

Bash Script Project: Interactive User & Group Management Tool

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This document for A robust Bash shell script project developed for the ITI Bash Scripting Course. This tool provides a menu-driven, whiptail-based interface for system administrators to easily manage users and groups on a Linux system, including adding, modifying, disabling accounts, and managing group memberships, all through interactive prompts.

1. Overview

This document provides a technical overview and user guide for the **Interactive Linux User and Group Management Tool**. This tool is a robust Bash shell script designed to streamline common system administration tasks—specifically the management of users and groups—on a CentOS/RHEL environment.

The entire application is built using the **whiptail** utility, which provides a menu-driven, graphical interface within the terminal, offering a significantly improved user experience over executing raw command-line utilities (useradd, usermod, etc.).

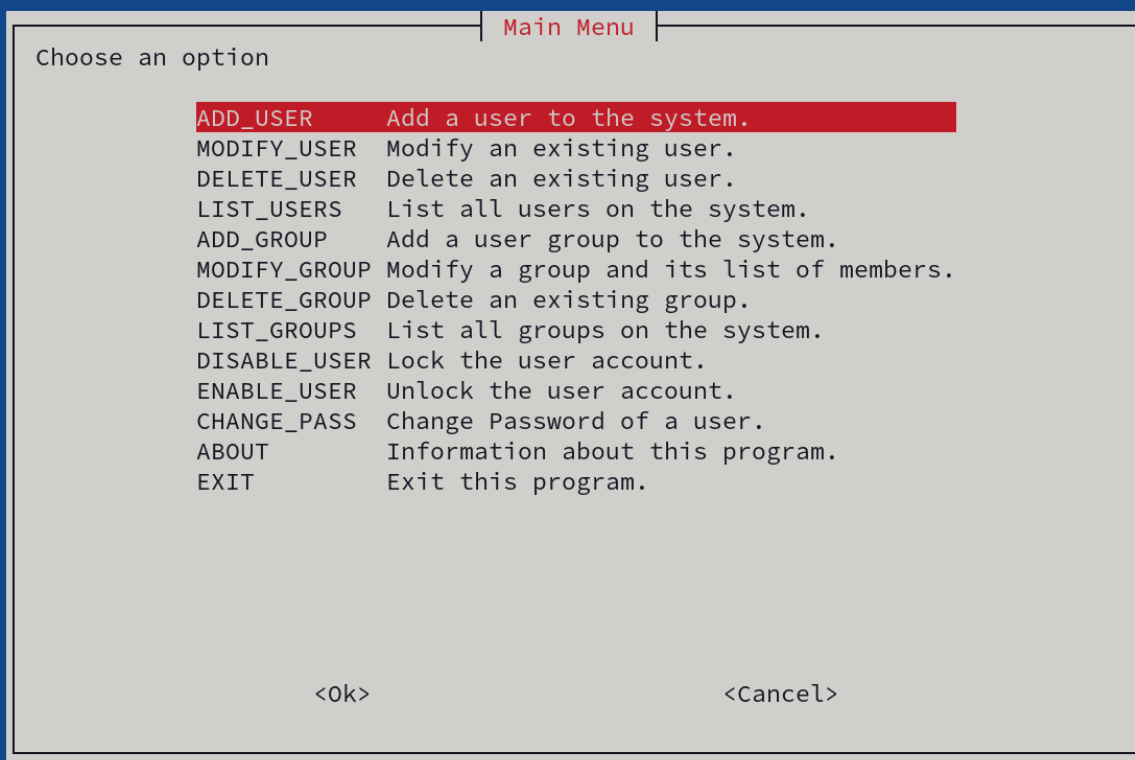


Figure1 – Main Menue

2. Technical Architecture and Design

The project employs a **modular design** structure, which separates the main presentation logic from the functional code. This approach enhances readability, simplifies debugging, and allows functions to be reused or modified independently.

