LESS HELL WITH SHELL

AN EDUCATIONAL GAME
FOR SHELL SCRIPTING

EARL JOSEPH PALAPAR
ADVISER: ZENITH ARNEJO

INTRODUCTION

BACKGROUND OF THE STUDY

In this technological age, the teaching and sharing of knowledge has become relatively dependent on the growing usage of educational games, or what is called "game-based learning".

BACKGROUND OF THE STUDY

Shawn Conrad, Michaela LaVan, Michele Pratusevich, Emma Tolley, David Zou
11.127/252/CMS.590 Digital Game Final Report
12 May 2011

Terminus: A Text Adventure Game To Promote Learning About Terminal Command Line Interfaces

You are player dropped into the mysterious land of Terminus! By exploring your surroundings and acquiring magic spells, you are destined to defeat the dark wizard plaguing the local citizens.

Who is the audience for your game and why did you choose this audience?
The intended audience is anyone who is interested in learning about using a command line interface, but the game can also be enjoyed by those who already know terminal commands. The game was created to be entertaining and informative to an audience of college-aged players, but also for younger

```
Welcome! If you are new to the game, here are some tips:

Look at your surroundings with the command "ls".
Move to a new location with the command "cd LOCATION"
You can backtrack with the command "cd ..".
Interact with things in the world with the command "less ITEM"

If you forget where you are, type "pwd"

Go ahead, explore. We hope you enjoy what you find. Do ls as your first command.

>pwd
You are in Home.
>
```
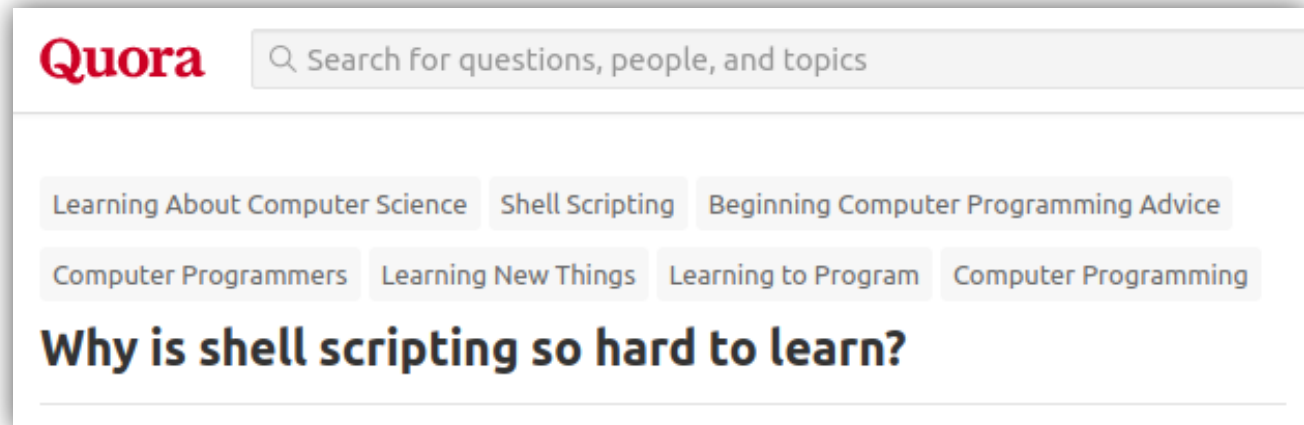
STATEMENT OF THE PROBLEM

Shell scripting, although is relevant in the programming industry, faces a scarcity in professionals who possess the necessary experience in the market, despite the booming demand for it.

Generally, the skill in mastering shell scripting is rather unpopular among others, in the field of programming.

STATEMENT OF THE PROBLEM

Quora   Q Search for questions, people, and topics

Python Vs. Java   Shell Scripting   Learning Java   Learning Python

Computer Programming Advice   Python (programming language)   Java (programming language)

Learning to Program   Programming Languages   Personal Question

I am learning shell scripting and find it even more difficult than Java and Python, is this normal?

Quora   Q Search for questions, people, and topics

Learning About Computer Science   Shell Scripting   Beginning Computer Programming Advice

Computer Programmers   Learning New Things   Learning to Program   Computer Programming

Why is shell scripting so hard to learn?

STATEMENT OF THE PROBLEM

Search The UNIX and Linux Forums (Quick Search)

The UNIX and Linux Forums

Forums   Man ▽   Search ▽   Today's Posts   Quick Links ▽   Register

Shell Programming and Scripting

Should I learn bash scripting or is it going obsolete?

