

GROUP 5 MINI PROJECT

[Password Reset System]

Requirements & Design: Detailed Technical Documentation

Instruction

Most medical devices and health records in the cloud are causing the major security challenge in the health sector. The sensitive data housed within hospital system makes them an easy target for cybercriminals. The password reset system provides an opportunity to protect health workers and patients' records by making it difficult for someone to make unauthorized adjustments to the patient's chart and other information. Good cybersecurity contributes to good health and wellbeing by providing access to safe, secure health-care services. We seek to contribute to the achievement of SDG #3, that is "GOOD HEALTH AND WELLBEING" through cyber security.

1. Project Overview

Provide high-level information to help health organization understand the solution being proposed as well as the business reasons supporting the solution.

1.1 Objective

Describe the objective of the project (2 to 3 sentences)

1. To mitigate password breaches
2. Reduce employee productivity caused by password maintenance issues.
3. Avoid password reuse across multiple devices.
4. Quick notification as password reminder

1.2 Business Case

Organizations of different sizes use credentials for their employees to maintain and secure information in their systems. This ensures unwanted access to patients' data or any records in their system. To avoid issues caused by password tampering, employees need to remember to reset passwords, which is important to any system security.

1.3 Risks

Document speaks to specific risks that have been identified or that should be considered.

- Exposure causes identity theft or tax fraud to individuals involved.

- Patients mistrust the system and sort other options.
- If one system suffers all connected devices are affected.
- Financial impact of data breach caused by password compromise can devastate health organizations.

1.4 Scope of Project

- Strategic roadmap covers process plan from start to finish of the projects.
- Project deliverables shows list of action items pertaining to the project.
- User stories section tells the as it is and to be from the admin and user role perspective.
- Flow diagram displays the diagrammatic system flow and relationship between the elements in the system.
- Test script set of instructions that will be performed on the system under test to test that system functions as expected.

1.4 Out of Scope

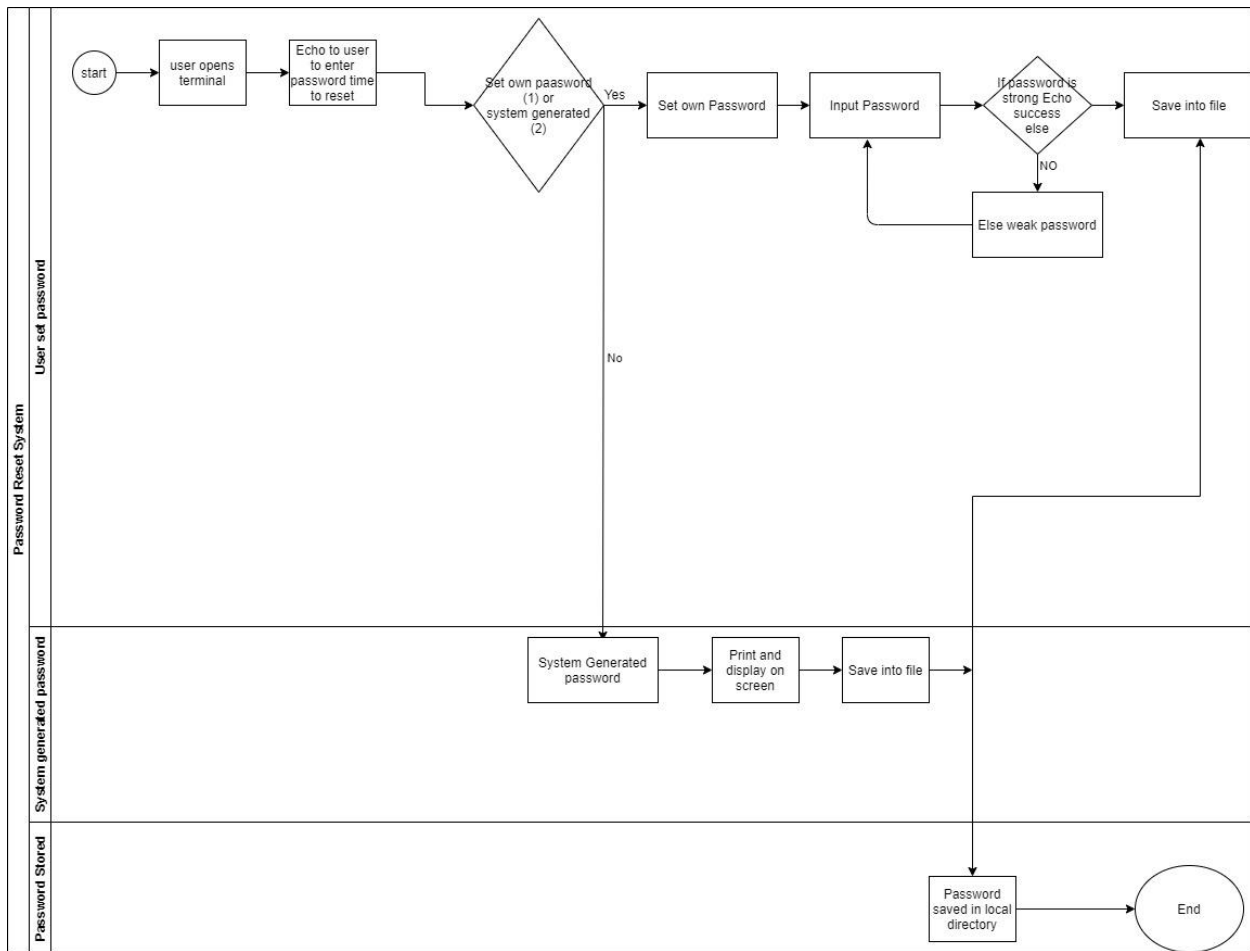
Delineate specific activities, capabilities, and items that are out of scope for the project.