2.1 File Structure

The tool consists of a central launcher script and multiple external function files, all installed in the system's binary directory for easy access:

```
0 directories, 0 files
[root@serverb ~]# ls -l /usr/sbin/mymini*
-rwxr-xr-x. 1 root root 1243 Oct 17 16:25 /usr/sbin/myminiabout
-rwxr-xr-x. 1 root root 793 Oct 17 17:10 /usr/sbin/myminiaddgroup
-rwxr-xr-x. 1 root root 5407 Oct 17 16:48 /usr/sbin/myminiadduser
-rwxr-xr-x. 1 root root 1310 Oct 17 17:21 /usr/sbin/myminichangepasswo
-rwxr-xr-x. 1 root root 1436 Oct 17 16:25 /usr/sbin/myminideletegroup
-rwxr-xr-x. 1 root root 1276 Oct 17 16:52 /usr/sbin/myminideleteuser
-rwxr-xr-x. 1 root root 1195 Oct 17 16:25 /usr/sbin/myminidisableuser
-rwxr-xr-x. 1 root root 937 Oct 17 16:25 /usr/sbin/myminienableuser
-rwxr-xr-x. 1 root root 784 Oct 17 16:25 /usr/sbin/myminiexit
-rwxr-xr-x. 1 root root 247 Oct 17 16:25 /usr/sbin/myminilistgroups
-rwxr-xr-x. 1 root root 240 Oct 17 16:25 /usr/sbin/myminilistusers
-rwxr-xr-x. 1 root root 3455 Oct 17 17:14 /usr/sbin/myminimodifygroup
-rwxr-xr-x. 1 root root 4220 Oct 17 16:25 /usr/sbin/myminimodifyuser
-rwxr-xr-x. 1 root root 2832 Oct 17 17:29 /usr/sbin/myminiproject
```

File Name	Role	Core Functions Contained
myminiproject	Launcher Script	Contains the MainMenue_Function and the commands to source all other files.
myminiadduser	User Functions	AddUser_Function
myminimodifyuser	User Functions	ModifyUser_Function
myminideleteuser	User Functions	DeleteUser_Function
myminilistusers	User Functions	ListUsers_Function
myminiaddgroup	Group Functions	AddGroup_Function
myminimodifygroup	Group Functions	ModifyGroup_Function
myminideletegroup	Group Functions	DeleteGroup_Function
myminilistgroups	Group Functions	ListGroups_Function
mimidisableuser	Utility Functions	DisableUser_Function
minienableuser	Utility Functions	EnableUser_Function
minichangepassword	Utility Functions	ChangePassword_Function
miniabout	Utility Functions	ABOUT_Function
miniexit	Utility Functions	Exit_Function

2.2 Key Technologies

- **Bash Shell Scripting:** The core programming language.
- **whiptail:** Used for creating all interactive dialog boxes (menus, input boxes, message boxes, and yes/no prompts).
- **Command Redirection (3>&1 1>&2 2>&3):** This technique is crucial for capturing the user input from whiptail --inputbox, as whiptail sends the user's text to **Standard Error**

(**stderr**) instead of Standard Output (stdout). The redirection captures and converts this error stream into a variable.

