

Final **CAPS 1152 - Linux**

Reporting Period

< 2016-2017 >

Course Description

Study of the Linux operating system, to include basic system operation and access, system installation and configuration, file system organization, file management and manipulation, shell usage, and system maintenance and security. This course satisfies the computer literacy requirement.

Program Outcomes/Goals

POG1 **Demonstrate technical skills**

Demonstrate skills and knowledge that emphasizes current computer networks, systems management, and internet technologies.

Student Learning Outcomes

SLO1 **Learn Linux basics**

Students should understand some of the basic knowledge of working with Linux and learn basic command line skills.

Supported Initiatives

2 Standards 1 General Education 0 Institutional Priorities 3 Strategic Initiatives

Action Plans for Improvement

Action Plans for Improvement Description

One of the biggest challenges in the increased scores is having students retain this knowledge, especially over the summer and winter breaks between semesters. My goal is to come up with a project or an activity that the students can do to keep this knowledge fresh in their minds during periods they are not in active study. Without constant practice, it is easy to lose the knowledge gained, so it is very important to gain a practice that will encourage the students to retain their Linux skills.

Due Date
Dec 10 2017

Status
Planned

Measures

M1 **Pre-Test/Post-Test**

A pre-test and post-test.

Methodology

A 20 question pre-test and a 40-question post-test created by Cisco Systems and the Network Development Group administered during week 1 of the semester and then the post-test delivered on the final week of the semester. Students are given questions about Linux applications, Linux commands, common Linux terms, computer hardware, Linux file systems, and user accounts.

Source of Evidence: Pre/post test

Target

Students achieve an average score of 80% or higher on the post-test

Target	Findings	Improvements Achieved from Previous Action Plans	Improvement Type	Status
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Improve Intentionally

80% or higher average post-test score	Students achieved an average of 95% on the post-test.	From previous classes, it was important that students did better than previous classes on the post-test. To meet this challenge, two points of emphasis were implemented this semester. First, students were encourage to perform the Linux commands during the lecture to reinforce learning while teaching. Second, students had to do labs on Linux virtual machines which again reinforced the content of each chapter. The hands-on learning process is proving to be a much better teacher than just the text only.	Academic: Improved Scores	Met
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Analysis of Finding and Evaluation Results

- A. 15 students took the pre-test and post-test. 1 student did not take the exams.
- B. 29% of all questions on the pre-test were answered correctly by the 15 students. On the post-test, the same students answered 95% of all questions correctly. 1 student scored 0% for not taking the exam.
- C. 71% of all questions on the pre-test were answered incorrectly by the 15 students. On the post-test, the same students answered 5% of all questions incorrectly. 1 student missed all questions for not taking the exam.
- D. The average score for the pre-test was 29%. The average score for the post-test was 95%. This was an increase of 66% from the pre-test to the post-test.
- E. All 15 students that took the exams met the target score of at least 80% or better. The 1 student who didn't meet the target did not take either of the exams. The question that gave most students the biggest problem was on the subject matter of symbolic links. A little more focus on the difference of different link types may shore up this slight weakness.
- F. Students did well this semester on the post-test in every subject area. The lowest scored subject area was hardware, which students had a 90% success rate of correct answers, which is outstanding. The hands-on method of teaching Linux is definitely the best strength of the course, as students always seem to learn better when the course material is backup up with actual activities the students can perform.

SLO2 Use Linux operating system

Students are required to understand some of the basic knowledge of working with a Linux operating system and learn basic command line skills.

Supported Initiatives

2 Standards 1 General Education 0 Institutional Priorities 3 Strategic Initiatives

Action Plans for Improvement

Action Plans for Improvement Description

The best way to improve the command journal homework assignment in the future would be to come up with a more uniform structure that all students could follow for better organization. Either a rubric with clearly defined expectations for each chapter and section or perhaps just a form that outlines the organization that the students would fill out within their own journals.

Due Date
Dec 10 2017

Status
Planned

Measures

M1 Command Journal

Students are to keep a notebook with written Linux commands.

Methodology

Students are given an assignment to write down new Linux commands as they appear during the course curriculum. They are also required to write down different options and arguments for each command if they appear to be important. The idea behind this command journal is to reinforce students' learning of the Linux commands so they have to reference the help sections of the operating system less, which saves time and improves students chances of passing future certification exams.

