BIF713

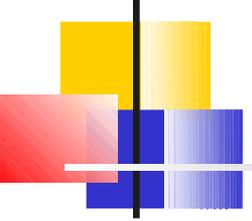## Operating Systems & Project Management
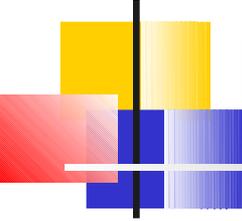
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Today's Topics

- Types of computer servers at Seneca College

- Introduction to the Matrix server

- How to Obtain a Matrix Server Account

- How to Access your Matrix Account
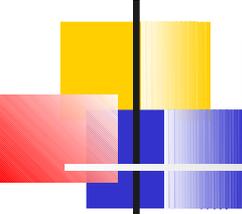 (YouTube Video Tutorials)

- Creating Effective Passwords

Using Linux at Seneca

Throughout your program you will use a variety of Unix/Linux systems. Some servers include:

- SIRIS – Registration & Information System
  (register for courses, timetable, view final grades)
- Scs – Computer Studies webserver (CS Professor notes)
- MySeneca – Student Learning Management System (main)
- Moodle – Alternative Student Learning Management System
- Matrix – Perl, Java programming, Linux Commands

In this course you will primarily use the MATRIX server.

Note: SIRIS is going through a transition (new program name)
      Matrix is actually a cluster of computers, as shown in the following diagram:

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Matrix Server


MATRIX.SENECAC.ON.CA
Cluster diagram
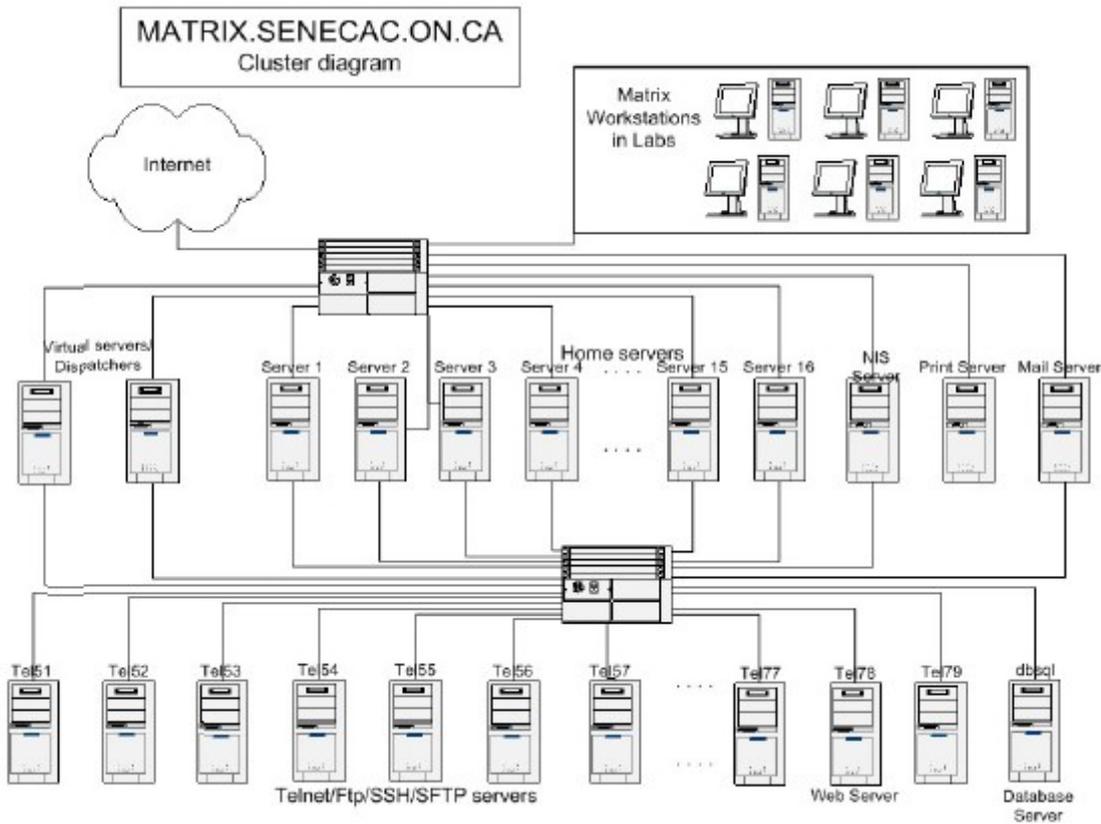
The Matrix server consists of many CPUs connected together to form a Linux-cluster.