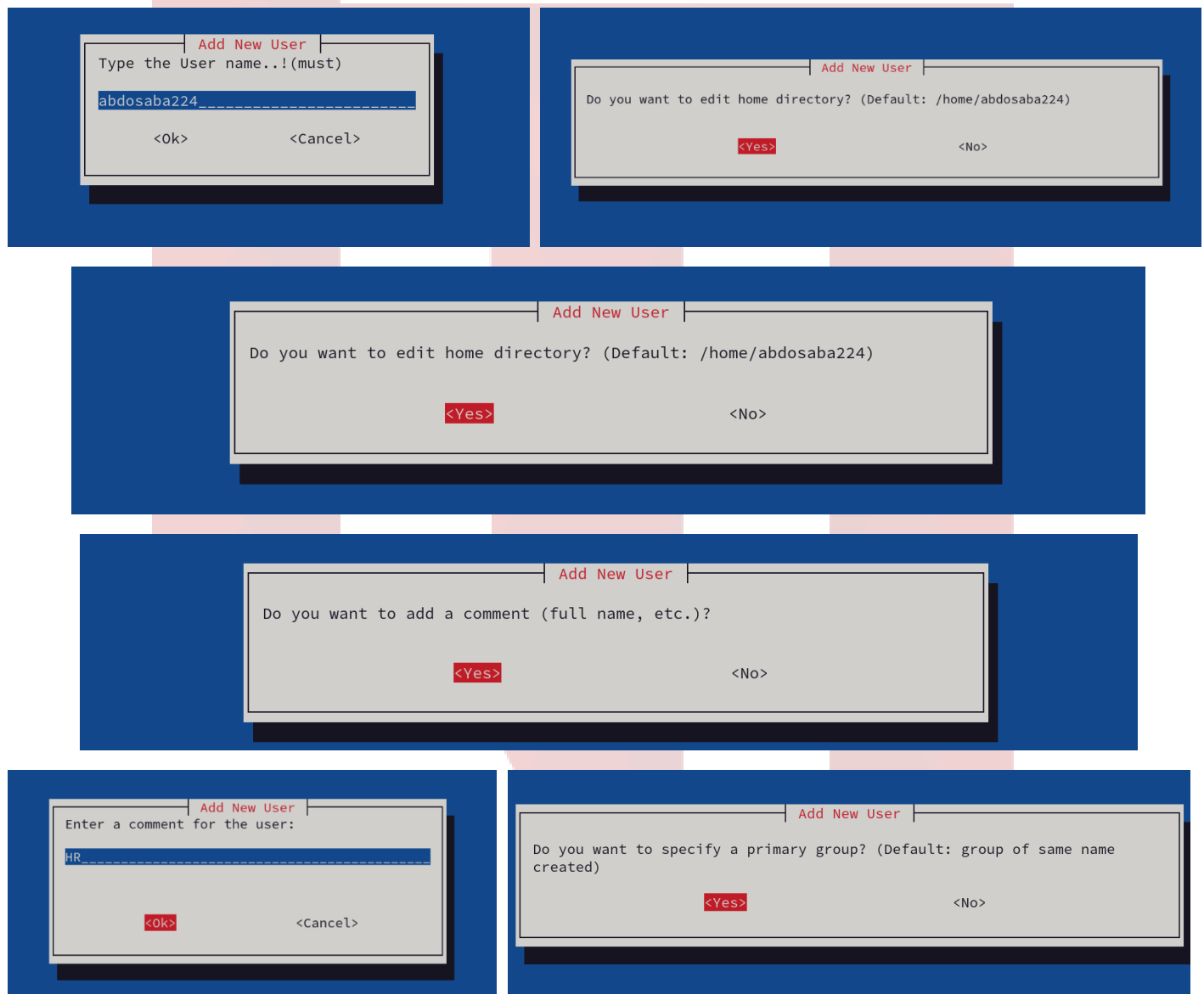
- **System Tools:** Leverages standard Linux utilities such as useradd, usermod, userdel, groupadd, groupmod, groupdel, passwd, and awk.

3. Main Menu Choices: Function Mapping

This section documents every option available in the main menu of the program, providing a brief description of the core functionality and the interactive interfaces (Dialogs) presented to the user upon selection

3.1. Add User

Used to add a new user to the system. It prompts for the username (mandatory) and allows the user to specify optional settings such as the Home Directory path, Comment (GECOS field), Primary Group, and User ID (UID).



Add New User

Do you want to specify a custom User ID (UID)? (Default: next available UID)

<Yes> <No>

Add New User

Enter the custom UID (number):

224424

<Ok> <Cancel>

Confirmation

Ready to execute:
sudo useradd -m -d /home/abdosaba224 -c 'HR' -u 224424
abdosaba224

You will be prompted to set the password next.

<Ok>

Success

User 'abdosaba224' created successfully! Now setting password...

<Ok>

password dialog

please enter your secret password

<Ok> <Cancel>

Success

Password set successfully for abdosaba224.

<Ok>

3.2 Modify User

Used to modify the properties of an existing user. After the username is entered, a sub-menu appears, allowing the user to select a single attribute for modification.

Modify Existing User

Type the User name to modify:

abdosaba224

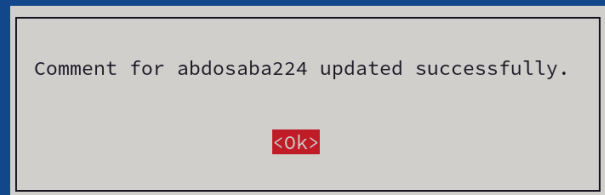
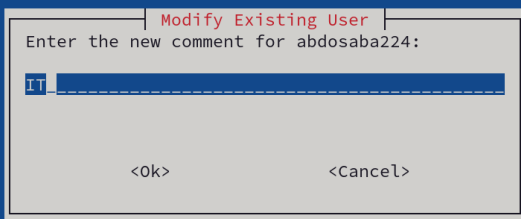
<Ok> <Cancel>