Tags

shell scripts

SIGNIFICANCE OF THE STUDY

The process of shell scripting is a concept in Computer Science which generally has not been tackled much, or taught thoroughly to students. To be able to help students and developers in grasping the skill in shell scripting, one way is through a method which most people enjoy: a game.

GENERAL OBJECTIVE

The general objective of the study is to create an educational game that teaches shell scripting, particularly bash (Bourne-Again Shell) scripting, to be able to help and encourage people, especially students and developers, to learn more about the concepts of shell scripting through a method that is both entertaining and educational.

OBJECTIVES OF THE STUDY

- design a storyboard which makes use of a word-type and multiple choice-type games to introduce concepts and terms in shell scripting, and a coding game where users can experience shell scripting firsthand

OBJECTIVES OF THE STUDY

- develop a desktop game application that has compatibility for a Linux Operating System which supports a Bourne-Again Shell environment, with the use of the standalone Java Programming Language

OBJECTIVES OF THE STUDY

- evaluate the usability and performance of the game through the use of pretest and posttest approach, as well as a game usability testing questionnaire
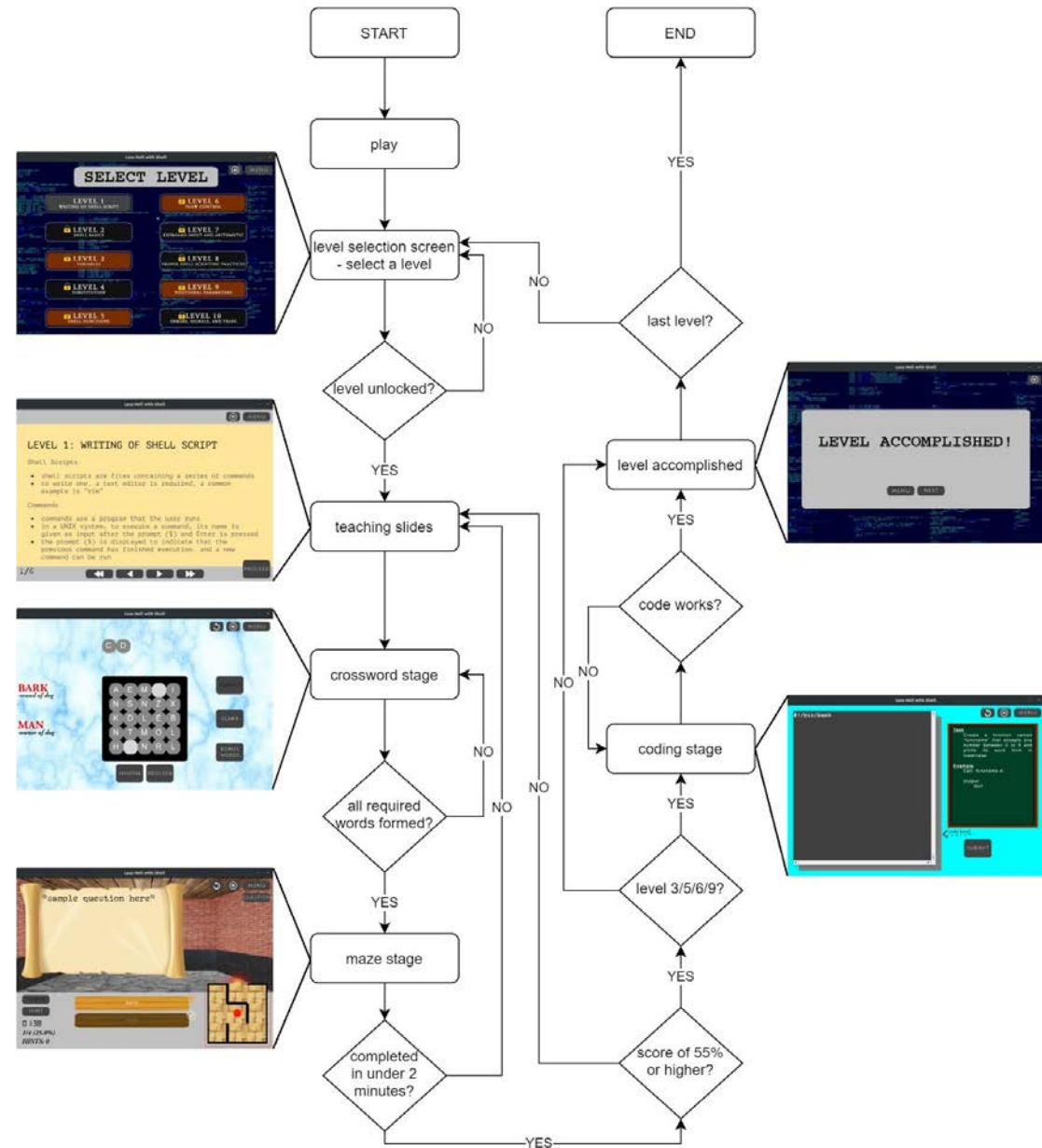
MATERIALS AND METHODS

