Security System
(C++ Micro Project)

Introduction to Security System

This C++ code implements a basic console-based user registration, login, and password change system. It allows users to register by providing a username, password, and age, storing them in a file. During login, the program verifies credentials from the file, and users can view their details if authenticated successfully. It also provides an option to change the password by validating the old one

Project Objectives

This project aims to design and implement a basic security system using C++ that can authenticate users, detect breaches, and trigger alarms to respond to unauthorized events.
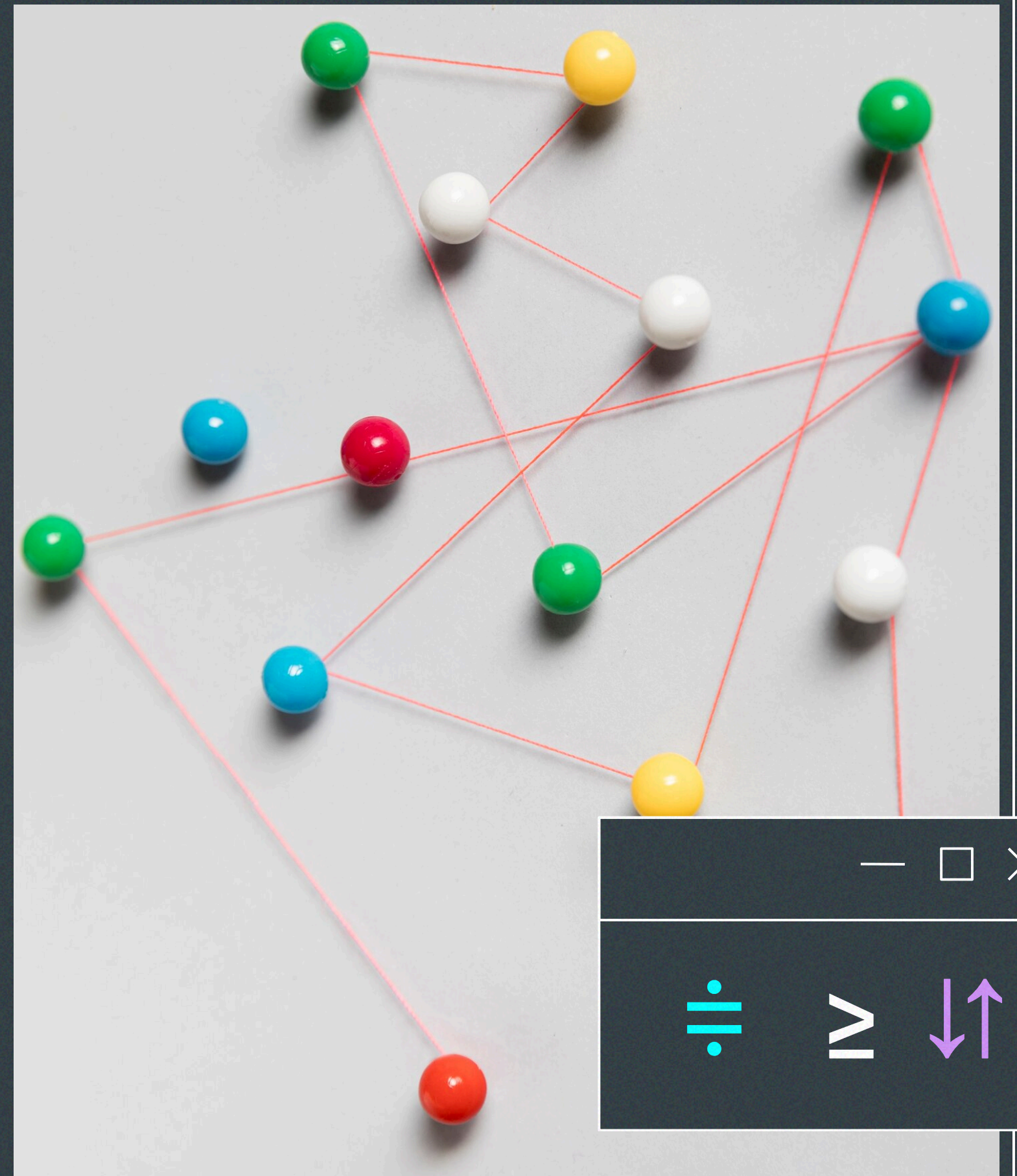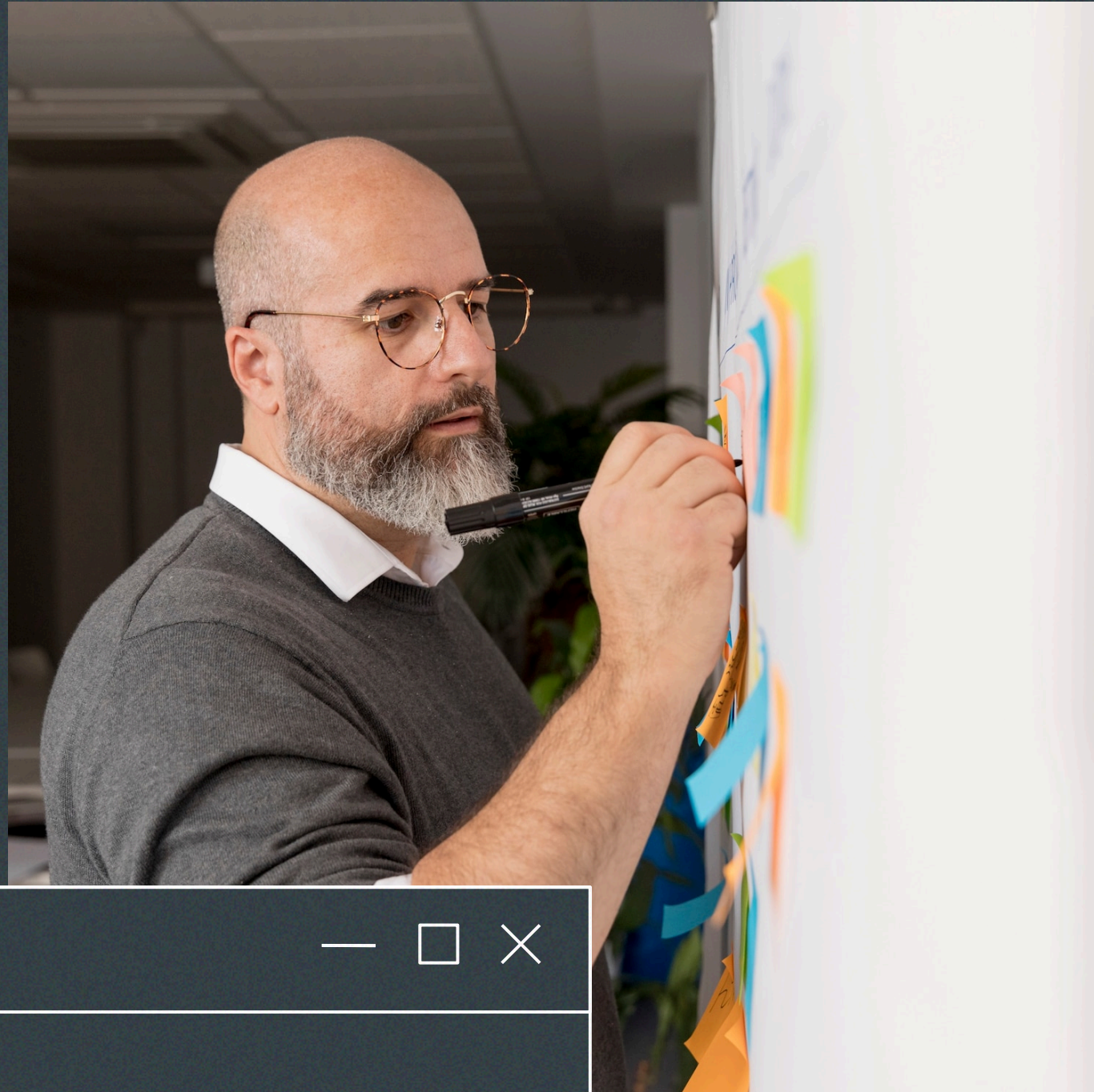
Technology Stack

