

Faculty of Computer Science, Dalhousie University

9-Feb-2026

## DGIN 5201 — Digital Transformation

### Lab 3: Shell, File System, Server (CSLab 1).

Location: Mona Campbell building 1201

Time: 11:35–12:25

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## Lab 3 (CS Lab 1): Shell, File System, Server

Slide notes:

### Lab Overview

- Logging into the server using ssh
- Shell: some useful commands
- File System navigation
- File System: permissions
- Apache web server and sample pages

Slide notes:

### Using timberlea Server

- ssh login into `timberlea.cs.dal.ca`
- First step: open a Terminal or Command Line Interface:
  - Command Line on Windows
  - Terminal on Mac
  - Terminal on Linux
- use the `ssh` command:
 

```
ssh <your_csid>@timberlea.cs.dal.ca
```

where instead of `<your_csid>` you should use your own CSID
- Older Windows: you can use the program PuTTY
  - other options available; e.g., MobaXterm

### Login to timberlea

You can now try to login to the `timberlea` server provided by the Dal FCS computing environment. Your own computer may be a Windows machine, a Mac, or a Linux. You need to use the `ssh` secure protocol to login to `timberlea` and on each of these environment you may need a different application to login.

On any of these three systems, Windows, Mac, or Linux, you can open a Terminal or Command Line interface program. On Windows, this program is called Command Line, and on Mac or Linux it is called a Terminal. The program provides a textual interface where you can execute operating system commands, including the `ssh` command, which we will use to login to the server `timberlea`. If you have problems finding the terminal application, you can search for it by searching for “Command Line” on Windows or “Terminal” on Mac.

Once you open the terminal, you should login to the `timberlea` server by typing:

```
ssh <your_csid>@timberlea.cs.dal.ca
```

where `<your_csid>` is your CSID userid.

The older Windows systems did not use to have the `ssh` command, in which case you will get an error message after the above command. In that case, you can download the known program PuTTY or some other alternative program.

### PuTTY for Older Windows

**Note:** This PuTTY subsection is relevant only if your `ssh` command does not work on Windows.

PuTTY has been a well-known open-source and free program, used on Windows to login using `ssh` to external server. If your `ssh` command does not work, as specified above, you can download PuTTY from the internet.

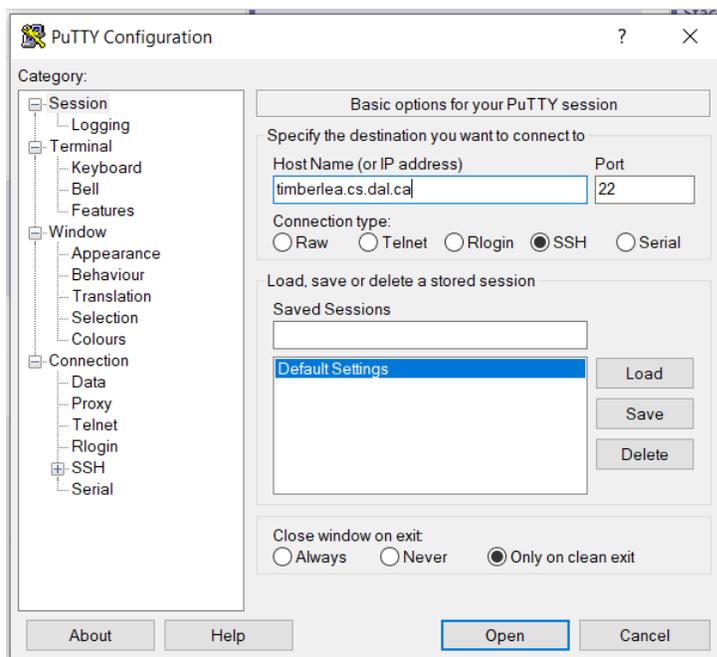
To download PuTTY from Internet, you can search it using Google. However, you should not download just any copy of it for security reasons. The official site of PuTTY is:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

PuTTY is a free implementation of Telnet and SSH for Windows and Unix, along with an `xterm` terminal emulator.