- Evaluating all subject areas in the environment as this is a mini project and a subset of an entire system. It will cover the necessary part needed for successful completion of the project.
- Performing an inventory of data sources this points to the above explanation. A small sample was use to execute .

2. Flow Diagram

This section provides a diagram that illustrates element interaction required for the successful completion of this project. The diagram illustrates the elements interaction in the password reset system. It is segmented into three sections

- User set password here the user can choose to select number (1) when prompted for password reset choice
- System generated password the user selects number (2) for system generated password option.



3. Technical Specifications

Provides detailed technical specifications for required system as outlined below.

Kali Linux or azure

Cronjobs/cron tabs

3.1 User Story

User Story ID	Module	As a	I want to	So that	Acceptance Criteria
1	Password generation	As an admin /user	Be able to set my password	I can have a strong password	User should be able to choose

					<p>password generation method</p> <p>Re-enter password</p> <p>Show password criteria to the user</p> <p>New Password data field specifications</p> <ul style="list-style-type: none"> - At least 8 characters, 1 number, 1 uppercase letter, 1 lowercase letter, one special character <p>New Password cannot be same as previously used password</p>
2	System password generation	As a user	The system to be able to generate password for the user	So that I can change my password for security reasons	System generates password using base system
3	Password Save	As an admin	The system to be able to save password to local directory	So that I can have my current and old password saved.	System saves password to local directory
4					

4. Resource Needs

This segment identifies the staff resources that participated to successfully complete this project.

Staff Resources

Name	Contact
Rosemary Agbozo	rosemary.agbozo@womentechsters.org
Akewusola Elizabeth	akewusola.elizabeth@womentechsters.org
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Rose Macharia	rose.macharia@womentechsters.org

5. Codes and Screenshot

Code in passreset.sh script – bash programming in linux

```
#!/bin/bash
```

```
#This is a script to reset password for a user
```

```
echo "This is the compulsory password reset schedule"
```

```
echo 'Type [1] if you want to set the password yourself, or type [2] for the system generated password'
```

```
while (true)
do
```

```
#take users choice
read choice
```

#Using the choice to determine what process to carry out.

```
if [[ $choice == '1' ]]
then

    #Initializing a variable to serve as a condition for while loop
    t=0;
    echo 'Please enter the new password; critieria to follow: '
    echo 'Min: 8 characters; 1 upper case; 1 lower case; 1 special character; 1 number'

    #while loop to cause user to keep inputting password till right one acquired
    while [ $t = 0 ]
    do
        read newpass
        len=${#newpass}
        if [[ $len -ge 8 && $newpass =~ [0-9] && $newpass =~ [a-z] && $newpass =~ [A-Z]
&& ! $newpass =~ ^[:alnum:]+$ ]]
        then
            t=1;
            echo 'Strong password, you may proceed'
            echo $newpass ": is your new Password" > passmail.log

            #taking old password to change password in the system
            echo "enter your old password"
            read oldie
            echo -e $oldie$'\n'$newpass$'\n'$newpass | passwd

        else
            echo 'Your password is missing one of the criteria, please set it again'

        fi
    done
    break

elif [[ $choice == '2' ]]
then
    echo 'Computer Generated Password below '

    #Simple Password Generator
    export passy=$(openssl rand -base64 14)
    echo " Your new password: " $passy '$'\n"
```

```

echo $passy ': is your new password' > passmail.log

echo "enter your old password for confirmation"
read oldie
echo -e $oldie$\n'$passy$\n'$passy | passwd

break

else
    echo 'Your response is not valid; enter [1] or [2]'
    continue
fi
done