This is a cost effective method to provide computing services. Linux clusters are used to a great extent in Bioinformatics!
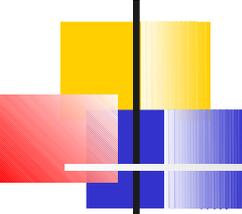
Matrix Server

- Note that the workstations in the lab form part of the Matrix group. When you boot (startup) a PC in a Seneca lab, you are given the choice of starting Windows or starting Linux.

- If you choose Linux, your PC will join the Matrix cluster, and you will have direct access to your files, the Matrix printers, the database server, and so forth.

- You can also connect to Matrix from a Windows system within the Seneca network, or from outside Seneca via the Internet so you can work on this server from home or on your portable computer.

- Free software is available to download and install on your computer in the BIF713 Week 1 notes.
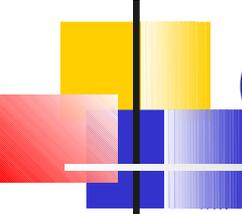
Obtaining a Matrix Account

- You need to manually obtain your Matrix account.

- Prior to obtaining your Matrix account, you need to be registered as a student at Seneca College (obtaining your Seneca One Card).

- If you are registered, then a Matrix account has been created, but you must first activate the account prior to accessing it. Click on the link below, confirm you accept the terms, and click the **Continue** button.

 https://matrix.senecac.on.ca/webadmin/agree/agreement.php

- Enter your *MySeneca* username and password and click the **Create Account** button.

- Please realize that during the first 2 weeks of the semester many Matrix account creation requests are processed. It may take up to 0-8 hours before your Matrix account has been created. If you cannot access your Matrix account after 24 hours, please contact the help desk by sending an e-mail to: **helpdesk@senecacollege.ca**
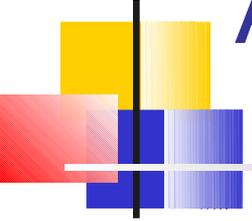
Accessing your Matrix Account

- You can access your Matrix account from the college's computer lab, your notebook computer, or from your home computer. In fact, if you boot Linux instead of Windows, you are automatically connected to Matrix!

- In order to connect to your Matrix account from your home computer (or when running Windows at Seneca's computer labs), you need to run an application (usually called Telnet or SSH). The Seneca's labs should have an icon on the desktop to launch the SSH application.

- When that application runs and connects to the server, it acts like a terminal that is physically connected to the computer. In this case, the monitor is the telnet window on your PC, and accepts keyboard entry.
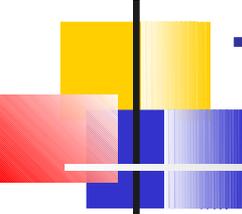
Telnet vs. SSH

- The Telnet application was invented in 1972, and many versions of this applications are available for many operating systems
  (eg. Windows, Linux, Unix, Apple-Macintosh).

- A major weakness with the earlier versions of Telnet is the lack of security! Another individual could view or capture a user's keystrokes when using the telnet application including passwords!

- Because of this security weakness, telnet has been <u>replaced</u> with a more secure method called:
  Secure Shell (SSH).
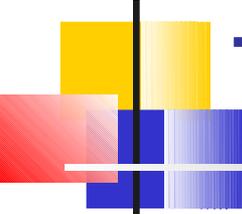
Telnet vs. SSH

- SSH or "secure shell" application allows data (i.e. keystrokes) to be encrypted to prevent other people intercepting this information.

