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# Guessing Game Script

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## Abstraction & Introduction

This project is a number guessing game designed in the way that the user thinks of any number between 1 and 1000, and the script will try to get the correct guess as fast as possible. The script is written in bash language. The mechanism of this game applies the concept of binary search, where we set a beginning point, an end point and compare the value in the middle, according to the result we adjust the beginning and end point to omit half of the interval. This process is continuous until we find the correct guess.

The script can run on Linux devices inside the terminal, and on windows devices through bash-like third-party applications as Git Bash, Cmder.

## Design

The script contains a main function called “play” which is responsible for executing the whole game. It sets the start point to 1 and the end point to 1000 to cover the whole interval, then it introduces the game to the user and gives them 10 seconds to think of a number. The program starts to guess using the midpoint of the start and end points. The guessing is continuous where each time the user is prompted to decide whether the guess is correct, higher or lower than the answer. The response of the user is handled in a case statement which modifies the start and the end according to the response. If the user enters an invalid input, they will be prompted to reenter a valid one.

When the program guesses the correct answer, it will ask the user if they would like to play again. This will recall the “play” method one more time repeating the whole logic.

## Implementation

1. Open the terminal and navigate to the working directory
2. Enter the command: nano script.sh
3. Write the following code:

```
 GNU nano 7.0                                  script.sh

play () {
    start=1
    end=1000

    echo "Welcome to our guessing game"
    echo "Please think of a number"
    echo "between $start and $end"
    echo "And I will try to guess it"
    echo "You have 10 seconds to think"

    for i in {10..1..-1}
    do
        echo -ne " $i\033[0K\r"
        sleep 1s
    done

    get_response () {
        echo
        echo "Is it $guess ?"
        echo "Type 't' if my guess is true"
        echo "Type 'l' if the answer is less than my guess"
        echo "Type 'g' if the answer is greater than my guess"
        read response
    }

    while true;
    do
        ((guess=(start+end)/2))
        get_response
        case $response in
            "l" | "L" )
                ((end=guess-1))
                ;;
            "g" | "G" )
                ((start=guess+1))
                ;;
            "t" | "T" )
                echo "I DID IT !!!!!!"
                break
                ;;
            * )
                echo "Invalid Response, Only ('t', 'l', 'g' allowed)"
                continue
                ;;
        esac
    done

    read -p "Play Again? (Y/n)" again
    if [ $again == "Y" ];
    then
        play
    fi
}

play
```

4. Save the file (Ctrl + S) and Close nano (Ctrl + K)

5. Enter command: bash script.sh

## Result

```
saif-@DESKTOP-ODG4LBB MINGW64 /d/SW/Projects/bash-guessing-game
$ bash script.sh
Welcome to our guessing game
Please think of a number
between 1 and 1000
And I will try to guess it
You have 10 seconds to think
 1
Is it 500 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
g

Is it 750 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
g

Is it 875 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 812 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 781 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l
```

```
Is it 765 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 757 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
g

Is it 761 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 759 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 758 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
t
I DID IT !!!!!!
Play Again? (Y/n)Y
Welcome to our guessing game
Please think of a number
between 1 and 1000
And I will try to guess it
You have 10 seconds to think
 1
Is it 500 ?
```

```
Is it 500 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 250 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 125 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 62 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
g

Is it 93 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
g

Is it 109 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
g

Is it 117 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
```

```
Is it 117 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 113 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
l

Is it 111 ?
Type 't' if my guess is true
Type 'l' if the answer is less than my guess
Type 'g' if the answer is greater than my guess
t
I DID IT !!!!!!
Play Again? (Y/n)n
```

## Conclusion

In this project I made use of what I learned in Linux and bash scripting, and what I learned in functional programming to implement the logic of the game.

## References


- bash script, erase previous line? - Stackoverflow
  https://stackoverflow.com/questions/5861428/bash-script-erase-previous-line
- How to Pause a Bash Script | Linux Sleep Command - Its Linux FOSS
  https://itslinuxfoss.com/linux-sleep-command-pause-bash-script/
- Bash Functions - Linuxize

https://linuxize.com/post/bash-functions/
- Bash case statement [Explained with 3 examples] - jquery-az.com
https://www.jquery-az.com/bash-case/
- Bash IF – Syntax and Examples - TutorialKart
https://www.tutorialkart.com/bash-shell-scripting/bash-if/