IT341
Introduction to System Administration

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Goal of This Course

• The goals of this course are
  o To teach you how to setup and configure a Linux Server
  o To learn some of the basic management principles involved in system administration
• The goal of this lecture is to let you know how this course will be conducted
Format of the Course

• This is a **lab** course
  - I will speak briefly at the beginning of each class
  - but most of the class time you will spend setting up a Linux server
• I will be here to help you with any issues that may arise
• **HINT:** When issues do arise, it is to your great benefit to resolve them sooner, rather than later.
• The bulk of the course will consist of your lab reports for a series of projects, working in teams of two
  - Each team will choose a Windows machine in this Lab
Format of the Course

- On that machine you will be running **VMWare**
  - VMWare is virtualization software
  - You will setup and configure a virtual Ubuntu server using VMWare
- Though you will be working on the projects in *pairs*, you will be graded *individually*
- Each of you must keep an ongoing record of what you are doing in the form of *lab reports*

- Also, you will need to read a number of chapters in *The Practice of System and Network Administration*, and submit *summaries* of what you have read
Format of the Course

• In addition to the aforementioned, there will also be:
  o Individual assignments
  o Midterm exam
  o Final exam

• The exams' questions will be taken/derived from material covered in...
  o Lectures
  o The Petersen textbook
Projects

• The core of this course is your work on a series of projects
• You will be working in teams
  o Each team will consist of two people, no more and no less
    ▪ The only exception will be if there is an odd number of students in the class
    ▪ In this event, one student will work alone
  o You and your teammate will choose a machine in this lab.
    ▪ The machine will be one of eight: it21 - it28
    ▪ You will choose your team and machine via the provided sign-up sheet
• There, you will use VMWare to create a virtual Ubuntu server on this machine
Projects

• Depending on your course section and chosen machine, you will be assigned a **team name** -- which will be on the sign-up sheet, as well.

• In the **first** project, you will create a basic Ubuntu server installation

• Through subsequent projects, you will add more and more features and services to this installation

• You will become more comfortable and familiar with
  
  o the server...
  
  o and its components
One of the most important things you can learn from this course, is the importance of keeping a written record of what you have done.

A system administrator will usually do this in the form of an administrator's log.

When you change a machine you administer - or something significant happens on it - you should make a note in your admin log.

Changes to a machine's configuration can cause problems, that may not appear until months afterwards.
Administrator's Log

• If you forget what you changed and when, you will struggle figuring out what to do next
• This is particularly important when you *solve a problem*
  o *First*, if the problem occurs again, the existence of a previously documented solution will save you the trouble of looking it up again
  o *Second*, the solution could affect other aspects of the system, making a clear record even more important
Lab Reports

- *For IT341*, you must keep an administrator's log - which will consist of the "daily entry" portions of your lab reports.
- Each lab report will be *due* by a particular date and time - to be eligible for credit.
- Each team member must write his or her own lab reports *separately*.
  - Even though you are working together and documenting the same things.
  - Even though you may share data such as command line output and rough notes.
Lab Reports

- Duplicated text (other than command line output) between team members' lab reports will be considered plagiarism.
- These must be kept in your it341/reports directory, inside your home directory on the CS department network - not on your VM!
- The lab reports must be text files (report_{XX}.txt)
  - {XX} stands for the project number
  - For a single-digit project number
    - {XX} will be the project number preceded by a 0
    - Example: report_05.txt
Lab Reports

- For a **double-digit** project number
  - XX will be the project number
  - *Example:* report_11.txt
- When you are signed into Linux, the file paths will probably look something like this: ~/it341/reports/report_XX.txt

- You should make an **entry** in the log for *each day* you work on the machine
- This work will usually be done during class
  - …but you may sometimes come in outside of regular class meetings or work remotely
  - Regardless, that day’s work should get an entry
Lab Reports

- While working, you may choose to keep rough notes
  - ...but those are to help you remember what you did and recall observations.
    - **The entries in your lab report should be more refined!**
    - You should complete your entries as soon as possible, after doing the work.
  - **Note:** There is no need to include class notes in your log, nor should you do so - except as it pertains directly to project work.