DEVELOPMENT SYSTEM
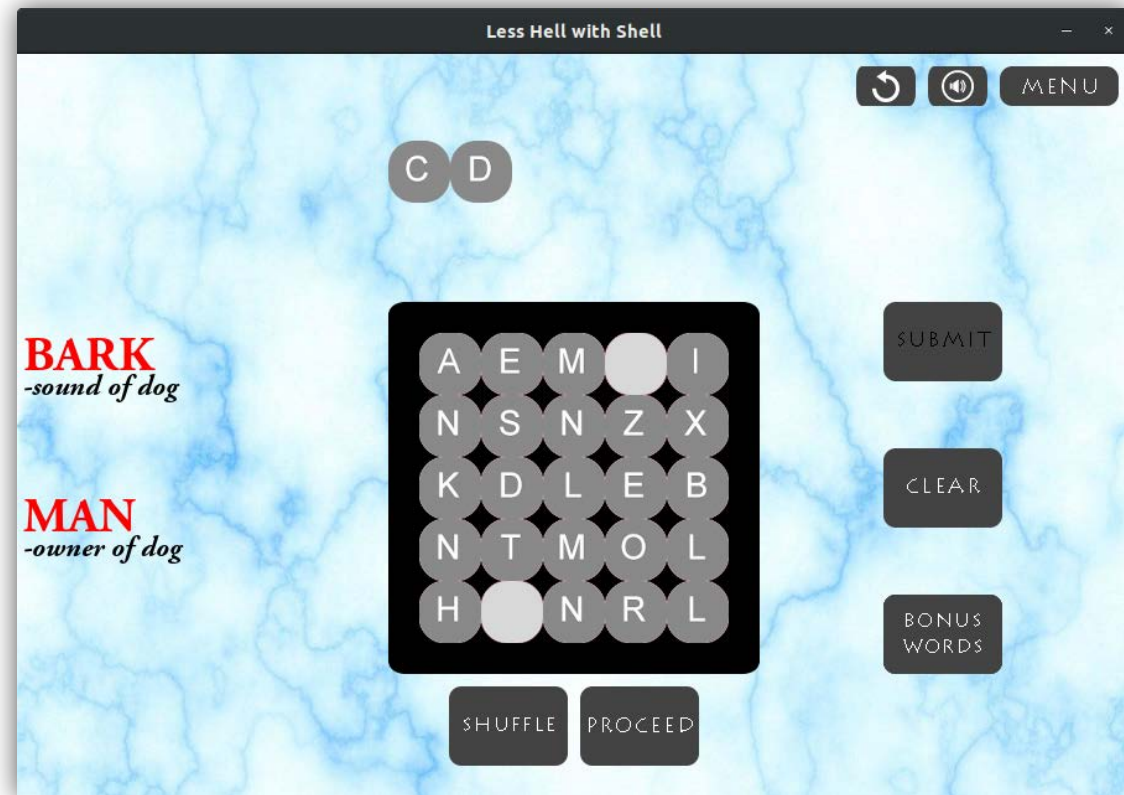
SHELL SCRIPTING CONCEPTS

- writing a shell script
- shell basics
- variables
- substitution
- shell functions
- flow control
- keyboard input and arithmetic
- proper shell scripting practices
- positional parameters
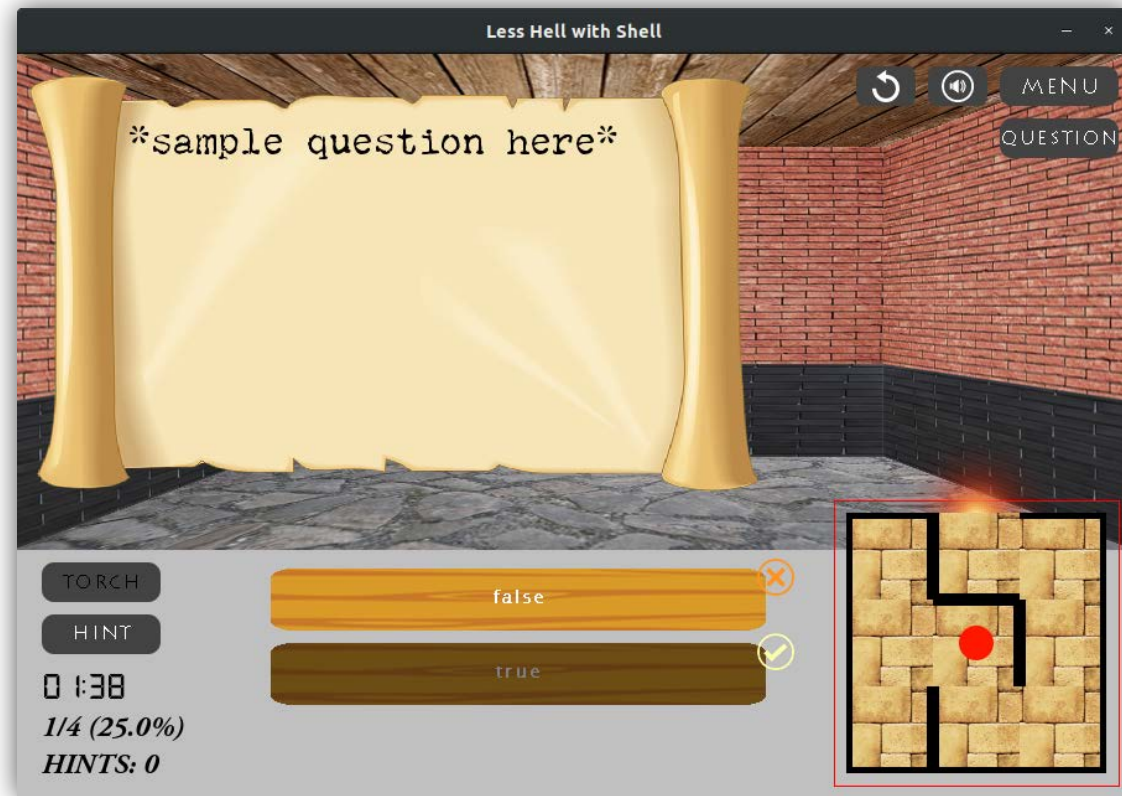- errors, signals, and traps

GAME STORYBOARD

Crossword Stage

Maze Stage

FINAL OUTPUT

Coding Stage

RESULTS AND DISCUSSION

PRETEST AND POSTTEST RESULTS

Pretest Scores	Posttest Scores
10	14
9	13
9	14
8	12
7	13
7	11
6	14
6	13
10	14
12	14
Mean Score: 8.4	Mean Score: 13.2

PRETEST AND POSTTEST RESULTS

Cronbach's alpha is a measure of the internal consistency within a group of items. It determines how close and similar those items are in representing a unified theme.

PRETEST AND POSTTEST RESULTS

The computed value of the Cronbach's alpha is 0.910861. In convention, 0.7 is the minimum acceptable value for Cronbach's alpha so a value of 0.91 implies an excellent internal consistency of items.

GAME USABILITY TESTING

CRITERIA	MEAN RATING	TOTAL POSITIVE*	TOTAL NEGATIVE**	TOTAL COUNT
Game Playing				
The game is simple.	5.1	70.00	30.00	10
The game is challenging.	5.2	70.00	30.00	10
I was able to complete the tasks and scenarios in the game.	5.1	70.00	30.00	10
It was fun playing the game.	5.5	80.00	20.00	10
Overall, I am satisfied with the game.	5.8	80.00	20.00	10
Average for Game Playing	5.34	74.00	26.00	
Game Software Technicality				
The interface of this game is suitable and functional.	5.6	80.00	20.00	10