### Running PuTTY

- Install and run PuTTY only if your `ssh` command does not work on Windows
- Double-click the PuTTY icon, and the following window should appear:



You should fill in the basic information: `timberlea.cs.dal.ca` for the Host Name. Make sure that the port number is 22; i.e., Connection type is SSH. You click 'Open' and the login process should start. You are likely to receive a warning about an unknown host key. Normally, this is something that you should be careful about and try to make sure that the offered fingerprint matches the fingerprint of the server, but in a relatively secure network you can accept this connection. Once accepted, the host key is stored with PuTTY and this warning should not appear again.

## Successful Login and Shell Response

Slide notes:

### After Successful Login

- Using the `ssh` command or PuTTY you should login to `timberlea`
- Another popular tool: FileZilla is a good tool to copy files back and forth, but does not provide access to command-line (shell)
- The following exercises should be finished and will be graded as a part of Assignment 1
- Example of command-line (bash shell) access:



```
vlado@timberlea:~$
```

### Example 1 (e1) Creating a Simple Web Page

- Try command: `pwd`
- Enter directory: `public.html`
- Create directories: `dgin5201/e1`
- Set permissions for this directory to be all-accessible: `chmod` command
- Go to directory `dgin5201/e1` and create file `index.html` with the following content:
 

```
<html><body>
This is a very small HTML file.
</body></html>
```
- Make `index.html` all-readable and access it over Web

**Opening Web Page in a Browser.** Now, we can try to open our web page by entering the following URL in a web browser:

`http://web.cs.dal.ca/~userid/dgin5201/e1`

As usual, the `userid` should be replaced with your CS `userid`. The browser should show our very simple web page.

### Concepts Review: Example 1

- `ssh` access, PuTTY, bash shell
- bash commands: `pwd`, `ls`, `cd`, `mkdir`, `chmod`, `rmdir`
- File permissions
- Text editors: `emacs`, `vi`, `pico`, `nano`, or use remote editing: FileZilla, `vscode`
- Emacs editor:
 

```
emacs index.html or emacs -nw index.html
C-x C-s to save, C-x C-c to exit, C-h t to go through simple tutorial (C- means Ctrl and other key)
```
- HTML: simple tags, `html`, `body`
- Web and HTTP access

### Requirements of e1

- At the end of Example 1 (e1), there should be the following directories (folders), files and their permissions:

```
~/public_html/dgin5201          rwx--x--x
~/public_html/dgin5201/e1      rwx--x--x
~/public_html/dgin5201/e1/index.html rwxr--r--
```

- Content of `index.html` was given previously

### File Permissions Review

- Each file or directory has user owner and group owner (group of users)
- Permissions defined for: user, group, other
- Each of these have three permissions: `rwx` — read, write, execute
- For directories 'execute' means actually access
- Examples of using `chmod`: `chmod 664 file.txt`  
`chmod og-r file.txt`  
`chmod u+x,og+r file.txt`  
`chmod u=rw,og= file.txt`  
`chmod a+r file.txt; chmod -R u+r+w+X dir1`

## Hands-on e2: Printable Page, Files Shared

### Example e2: User Registration, Printable Page, Files Shared

- Consider a Conference Management System
- Let us build a conference registration form
- We also want to provide them with some material
- First iteration: Create a printable form
- Create directory `public_html/dgin5201/e2`
- Go to that directory
- Add file `index.html` (content to be given)
- Make sure that the permissions of `e2` are `rwx--x--x`, and of `index.html` are `rwxr--r--`

### Example e2: `public_html/dgin5201/e2/index.html`

```
<html><head><title>Conference Registration</title></head>
<body>
<h1>Conference Registration</h1>

<p>This is a registration page for CoMS.<br/>
For additional documents, please check <a
href="material">here</a>.<br/>
Please enter your information below to register:

<table>
<tr><th align=right>First and last name:</th>
<td>_____</td></tr>
<tr><th align=right>Email:</th>
<td>_____</td></tr>
<tr><th>Area of Interest (DB, HI, DS):</th>
<td>_____</td></tr>
</table>
```