Modify Existing User

Choose an option

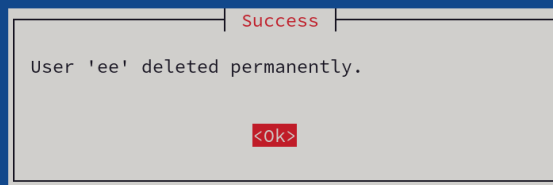
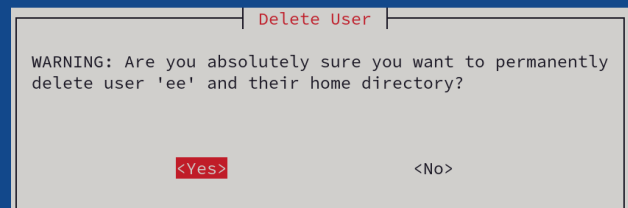
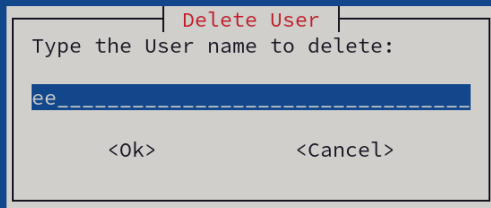
COMMENT	Modify the user's GECOS/Comment field.
GROUP	Modify the user's Primary Group.
HOME	Modify the user's Home Directory path.
UID	Modify the user's User ID (UID).
PASSWORD	Change the user's Password.

<Ok> <Cancel>



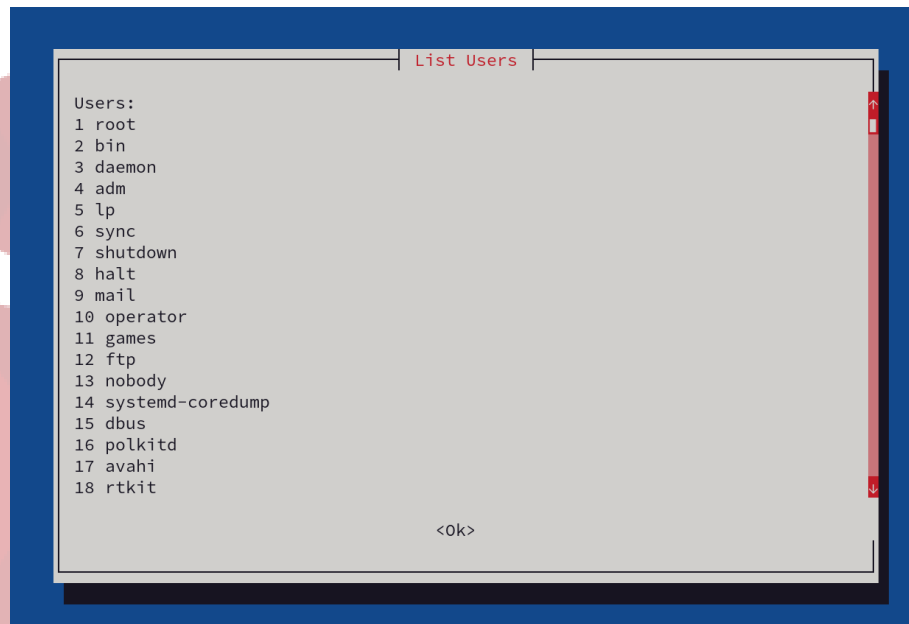
3.3 Delete User

Used to permanently delete an existing user, including the removal of their home directory. Requires a crucial confirmation before execution.



3.4 List Users

This displays all users in the system.