```

Pictures of the code in nano editor.

```

GNU nano 5.3 passreset.sh
#!/bin/bash

#This is a script to reset password for a user

echo "This is the compulsory password reset schedule"
echo 'Type [1] if you want to set the password yourself, or type [2] for the system generated password'
while (true)
do
    #take users choice
    read choice

    #Using the choice to determine what process to carry out.
    if [[ $choice = '1' ]]
    then
        #initializing a variable to serve as a condition for while loop
        t=0;
        echo 'Please enter the new password; critieria to follow: '
        echo 'Min: 8 characters; 1 upper case; 1 lower case; 1 special character; 1 number'

        #while loop to cause user to keep inputting password till right one acquired
        while [ $t = 0 ]
        do
            read newpass
            len=${#newpass}
            if [[ $len -ge 8 && $newpass =~ [0-9] && $newpass =~ [a-z] && $newpass =~ [A-Z] && ! $newpass =~ ^[:alnum:]]+$ ]]
            then
                t=1;
                echo 'Strong password, you may proceed'
            fi
        done
    fi
done

```

```
GNU nano 5.3 passreset.sh
echo $newpass ": is your new Password" > passmail.log

#taking old password to change password in the system
echo "enter your old password"
read oldie
echo -e $oldie$'\n'$newpass$'\n'$newpass | passwd

else
    echo 'Your password is missing one of the criteria, please set it again'
fi
done
break

elif [[ $choice == '2' ]]
then
    echo 'Computer Generated Password below $'\n''

    #Simple Password Generator
    export passy=$(openssl rand -base64 14)
    echo " Your new password: " $passy '$'\n''

    echo $passy ': is your new password' > passmail.log

    echo "enter your old password for confirmation"
    read oldie
    echo -e $oldie$'\n'$passy$'\n'$passy | passwd
```

```
GNU nano 5.3 passreset.sh
echo "enter your old password for confirmation"
read oldie
echo -e $oldie$'\n'$passy$'\n'$passy | passwd

break

else
    echo 'Your response is not valid; enter [1] or [2]'
    continue
fi
done
```

Crontab to set automatic reminder for password reset.

```
0 9 * * mon [ $(date +%d) -le 07 ] 66 /usr/bin/xfce4-terminal --display=:0.0 -H --command=/home/rosa/Desktop/passreset.sh
```

This crontab command causes the script to run once every first Monday of every month at 9am. Once this script runs, it opens a terminal for the user to input the new password/ to follow the prompt. Below is an image of the interactive terminal opened.

5.1 Password Reset Schedule

```
Terminal -
File Edit View Terminal Tabs Help
This is the compulsory password reset schedule
Type [1] if you want to set the password yourself, or type [2] for the system generated password
1
Please enter the new password; critieria to follow:
Min: 8 characters; 1 upper case; 1 lower case; 1 special character; 1 number
th^hrnf456
Your password is missing one of the criteria, please set it again
Thd56_+fjbf
enter your old password
4joshrose
Changing password for rosa.
Current password: New password: Retype new password: passwd: password updated successfully
[ ]
```

Password Reset Schedule Selection 1

```
Terminal -
File Edit View Terminal Tabs Help
This is the compulsory password reset schedule
Type [1] if you want to set the password yourself, or type [2] for the system generated password
1
Please enter the new password; critieria to follow:
Min: 8 characters; 1 upper case; 1 lower case; 1 special character; 1 number
th^hrnf456
Your password is missing one of the criteria, please set it again
Thd56_+fjbf
enter your old password
4joshrose
Changing password for rosa.
Current password: New password: Retype new password: passwd: password updated successfully
[ ]
```

Password Reset Schedule Selection 2

```
Terminal -
File Edit View Terminal Tabs Help
This is the compulsory password reset schedule
Type [1] if you want to set the password yourself, or type [2] for the system generated password
2
Computer Generated Password below $n
Your new password: C/eAmn3XlB2g2WS+7lY= $n
enter your old password for confirmation
Thd56_+fjbf
Changing password for rosa.
Current password: New password: Retype new password: passwd: password updated successfully
[ ]
```

Once the password is set, it is changed in the system. Knowledge of one's old password is required to set the new password, for extra safety.

A file in a hidden directory on the system is used to keep the current/new password. The location of the file is known only by the user of the machine and the system administrator.

Users can also use password management tools to keep password safe.

6. Recommendations and Conclusion

This project is one that is useful and can be implemented not only in the health sector but across various other systems in the world. During the testing phase, the project worked as expected and this implementation can be applied to applications used on various machines. That is, software applications such as linkedIn, Instagram, e-commerce sites, and many other, can adopt the system of reminding users to change their password frequently and bringing a prompt for users to do so at ease. This will help better safeguard breaches into systems through passwords.\

In the near future we hope to create room for system extension:

- By having an **audit visualization report** so users can see the attempts on their passwords. It will also give visibility into all previously used combinations so they don't have to repeat same passwords.
- Then "a password educate" prompters or section where they have list of not to be used passwords or combinations according to certain bodies(Security bodies) and a section on the right ways to generate complex passwords.

This report will be safeguarded and well protected.