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Linux Command-line Tutor

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DECLARATION

I OBELLA ISAAC Reg No BU/UG/2012/89 hereby declare that this project report is my original work except where explicit citation has been made and it has not been presented to any Institution of higher learning for any academic award.

SIGNATURE

.....

DATE

.....

APPROVAL

This is to certify that the project report under the title “**A Linux command-line Tutor**” has been done under my supervision and is now ready for examination

Mr. Alunyu Andrew Egwar

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SIGNATURE

DATE

.....

.....

DEDICATION

I dedicate this report to my family and friends who prayed for my success and gave me advice in the core areas of training.

ACKNOWLEDGMENTS

All praises to Jesus Christ for His love endures forever.

The work presented in this manuscript was accomplished under the generous guidance, assistance, constructive criticism and enlightened supervision of Mr. Alunyu Andrew Egwar. His efforts towards the inculcation of spirit of constant work and the maintenance of professional integrity besides other invaluable words of advice have always served as beacon of light throughout the course of the final year project period. I take this humblest opportunity to my deepest sense of gratitude and thankfulness to him.

I am thankful to all those who supported me including my family and friends who provided me with great help for completion of this task, May God bless you.

OBELLA ISAAAC

BU/UG/2012/89

LIST OF ACRONYMS

Acronym	Definition
DBAs	Database Administrators
DNS	Domain Name Service
GNU	Gnu's Not Unix
GUI	Graphical/Graphics User Interface
IDE	Integrated Development Environment
LPI	Linux Professional Institute
MySQL	My Structured Query Language
RAD	Rapid Application Development
RAM	Random Access Memory
SPSS	Statistical Product and Service Solutions
SQL	Structured Query Language
WYSIWYG	What You See Is What You Get
XML	Extensible Markup Language

LIST OF ABBREVIATIONS

Abbreviation	Definition
OS	Operating System
UI	User Interface

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ABSTRACT

This project involves creating of a new way of accessing help on the Linux command-line based on the initial man pages, it provides encapsulations of commands, easy to access man pages, illustrations, tests and graphing analysis of progress. The main goal was to build a Linux command-line Tutor that speeds up the process of learning Linux command-line usage. This was done by reviewing literature and documents, collect and analyze requirements on Linux commands, interfaces and daemons, designing the system Qt interface and triggers, implementing system interface and link it to the Linux environment, Linux daemon and resources and testing and validating the command inputs and options. Upon examination of this system in relation to the initial command-line help options, it was discovered to be easier to use as it has a graphical interface, it also narrowed the gap between command-line and graphical interface. This system will be used by newbie Linux users and those who are stuck and need help on a particular command.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter gives an overview of the background of the title, the problem statement, main objective, specific objectives, the study significance and scope.

1.1 Background

This study focuses on the Linux as a rapidly growing operating system, [1]it's being used in over 40 great world institutions including NASA, U.S. Department of Defense and Federal Aviation Administration. According to James Wire Lunghabo, [2]the Uganda Linux User Group is spreading the use of Linux over many NGOs and the private sector.

Linux usage is highly characterized by its increased usage of the terminal due to ease of command interpretation and its powerfulness over other terminals, however this terminal usage comes with a high price of memorizing, studying and understanding the commands.

Most computer users today are only familiar with graphical user interface and have been taught by vendors and fellow users that the command-line is a very terrible thing [3], however a good command-line interface is a marvelously expressive way of communicating with the computer and putting to use detailed computing resources.

Linux is a freely distributed, multitasking and multiuser operating system that behaves like UNIX, Linus Torvalds a student at the University of Helsinki built the Linux kernel [4] and let other programmers add on to it using the software libraries they had built together producing the first Linux distribution. Since it was put together by various programmers it became open source, however this also gives it an advantage of being more powerful than windows in essence that it is highly customizable to fit a user's requirements, makes it of low cost and makes use of even low processing resources.

According to Mitchell Anicas, [5]a terminal emulator refers to a program that allows the use of a terminal in the graphical interface, terminal emulators are usually confused for

terminals although they carry out the same task. Linux terminals work hand in hand with the shell which interprets user's commands and script files and tells the operating system what to do with them. When working with Linux servers, usage of the Linux terminal is not optional.

In comparison to the graphical user interface of Linux, the terminal is more advantageous in that command-line users only need the keyboard to navigate the command-line making it faster, command-line uses less resources in terms of RAM and processing power, it can also automate tasks through scripts, remote access to a machine can only be done over the command-line interface and many more advantages.

However the command-line usage has a very great drawback of making mistakes and requiring a high degree of memorization and familiarity for navigation and operation hence new users find it difficult to use command-line environments.

1.2 Problem Statement

Many Windows to Linux migrants, Linux users, students and a few Linux networking administrators face the problem of quickly learning Linux command-line usage, this limits them when they are required to carry out major tasks using the Linux command-line.

1.3 Objectives

1.3.1. Main objective

To build a Linux command-line Tutor that speeds up the process of learning Linux command-line usage.

1.3.2. Specific objectives

- i. To review literature and documents, collect and analyze requirements on Linux commands, interfaces and daemons.
- ii. To design the system Qt interface and triggers.
- iii. To implement system interface and link it to the Linux environment, Linux daemon and resources.
- iv. To test and validate the command inputs and options.

1.4 Justification

With Uganda's joining of the Linux Professional Institute, Mr. Johnson Olubi the introduction of the LPI program into universities and schools [6], Busitema University already having a Linux related course unit called Systems Programming requires students to have exquisite knowledge on the Linux command-line usage, however many of these students are encountering Linux for the first time and face a problem of coming up to speed with the command-line usage.

The system therefore creates a new way of learning to use the Linux command-line and also offer an educational platform for studying the Linux command-line. This also helps to ease the process of getting acquainted with the Linux command-line for the Linux users.

1.5 Scope

1.5.1 Technical Scope

This project works specifically on a desktop version of a Linux distribution for example Ubuntu 14.04 Desktop version since it is a graphical user interface application and not limited to only terminal and supports the retrieval of Linux terminal resources and commands to be used as variables during its run time.

It was specifically designed to use the bash (Bourne-Again shell) Linux command-line interpreter since it's the most commonly used command-line interpreter in preference to ksh and csh.

1.5.2 Time scope

This system was developed in a period of 8 months.

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