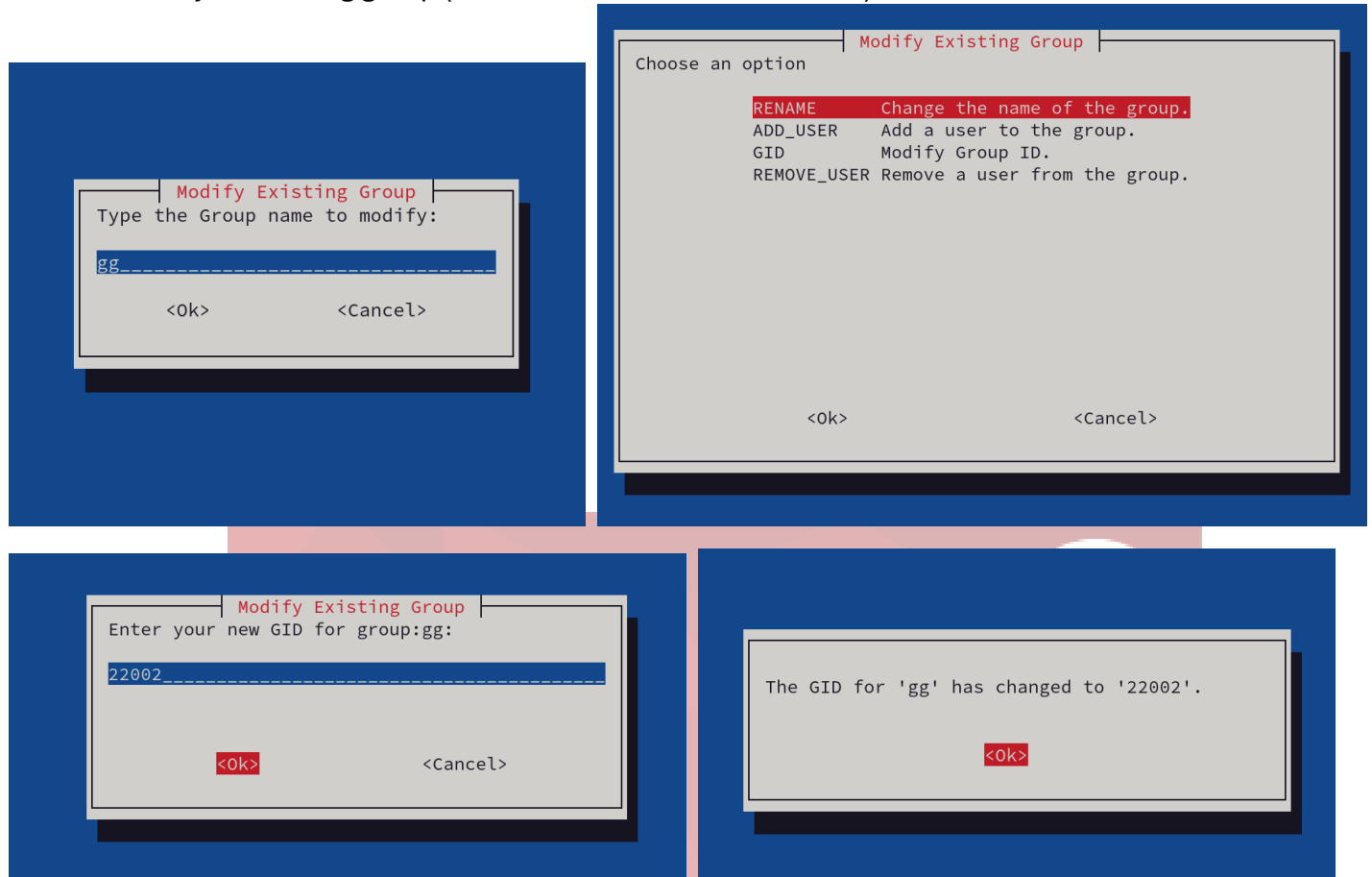
3.5 Add Group

Used to add a new group to the system.



3.6 Modify Group

Used to modify an existing group (rename, add/remove members).



