

Using Active Learning to Teach Unix Commands

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***Abstract.** Nowadays, it is vital for a computer scientist to be prepared for different environments such as new frameworks, different programming paradigms and multiple operational systems. Unfortunately, it is common that freshman students are only used to Microsoft Windows' Operating System and no proper class or activity is done to revert that. Therefore, our goal is to teach minimal Unix-like skills to first year students through a challenge-based learning approach. To this end, we will use a list of quests with ascendant difficulty levels, without no functionality to reinforce competition between students. Its interface is all web-based with a colored shell looking, so students can get used to Unix command line environment and slowly loose their distrust in a different operational system.*

1. Introduction

Nowadays, it is vital for a computer scientist to be prepared for different environments such as new frameworks, different programming paradigms and multiple operational systems (OS). Usually, people with low experience in the field carry a stigma that Unix-based systems are hard to use, specially when it comes to shell commands line interface that does not have buttons or the main use of mouse. Therefore, it is crucial that students loose their distrust when it comes to different OS's. Our university currently does not have any courses that teaches basic Unix although it is important to provide alternative ways for newcomers to learn the basics.

The method of using missions or achievements in the classroom is not new and can obtain good results in motivating and engaging students [Poffo et al. 2017, Santana et al. 2017]. Moreover, this method has been commonly studied to encourage elementary and high school to learn computational thinking and basic programming [Silva et al. 2017].

A few projects with the goal of teaching UNIX in a more active way were developed. One approach divides knowledge between students to encourage cooperation [Simón-Hurtado and Vivaracho-Pascual 2005] and other creates a treasure hunt using UNIX tools and bash commands to increase freshman's motivation [Moy 2011].

The goal of this project is to give students minimal knowledge of Unix-like shell. The tool environment is a colored bash command line, implemented without any graphic interface. In this way we can simulate the real environment encountered in Unix systems. We will use different colors to distinguish between shell messages and the tool messages. The challenges will be divided in levels, each one adding more commands and more combinations, such as pipes and redirects. An achievement system will also be used to increase student's motivation, but not encouraging a competitive environment.

tools, each with its own advantages and disadvantages. We intent to conduct tests on the freshman of Computer Science of our university later next year. We also intent to monitor the system, generating logs of use, allowing an independent and personalized assistance to each student.

References

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