System Administration

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https://stevens.netmeister.org/615/

https://xkcd.com/705/
Programming

Most App Development / what most people actually hire for.

Nobody knows what this is.

Git

SEO

VC pitching

CSS

HTML

You lose without this part.

Computer Science

Stuff that helps us understand all the other parts.

Future ideas (not all good, not all profitable).

Sometimes you get interviewed for some of the basic parts from over here.

analytics, performance, benchmarking, provable state convergence, ...

E.g. design/development of infrastructure components such as config mgmt, CI/CD

Operations

Mostly duct tape.

@jschauma
Learning System Administration

System Administration is a profession with no fixed career path.

- few degree granting programs
- heavy reliance on practical experience
- specializations in many different areas possible
- breadth of expertise as necessary as depth in some areas
- background knowledge and requirements vary
Learning System Administration

Breadth of knowledge:
• operating system concepts
• TCP/IP networking
• programming
• cloud computing
• ...

Depth of knowledge:
• certain OS flavor
• specific service (DNS, E-Mail, Databases, Content-Delivery, …)
• specific implementation/vendor (Oracle, Hadoop, Apache, Cisco, …)
• specific area of expertise (security, storage, network, datacenter, …)
• ...

## Syllabus

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Learning is critical

Know how to find answers:
• know how to ask questions
• know where to ask questions
• read critically
• know what you don’t know (Dunning-Kruger effect)
A: Things we don't know.

B: Things we know we don't know.

C: Things we know.

D: Things we know we know.
A: Things we don't know.

B: Things we know we don't know.

C: Things we know.

D: Things we know we know.

Ratio D:C >> B:C => "I'm an expert!"
A: Things we don't know.

B: Things we know we don't know.

C: Things we know.

D: Things we know we know.

Ratio B/C now closer to D/C =>
"I really don't know all that much."
Learning is critical

Know how to find answers:

• know how to ask questions
• know where to ask questions
• read critically
• know what you don’t know (Dunning-Kruger effect)
• understand what you’re doing
• understand why you’re doing it
• seek information exchange
Grading

• course participation, questionnaires, course notes (12% of the grade)
• a meetup requirement (8% of the grade)
• three individual homework assignments (40% of the grade)
• one class project (25% of the grade)
• a group project (CtF) towards the end of the semester (15% of the grade)
Systems Used

• AWS EC2 — different OS on various instances

• linux-lab.cs.stevens.edu — Ubuntu Linux; see
  https://stevens.netmeister.org/615/linux-lab.html

• NetBSD 9.0 VirtualBox VM; see:
  https://stevens.netmeister.org/631/virtualbox/
Course Notes and Participation

• create a git repository with a single text file for each lecture

• before each lecture:
  • answer that week’s questionnaire (linked from the course website in the syllabus)
  • note what you read, what exercises you completed, and what questions you have

• after each lecture:
  • review the questionnaire and your answers
  • note anything of interest you learned
  • write down what questions remain and what new questions arose

• follow up on unanswered questions in class or on the mailing list

• at the end of the semester, review and then submit all your notes

https://stevens.netmeister.org/615/course-notes.html
In each class, two students will each present one article, paper, project, … relating to that week’s topic.

• share link no later than Friday before class
• in class, summarize the information, show examples, and answer questions
• other students prepare by reading up and asking questions
About this class

You are responsible for your work as well as your time management. If you run into challenges, contact me as soon as possible and we will work something out.

There will be no extra-credit assignments, but for individual homework assignments you may resubmit your work to address any problems identified to improve your grade.

You are responsible for your own work. You may not present as your own the ideas, code, or code samples of another, even if those are available on the internet. Any incidents of plagiarism and copyright infringement will be reported to the Dean of Graduate Academics.

https://stevens.netmeister.org/615/#plagiarism
About this class

Everything: https://stevens.netmeister.org/615/
Course Mailinglist: https://lists.stevens.edu/mailman/listinfo/cs615asa
Video Lectures: https://v.gd/cs615asa
Slack: https://cs615asa.slack.com/
Twitter: https://twitter.com/cs615asa

Synchronous Discussions: Mondays, 18:15 Eastern on Zoom

Recommended Textbook:
“Principles of System Administration", by Jan Schaumann
Before every lecture:

• review the previous week’s slides and notes
• submit class questionnaire
• watch the video lectures and slides for that class
• follow up with questions on the course mailing list
• prepare for class by reading the recommended materials
• do the recommended exercises

After every lecture:

• run all examples from the video / slides
• update your class notes
CS615 - System Administration

Homework

Week 01:

• make sure your class notes git repository is set up
• bookmark the course resources
• double-check that you are subscribed to the class mailing list
• ensure you have access to linux-lab.cs.stevens.edu
• set up your AWS EC2 access
• join the course Slack channel and participate
In our next segment...

Keep your eyes open for the next video lectures. We’ll cover:

• homework assignments
• setting up git on linux-lab
• some UNIX history
• just what exactly a System Administrator does…
Links and Reading

“Principles of System Administration”, by Jan Schaumann

USENIX Short Topics in System Administration: Job Descriptions for System Administrators: https://is.gd/x0BZG9

“Principles of Network and System Administration”, by Mark Burgess
https://is.gd/K3jnW9

“The Practice of System and Network Administration”, by Thomas A. Limoncelli, Christina J. Hogan, Strata R. Chalup
https://is.gd/VWQPrI