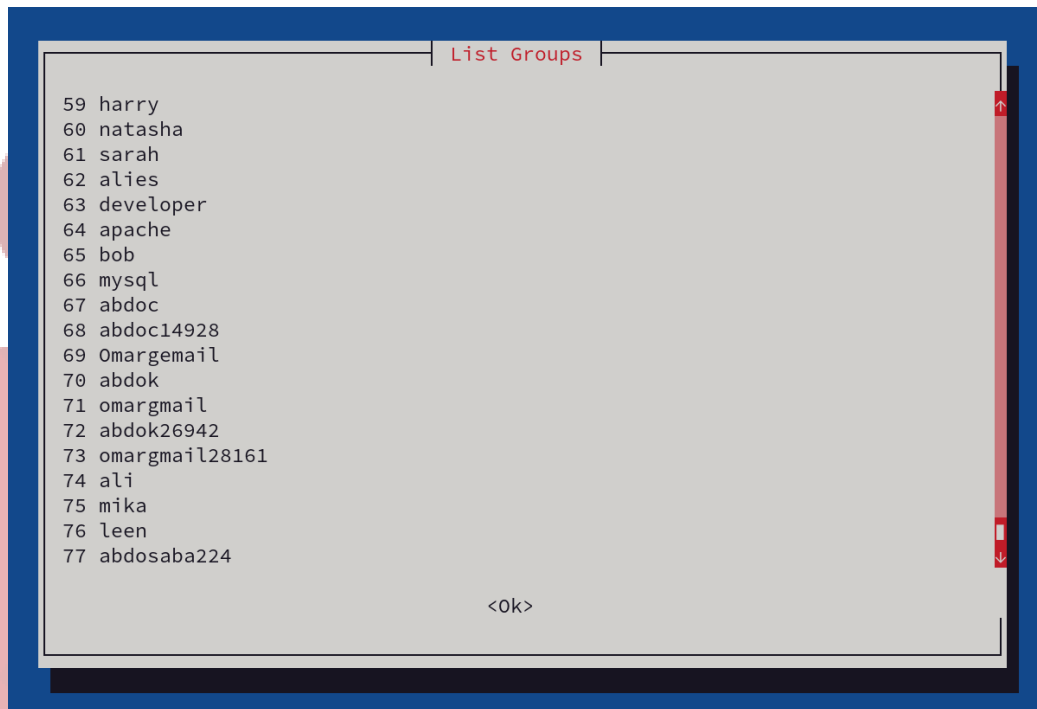
3.6 Delete Group

Used to delete an existing group. Requires confirmation before execution.



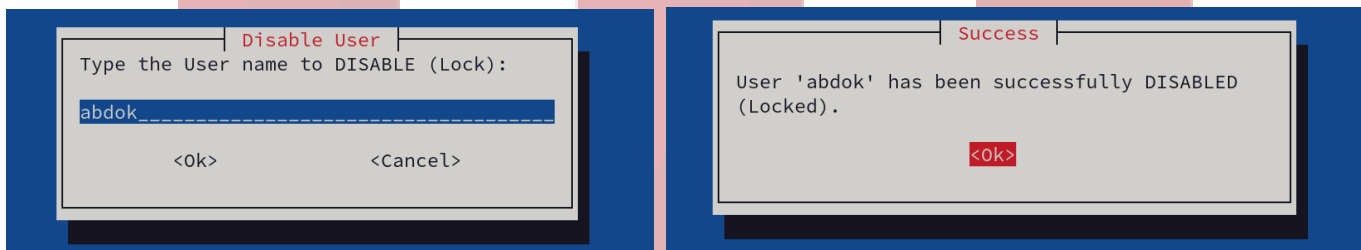
3.7 List Groups

This display all groups in the system.