Source of Evidence: Source Of Evidence for Academic Direct

Target

Students achieve an average score of 90% or better on the Command Journal homework assignment.

Target	Findings	Improvements Achieved from Previous Action Plans	Improvement Type	Status
90%	Students who completed the assignment had an average score of 97% on the Command Journal assignment.	Upon completion of the command journal, it became clear that writing down all of the different Linux commands did have a positive impact on many of the students to better remember them. Although remembering every single command in a semester is a improbable task, the students did demonstrate during exams and oral class feedback that they were improving in the command retention process. Improvement probably needs to be in the structure of the journals to find a more uniform process to make it more organized rather than just a loose collection of notes.	Academic: Improved Performance	Met

Analysis of Finding and Evaluation Results

- A. 15 students completed the Command Journal assignment. 1 student did not attempt the assignment.
- B. 13 out of 15 students achieved or exceeded the goal of 90% or better on the assignment.
- C. 2 out of 15 students did not achieve the 90% goal on the assignment, but did still exceed 80% or higher. 1 student scored 0 for not even attempting the assignment.
- D. The average score for the students who completed the assignment was 97%.
- E. The weaknesses of the students who did not achieve the target was either a case of not listing commands for a chapter or did not list some of the more important options and arguments and therefore lost some points on the assignment.
- F. This assignment really proves the work ethic of the student during the course, and most students excelled by writing down all of the command throughout the entire curriculum. It also reinforces the learning of many different commands and helps with exams and possibly future certifications.

POG2 Demonstrate security fundamentals

Demonstrate knowledge of basic security fundamentals.

Student Learning Outcomes

SLO1 Apply permissions to protect files

Learn how to create users and groups and set file permissions and ownership to protect them.

Supported Initiatives

2 Standards 1 General Education 0 Institutional Priorities 3 Strategic Initiatives

Action Plans for Improvement

Action Plans for Improvement Description

The challenge for the next course is to find another way to teach the more advanced concepts of permissions and have students completely understand them. While the text gives several useful examples that can help, it may be useful to come up with a few more for practice or perhaps make up a quiz on that particular topic to reinforce the practice.

Due Date
Dec 10 2017

Status
Planned

Measures

M1 Chapter Exam

A chapter exam with questions concerning created users and groups and applying permissions to their directories and files.

Methodology

Students take a chapter exam with questions about permissions that are given to files and directories owned by users and groups. Students will have to recognize how different permission types are applied to directories and the files that are contained within.

Source of Evidence: Test/Exam/Quiz

Target

Students score an average of 80% or better on the chapter exam.

Target	Findings	Improvements Achieved from Previous Action Plans	Improvement Type	Status
80%	Students who took the exam scored an average of 94%.	Students did improve in the areas of basic Linux security as it applies to users, groups, and permissions. They certainly proved within the confines of this exam that they have a basic understanding of the concepts of creating the default permissions and applying the basic changes. The challenge going forward is to get them to understand the advanced side of these permissions as they apply to subdirectories and the files contained within as each directory in the file system can have different permissions which when combined with other directories can produce some minor confusions on which users or groups are allowed to access them.	Academic: Improved Scores	Met

Target

Findings

Improvements
Achieved from
Previous Action
Plans

Improvement Type

Status

Analysis of Finding and Evaluation Results

- A. 15 students took the chapter exam. 1 student did not attempt the exam.
- B. All 15 student that took the chapter exam scored at least 80% or above on the exam and met the target goal.
- C. Only one student did not meet the target goal and it was because the student did not take the exam and therefore was given 0%.
- D. The average score for the 15 students that took the exam was 94%, which exceeded the target goal.
- E. The challenge and most missed questions in this exam were in the questions about permissions of subdirectories and how the permissions of directories above them affect those permissions. Those questions are tougher because students are forced to think in several layers instead of simply viewing flat permissions.
- F. The strength of this exam is that students proved that they were competent in understanding basic Linux security, especially in the areas of creating users and groups and understanding the default permissions. They also showed competency in the basic commands needed to alter those permissions.

Related Projects

There are no related projects to this project.

Project Collaborators



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Project Attachments

CAPS1152Fall2016Syllabus.docx

CAPS1152Pre-TestFall2016.docx

CAPS1152Post-TestFall2016.docx

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