The project is implemented using the C++ programming language, leveraging its efficiency and low-level control over system components.
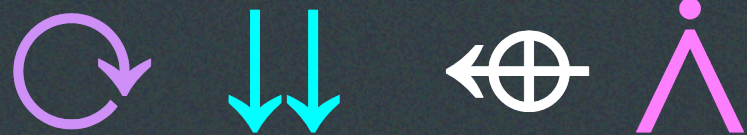
Problem Statement

<u>Security Concerns</u>: Unauthorized access to systems. Weak password management .Lack of user authentication mechanisms.
<u>Importance of the Solution:</u>
"Addressing these concerns ensures that only authorized users can access the system, thereby protecting sensitive data and maintaining system integrity."

Features of the System

- <u>User Registration:</u> Allows new users to create an account by providing a username, password, and age.
- <u>User Authentication:</u> Validates user credentials during login to ensure only authorized access.
- <u>Password Management:</u> Enables users to change their passwords securely.

Conclusion and Future Work

In conclusion, enhancing security protocols through my C++ project has provided valuable insights into effective practices. Future work will focus on **continuous improvement**, adapting to emerging threats, and exploring **innovative technologies** to further strengthen security measures.

C++ Program Structure

- Moduel

1.Main Menu:
Displays options: Register, Login, Change Password, End Program.
2.Registration Module:
Captures username, password, and age.
Stores credentials in File.txt.
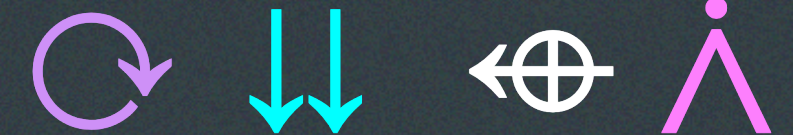3.Login Module:
Prompts for username and password.
Validates credentials against stored data.
4.Password Change Module:Allows users to update their passwords after
verifying the old password.
5.Exit Module:Ends the program gracefully.