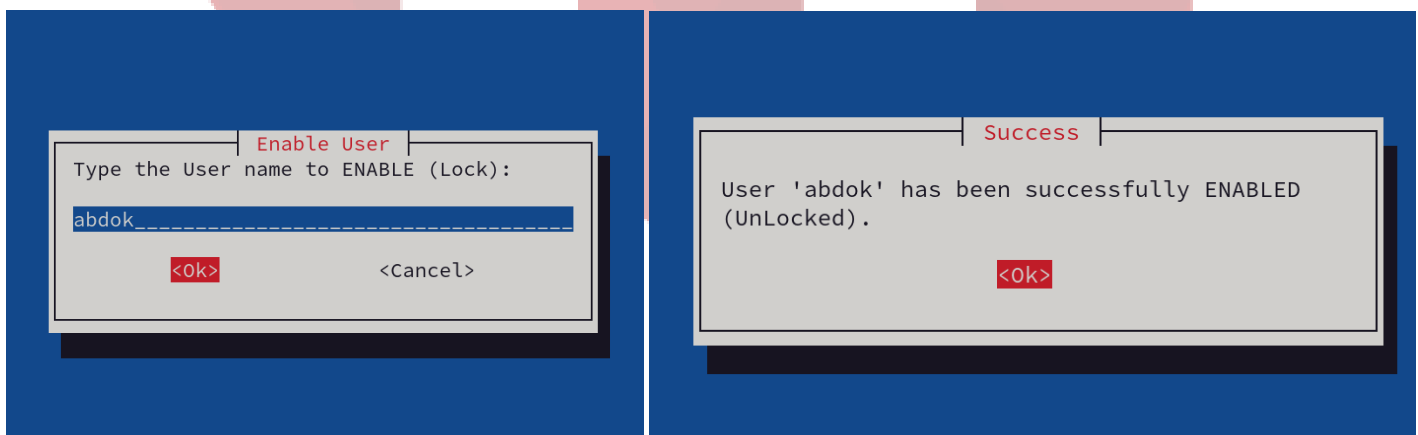
3.8 Disable User

Requests the username, confirms the action, and executes `usermod -L` to lock the account.



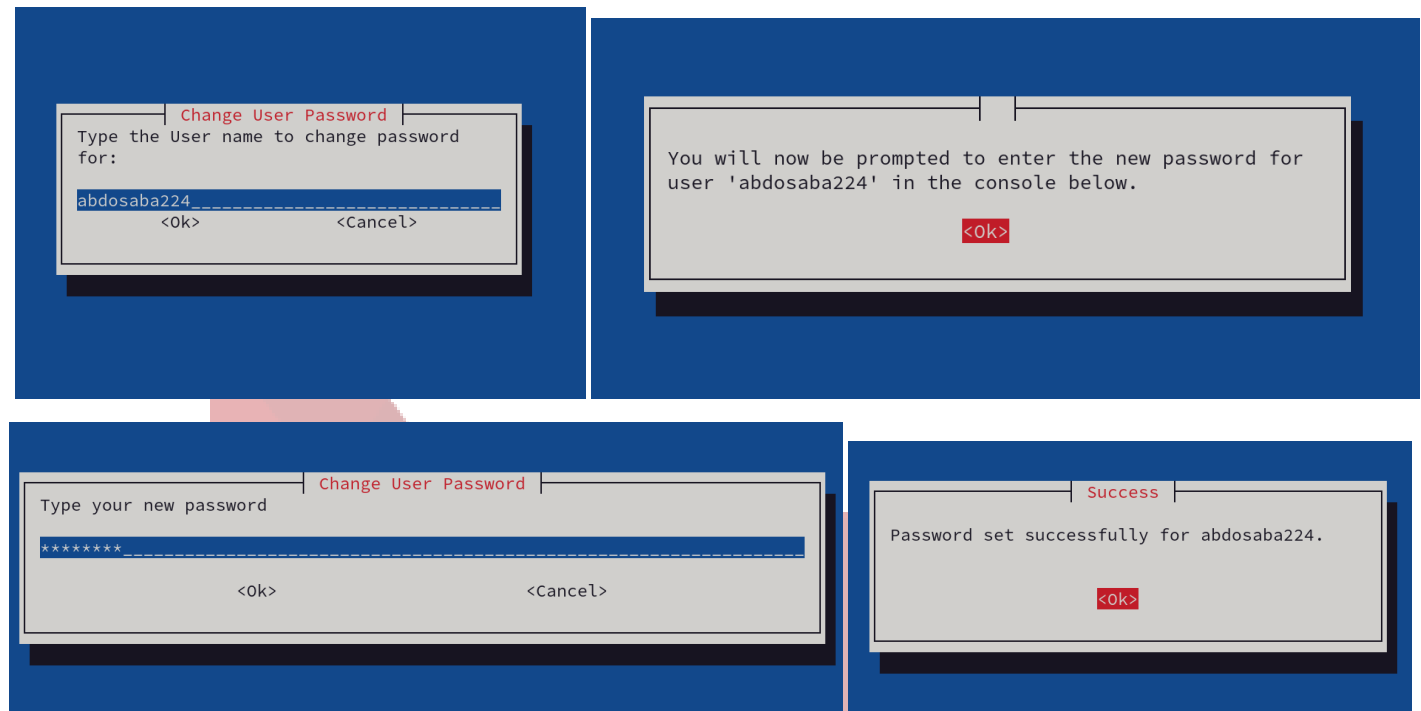
3.9 Enable User

Requests the username, confirms the action, and executes `usermod -U` to unlock the account.



