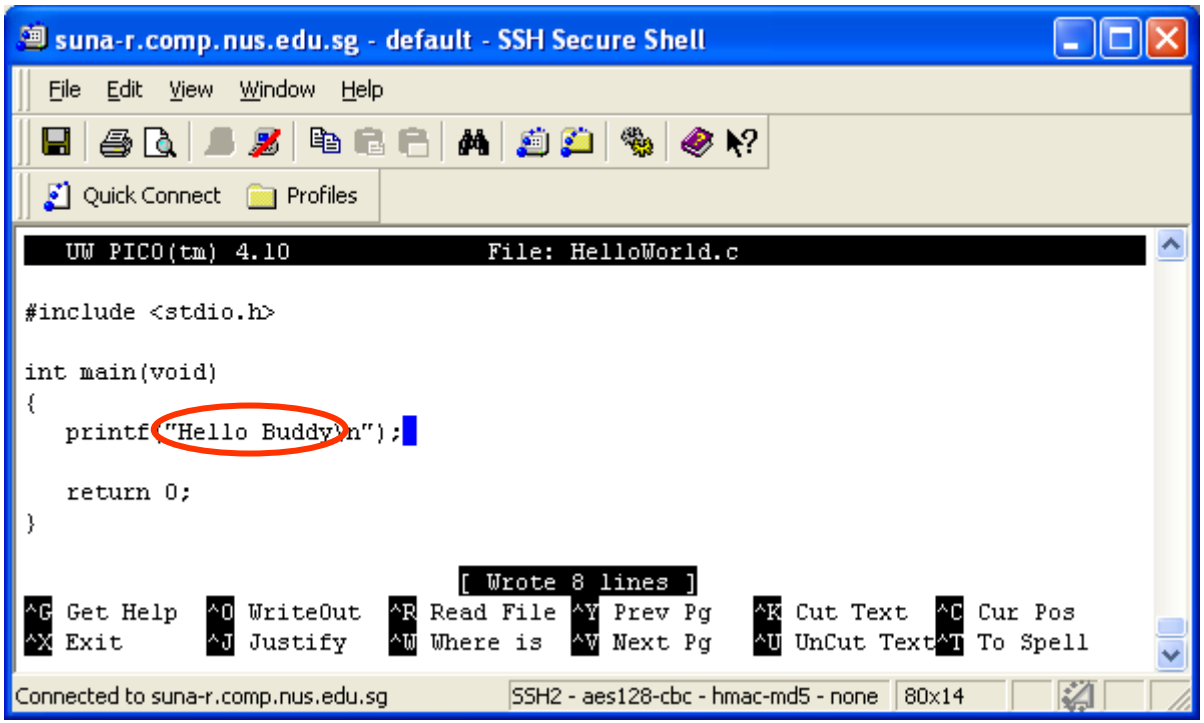
Compile and run HelloWorld.c

- After returning from pico, type command gcc –Wall HelloWorld.c –o HelloWorld.exe to compile your code. You can find that a file called HelloWorld.exe is generated in the same folder.
- Type HelloWorld.exe and observe the output of your program.



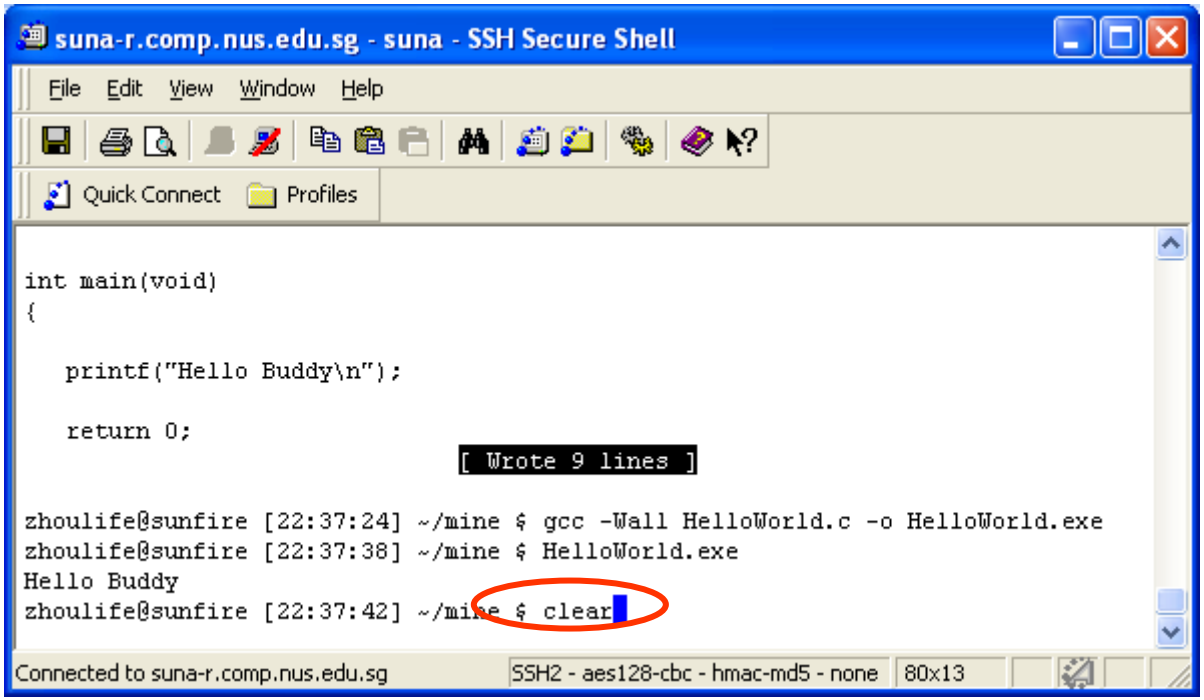
Modify HelloWorld.c

- Type pico HelloWorld.c again and modify your program. Change "Hello world" to "Hello Buddy".
- Save and exit pico (ctrl+x) , re-compile your code (gcc –Wall HelloWorld.c –o HelloWorld.exe) and run it again (HelloWorld.exe). You will get different output from last time!



clear command

- If the screen is too messy and you want to clear it, simple type command clear
- Try the command by yourself.



Logout

- After finishing your job, you may want to exit from Sunfire.
- The command is quite simple: exit
- Try it and say “bye-bye” ☺

Congratulations!

- So far you have created and run your first C program on Sunfire, congratulations!
- Still got a lot not clear? Don't worry, more details will be introduced in week 3 lab.
- You will gain more experience after days and weeks.
- Two useful links on more completed Unix commands and programming:
  http://www.comp.nus.edu.sg/~cs1101c/gettingStarted.html

  http://www.comp.nus.edu.sg/~cs1101x/3_ca/labs/lab0/unix_intro.html
  (please ignore those irrelevant parts if applicable)