- **In addition to** the daily entries, at the end of each lab report, you will answer a series of *discussion questions.*
Lab Reports

• Read the lab report specifications for further details
• There is a link to the specifications on the class web page, under the Course Components section
Individual Assignments

- Although you will work on the projects as a team of two, each of you must complete occasional individual assignments by yourself.
- They are not technically "homework", but you may be able to finish some of them at home.
- You will find the list of assignments on the course web page.
- You will work on the first assignment today (or next class period) after I have finished speaking.
Individual Assignments

• The first assignment is to
  o complete the Unix Apply Process for this course
  o set up a special text file for e-mail
  o send me an introductory e-mail

• I can help you with this, as needed
Course Textbooks

• The two textbooks for this course are quite different

• Ubuntu 16.04 LTS Server: Administration and Reference describes how to set up and configure an Ubuntu Server
  o It will help clarify many of the technical steps we go through during the course
  o Do not neglect this reading!
  o By the end of this weekend, you should have read the first two chapters
  o The good news: You need not summarize these readings
Course Textbooks

- *The Practice of System and Network Administration* is written by veteran system administrators
  - It contains practical advice for system administrators, gleaned from experience
  - Reading this book will help you become a better system administrator
  - *These* are the readings that you will summarize
Chapter Summaries

• Throughout the course, I'll assign chapters to read from *The Practice of System and Network Administration*, along with suggested summary completion dates.
  
  o You will find the reading schedule on the course web page.
  o We may have some discussion on these chapters, if we have time

• You will find a link to the specifications for the chapter summaries on the course webpage
  
  o under the Course Components section
  o under the Chapter Summaries section

• You should get started on these ASAP!
Working in Pairs

• For your work on the projects, you will be working in teams of two

• Soon, you will choose
  o Your partner for this work
  o The machine in this lab you will use
  o You will do this using the provided sign-up sheet

• it20, it30, and it31 are special machines:
  o You should not touch them!
  o However, you will occasionally ssh into it20
**Working in Pairs**

- On your physical machine, you and your partner will create a single virtual machine using **VMware**
  - Obviously, there will be some differences from using a physical machine,
  - but much will be the same because you are still *emulating* physical hardware
- Though you will be working together on the projects, you will be graded *individually*
- Please remember this last point, in particular, so that you do not end up in a situation that looks like *plagiarism*!
Working on the Command Line and with Configuration Files

• Since most of you have taken IT 244 (or possess some equivalent), you know that the command line is a user-hostile environment
  o On Linux and Unix machines, almost all system administration work is done at the command line
  o Almost all configuration information is stored in text files
• All of the project work you do in this course, therefore, will be done at the command line
Working on the Command Line and with Configuration Files

• You must be very **careful** about what you type at the command line
  - If you **mistype or misspell** a single character, your command will not work the way it is supposed to
  - As such, you must be extremely careful when changing these files
  - A single typo could cause a Linux service on your machine to fail

• **You should reconsider taking this course if...**
  - You did not do well in IT244 or struggle with the command line
  - You are unable to quickly and easily recall the material learned in that course
Working on the Command Line and with Configuration Files

• Since there are **two** of you working on the projects
  o One person should **enter** the commands and **edit** the config files
  o While the other should **check** the commands and file edits for accuracy
  o The two of you are expected to occasionally **switch roles** so that you can experience **both sides**
Do You Have Enough Time to Do the Work for This Course?

- Many of you work, either part time or full time
  - This cuts down on the time you have for class work
  - *You should not be taking this course if you do not have enough time to do all the work*

- In this course, you will be configuring an Ubuntu server
  - As previously mentioned, the command line is user-hostile
  - Moreover, configurations and installations will require considerable attention to many small details
  - Project completion will require you to read and follow given directions closely.
Do You Have Enough Time to Do the Work for This Course?

o Finally, you need to understand how individual project tasks relate to the grand scheme of things
• In addition, doing well in this class will require a higher quality of submitted work.
  o You must both understand the material well and express yourself well
  o Do you have the time and energy to bring your work to a level sufficient to achieve your desired grade?
• If you sign up for more work than you can achieve in the time you have, you are cheating yourself
  o Many people in this country rush to get a degree, but haven't done enough work to digest the material
  o Those people invariably set themselves up for failure
Attendance

• At each class I'll take attendance
• I do this to:
  o Learn your names
  o Have a record
• Your attendance will not affect your grade directly
• However, if you find yourself struggling with the material and have not been coming to class, I'll be less sympathetic!
Course Documents

• Everything I create for this class is made available **online**
  o All of it can be accessed from the Class Page: http://www.cs.umb.edu/~ckelly/teaching/it341
  o You should **bookmark** this page because the page will function as our syllabus, instead of a paper syllabus
  o It is a lot of material, but you should at least get to know the **layout**
    ▪ That way, you will **know where to look** for information you need
    ▪ This is much **quicker** than sending an e-mail and awaiting my response
Course Documents