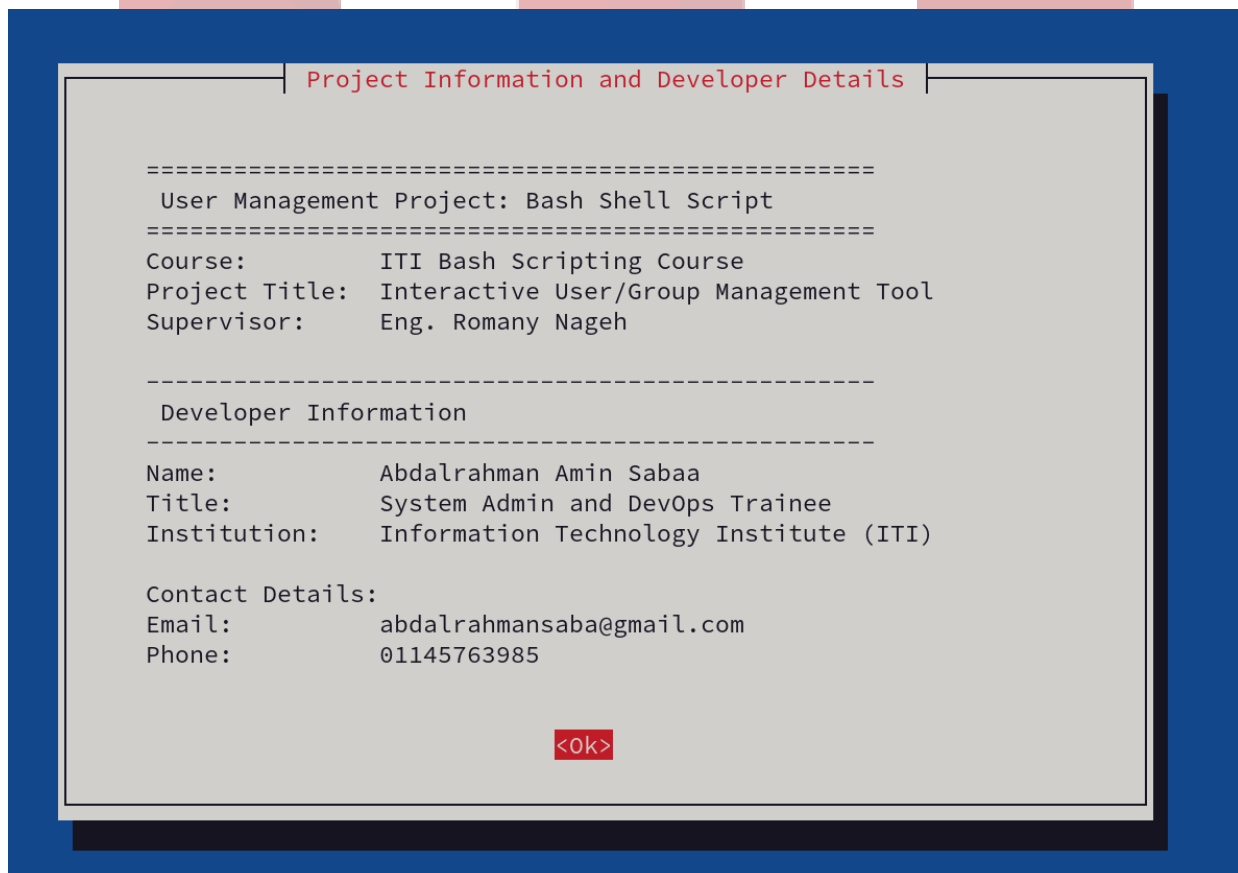
3.10 Change Password

Used to change the password for a specific user account.



3.10 ABOUT

This displays some info about the project.



4. Project Conclusion and References

This Bash Shell Scripting project, the **Interactive Linux User and Group Management Tool**, is complete and fully functional according to the design specifications derived from the ITI Bash Scripting Course requirements.

The full source code, including the modular function scripts and the README.md file, is hosted publicly for review and collaboration.

Detail	Information
<i>Project Status</i>	Completed and Deployed
<i>Repository Host</i>	GitHub
<i>Repository URL</i>	https://github.com/abdosaba22/Interactive-User-and-Group-Management-Tool
<i>Project Status</i>	Completed and Deployed

4.1 Technical References

The development of this interactive tool relied on standard Linux commands and the principles of shell scripting, utilizing the whiptail utility for all graphical dialogs.

https://en.wikibooks.org/wiki/Bash_Shell_Scripting/Whiptail