The background music/sound is appropriate.	5.7	80.00	20.00	10
The information provided in the game is clear and easy to understand.	5.6	80.00	20.00	10
The game has all the functions and capabilities I expect it to have.	5.5	80.00	20.00	10
Drawing and scenes incorporated in the game complement each other.	5.1	80.00	20.00	10
Whenever I want to go back to a particular segment of the game, I could do so easily and quickly.	5.5	80.00	20.00	10
Average for Game Software Technicality	5.5	80.00	20.00	

COMMENTS AND SUGGESTIONS

- Adaptive screen resolution

- More levels or stages

- Varying background music

- More maze rooms

- Button click and hover sounds

- More maze backgrounds

COMMENTS AND SUGGESTIONS

- Lesser file size, if possible

- User creation functionality

- Varying difficulty

- Clear all data functionality

- Additional coding exercises

CONCLUSION

After having overall satisfactory results yielded from the surveys, it can be concluded that the developed application "Less Hell with Shell" is a great tool that can be used people, especially those who take programming courses and degrees, and those who are inclined to programming.

RECOMMENDATIONS

It is recommended to further develop the game using common and modern and game engines like Unity and such. Optimization would also improve the application, for better execution without sacrificing the resources required and the load on the machine and memory. Also, better graphics, sprites, and assets could be made for the application if there are dedicated creative artists involved in creating it.

THANK YOU!