- The "Course Policies" section will give you a good idea of my rules and expectations. That section also contains some supplementary information you should check out.
- The schedule will feature links to class notes, along with reading assignments - including your chapter summaries.
- The "Projects" section will feature descriptions of each project as they come up.
- Similarly, links to assignments may be found in the "Assignments" section.
Many terms we encounter in this class can be found on the Definitions page:

http://www.cs.umb.edu/~ckelly/teaching/it341/local_assets/files/common/data/linux/linux_sysadmin_definitions.html
Taking Notes

• Although I make my notes available in PDF form, I want to encourage you to take notes in class
  o Studies have shown that students learn more when they take notes, even if they never look at their notes again
  o Other studies have shown that the more activities and senses are engaged when you learn something, the greater your likelihood of remembering
  o Writing notes engages another part of your brain, which increases recollection

• All of you should take notes
Taking Notes

- Probably the best practice would be for you to *print* the notes before coming to class.
- That way, you can *write your own* notes in the margins, along with any questions you may have.
- **Note:** Sometimes PDF content may differ from slides as presented in class!
Textbooks

• There are two textbooks for this course:

• You may be able to obtain electronic copies of each of these...
Cheating

• All students are expected to follow the University's Code of Student Conduct
• You will find this at http://www.umb.edu/life_on_campus/policies/community/code
• The Computer Science Department has the following policy on cheating
  o You will be given a score of zero if you cheat on any assignment, quiz or test
  o If you cheat a second time you will receive an F in the course
  o If you cheat a third time you can be expelled from the University
Cheating

• I put a great deal of work into my courses, and I ask you to respect that work by not cheating.

• **Important:** *It is the student's responsibility to know what constitutes academic dishonesty - at this university and in this class. Lack of knowledge that something constitutes an academic honesty violation will not be accepted as a valid excuse.*
Grading Policy

• All homework and exams are subject to the honor code
• Plagiarism is not allowed in any form
• Grades will be computed as follows
  o Lab Reports: 50%
  o 4 Assignments: 15%
  o Chapter Summaries: 10%
  o Midterm Exam: 10%
  o Final Exam: 15%
Grading Policy

- Final *number* grades will be translated to *letter* grades as follows:
  - A  93.3 and above
  - A- 90 to 93.2
  - B+ 86.7 to 89.9
  - B  83.3 to 86.6
  - B- 80 to 83.3
  - C+ 76.7 to 79.9
  - C  73.3 to 76.6
  - C- 70 to 73.3
  - D+ 66.7 to 69.9
  - D  63.3 to 66.6
  - D- 60 to 63.3
  - F *Below* 60
Accommodations for Disabilities

• The school is legally obligated to try to accommodate students with disabilities

• If you have a disability you can get help from Ross Center for Disability Services
  o **Location:** Upper Level of the Campus Center, Room 211
  o **Phone:** 617-287-7430
  o **Web Site:** [https://www.umb.edu/academics/vpass/disability/](https://www.umb.edu/academics/vpass/disability/)

• After you have discussed the matter with them, see me

• They will usually draft a letter explaining any accommodations you should receive.
Accommodations for Disabilities

• You should get this letter to me ASAP!
• If you require extra time for an exam, then it is your responsibility to arrange for this at least a week in advance!
• Also, you may wish to check out the page containing my own notes:

Communications

• All communication outside of class will be conducted through **email**

• For regular contact, we are going to use your [@umb.edu](mailto:email) or [@cs.umb.edu](mailto:email) email

• The *first* assignment will include setting up email

• I will use that account when sending you a personal email concerning the class or any class-wide announcements outside of class.

• If I have sent you an email about something concerning the class, I'll assume that you have been given adequate notice
Communications

• If you have a question, email me at cg.kelly2013@gmail.com

• Please be sure to:
  1. Use a descriptive, meaningful subject line
  2. Begin the subject with IT341:

• Failing to include #2 is effectively the same as not having sent the e-mail at all!

• Don't hesitate to contact me if you are stuck and/or need help with something.

• Others might be having the same issue!
Office Hours

• My office is **S-3-130**

• My official office hours will be posted on the course web page

• You do not have to make a special appointment to see me during office hours - just drop in!

• If you need my help and cannot make it to office hours, contact me and we'll work something out