- On many Linux and Unix systems, you would use the ssh application (works similar to telnet application, but requires the server password)

- In the Seneca Labs in **MS Windows**, there is an application on the desktop called SSH Client. You are advised to use this application. You can download or buy SSH applications for your PC at home to use. Refer to **BIF713 week 1 resources** to download and install on your Windows machine for free.

- Another (open-source) application called Putty can be used instead of SSH Client if you desire. Usually ssh command line programs are already installed with **Linux** and **Unix** systems.
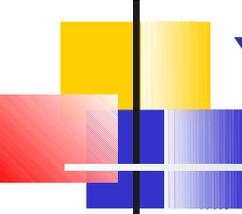
YouTube Videos For SSH

- ## Why do we want to use SSH?
  http://www.youtube.com/watch?v=_HBOM7Zq61E

- ## SSH Client (for Windows) Tutorial:
  (Use your instructor's reference for software download.
   Hostname: **matrix.senecac.on.ca**
   Username: Y<u>our</u> **MySeneca** username)

  http://www.youtube.com/watch?v=igKZeyCoLxk

- ## Putty (for Windows) Tutorial:
  (Use your instructor's reference for software download.
   Hostname: **matrix.senecac.on.ca**
   Username: Y<u>our</u> **MySeneca** username)

  http://www.youtube.com/watch?v=ma6Ln30iP08
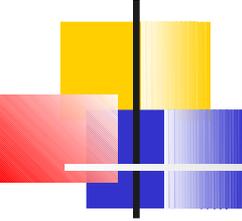
Using Your Matrix Account

- With computers, there are various ways to interface with the computer (Graphical, menu-driven, command-line). When connecting to your Matrix server, the interface is command-line only.

- Refer to **Lab1a** (Introduction to Matrix Account) to run a program (while in Matrix) to learn how to use your Matrix account.

- At some point, you will need to learn how to use a text-editor to create programs. Please refer to the **Lab1b** to run a program to learn how to use the vi text editor (a common & powerful editor).

- You must close your ssh session when you want to finish your Matrix session. You can close the session by issuing the command **exit**, **logout**, or press the key combination: **CTRL-d**.
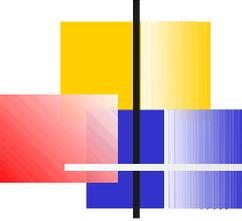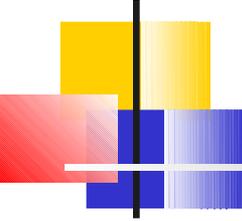
Passwords

It is important to assign an appropriate password to prevent unauthorized access to your computer accounts.

Concerns regarding unauthorized use:

- Illegal Activity
- Suspension of account
- Loss of data
- Penalties associated with cheating
  (someone copies your original work)

Passwords

Creating Passwords:

- Combine upper and lower case letters

- Include non alpha-numeric characters such as . or - in your password

- Acceptable passwords range from 8 characters and greater.

- You can only change your MySeneca & MATRIX password from within myseneca via a web browser:http://my.senecacollege.ca)

- In fact, the MySeneca and Matrix servers have the same password for simplicity. When you change your MySeneca password, you are also changing your Matrix password.

- For security purposes, you are required to change your MySeneca password every 45 days!
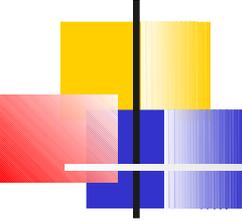
Passwords

Additional Password Considerations:

- Avoid easily detected passwords such as names or a series of numbers.
- Use phrases and take the first letter of each word (i.e. easier to remember!)

For example:

Autumn **l**eaves **T**urn **r**ed**, y**ellow**, O**range **. . !**