Key Algorithms

- Input Validation: Ensures that user inputs are correctly formatted and secure.
- File Handling: Efficiently reads from and writes to files to manage user data.
- Authentication Logic: Compares input credentials with stored data to grant or deny access.

REGISTER PAGE

```cpp
#include<iostream>
#include<fstream>
#include<sstream>
#include<string>

using namespace std;
Tabnine | Edit | Test | Fix | Explain | Document | Ask
int main(){
    int a, i=0;
    string text,old,password1,password2,pass,name,password0,age,user,word,word1;
    string creds[2],cp[2];
cout<<" ###### ######## ###### ##      ## ######## #### ####### ##   ##    ###### ##   ## ###### ######## ######## ##    ## "<<endl;
cout<<"## ## ##   ##     ## ## ##     ## ##   ## ## ##   ##   ## ##   ##    ## ##   ### ### "<<endl;
cout<<"##     ##     ##      ## ## ##   ## #### ##      #### ## ## #### #### "<<endl;
cout<<" ###### ######   ##    ## ######## ##   ## ##   ######   ##   ## ## ## ## ## ## ## ## "<<endl;
cout<<"      ## ##      ## ## ##   ## ##   ##    ## ## ##    ## ## "<<endl;
cout<<"## ## ##   ##   ##   ## ## ##   ##   ## ##   ## ## "<<endl;
cout<<" ###### ######## ###### ######## ##   ## #### ##   ######   ##   ## ######## ##   ## "<<endl;

    cout<<"_____"<<endl;
    cout<<"|          1.Register        |"<<endl;
    cout<<"|          2.login           |"<<endl;
    cout<<"|          3.Change password |"<<endl;
    cout<<"|_____ 4.End Program____|"<<endl<<endl;
```

```cpp
do{
    cout<<endl<<endl;
    cout<<"Enter your choice:- ";
    cin>>a;
    switch(a){
        case 1:{
            cout<<"  _____"<<endl<<endl;
            cout<<"  |-----------Register------------|"<<endl;
            cout<<"  |_____|"<<endl;
            cout<<"Please enter username:- ";
            cin>>name;
            cout<<"Please enter the password:- "<<"\n";
            cin>>password0;
            cout<<"Please enter your age:- "<<"\n";
            cin>>age;

            ofstream of1;
            of1.open("File.txt");
            if(of1.is_open()){
                of1<<name<<"\n";
                of1<<password0;
                cout<<"Registration successfull"<<endl;
            }


        }
```

LOGIN PAGE

```cpp
case 2:{
    i=0;
    cout<<"_____|"<<endl<<endl;
    cout<<"|-----------login---------------|"<<endl<<endl;
    cout<<"|_____|"<<endl<<endl;
    ifstream of2;
    of2.open("file.txt");
    cout<<"Please enter the username:-  ";
    cin>>user;
    cout<<"Please enter the password:- ";
    cin>>pass;
    if(of2.is_open()){
        while(!of2.eof()){
            while(getline(of2,text)){
                istringstream iss(text);
                iss>>word;
                creds[i]=word;
                i++;
            }

            if(user==creds[0] && pass==creds[1] ){
                cout<<"---log in successfull----";
                cout<<endl<<endl;

                cout<<" Details: "<<endl;
                cout<<"Username: "+ name<<endl;
                cout<<"password: "+ pass<<endl;
                cout<<"Age: "+age<<endl;
            }
            else{
                cout<<endl<<endl;
                cout<<"Incorrect Credentials"<<endl;
                cout<<"|     1.Press 2 to login              |"<<endl;
                cout<<"|     1.Press 3 to Change password    |"<<endl;
                break;
```

```cpp
}
case 3:{
    i=0;
    cout<<"-----------Change password----------------"<<endl;
     ifstream of0;
     of0.open("file.txt");
     cout<<"enter the old password"<<endl;
     cin>>old;
     if(of0.is_open())
     {
         while(of0.eof()){
             while(getline(of0,text)){
                 istringstream iss(text);
                 iss>>word1;
                 cp[i]=word1;
                 i++;
             }
             if(old==cp[1]){
                 of0.close();

                 ofstream of1;
                 if(of1.is_open()){
                     cout<<"enter your new password:- "<<"\n";
                     cin>>password1;
                     cout<<"Enter your password again:- "<<"\n";
                     cin>>password2;
                     if(password1==password2){
                         of1<<cp[0]<<"\n";
                         of1<<password1;
                         cout<<"Password change successfull"<<"\n";
                     }
                     else{
                         of1<<cp[0]<<"\n";
                         of1<<old;
                         cout<<"Password do not match"<<"\n";
                     }
                 }
             }
         }
     }
    else{
        cout<<"Please enter the valid Password"<<endl;
        break;
```

CHANGING PASS PAGE

```
          5
       case 4:{
          cout<<"_____Thank you_____";
          break;
       }
       default:
          cout<<"Enter a valid choice";

       }
    }
  while(a!=4);
  return 0;

}
```

IF AYNONE ENTERED WRONG CHOICE

SO THE PAGE WILL TELL THEM TO ENTER VALID CHOICE

Thanks YOU!