DEPARTMENT OF INFORMATION AND COMMUNICATION ENGINEERING

INDIVIDUAL REPORT SAMPLE

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I. Introduction

Automata theory is an area of theoretical computer science that investigates abstract machines and the computing problems that these machines can solve. Automata are abstract devices that are used to model the behavior of real-world systems.

The finite automaton (FA), which is a machine with a finite number of states, is one of the most important forms of automata. Regular languages, a sort of formal language that may be described using regular expressions, can be recognized using FAs.

Automata theory is a complex and difficult area, yet it is also extremely rewarding. By studying automata, we can obtain a better knowledge of the theoretical basis of computer science as well as its practical applications.

II. Group Contribution

a. Delete Program

Use delete to delete all existing data in programming, and then to delete data, we must write id and name if they exist. So, we see "Delete Successful" right away.

```
//Delete
void DeleteCurrentFA() // delete all data
{
    system("cls");
    ifstream Myfile;
    Myfile.open("auto.txt");
    ofstream writefile;
    writefile.open("new.txt");
    Element *tmp;
    cout << "\n\t\t\t*******************************\n";
    cout << "\t\t\t****Welcome to delete FA********\n";
    cout << "\t\t\t*******************************\n";
    cout << "\t\t Delete function"<<endl;
    if(!Myfile)
    {
        cout<< "File is not found.\n";
    }
    else{
            cout << "Delete successful \n";
        Myfile.read((char*)&tmp,sizeof(tmp));
        while (!Myfile.eof())
        {
            Myfile.read((char*)&tmp,sizeof(tmp));
        }
    }
    Myfile.close();
    writefile.close();
    remove("auto.txt");
    rename("new.txt","auto.txt");
    exit();
}
void insert_data(ofstream &write) {

   file f1;

    cout << "\n\tEnter id : ";

    cin >> f1.ID;

    cout << "\n\tEnter name : ";

    cin.get();

    getline(cin, f1.name);

    write << f1.ID << endl;

    write << f1.name <<endl;
}
```

b. Update Program

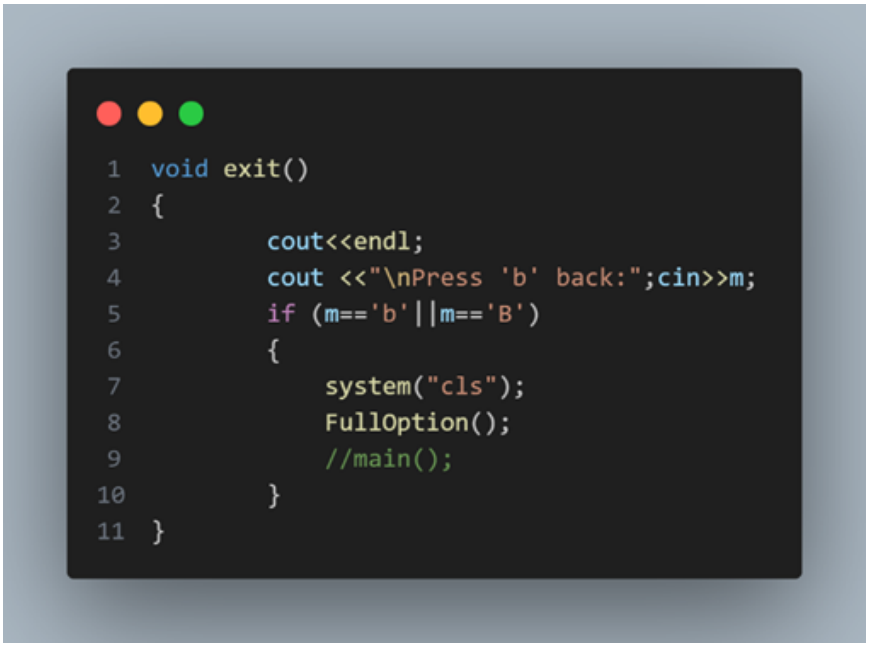
Use update to update existing data in programming, and then write old id for old function before updating data. We can only update for new ids. As a result, you must enter the update name.

```
void updateFA(string id,ifstream &read)
{
    system("cls");
    string name;
    //string id;
    //ifstream read("auto.txt");
    ofstream writefile("auto.txt");

    //writefile.open("auto.txt",ios::app);
//    fstream read;
//    read.open("auto.txt",ios::in);

    file f;

    f = get_data(read);

    while(!read.eof())
    {
        if(f.ID ==id)
        {
            cout << "\n\tEnter new ID: "<<id;
            insert_data(writefile);
        }
        else
        {
            writefile<<f.ID<<endl;
            writefile<<f.name<<endl;
        }
        f = get_data(read);
    }

    read.close();
    writefile.close();
    remove("auto.txt");
    rename("new.txt","auto.txt");
}
void searchdata()
{
    string idsearch, id, name;
    ifstream Myfile("auto.txt");
    bool found = false;
    string line;
    cout << "Enter ID to search: "; cin>> idsearch;
    if(Myfile.is_open())
    {
        while (getline(Myfile,line))
        {
            f.ID = line.substr(0,8);
            if(f.ID != idsearch)
            {
                found = true;
                break;
            }
            else{
                found = false;
            }
        }
        if(found == true)
        {
            name= line.substr(9,line.length()-1);
            cout << "\n*****************************\n";
            cout << "ID number: "; cin>> id;
            cout << "Name: "; cin>> name;
            cout << "\n*****************************\n";
            cin.get();
        }
        else
        {
            cout << "ID is not exist! \n";
            cin.get();
        }
    }
    else {
        cout << "enable to open file! Press any key to continue.\n";
    }
    Myfile.close();
}
```

```
void updateFA()
{
    ifstream Myfile("auto.txt");
    string idsearch , newname;
    int newid;
    int recon;
    bool found;
    int counter = 0;
    string line;
    string linearr[100];

    try {
    cout << endl;
    cout << "\t\tEnter ID: "; cin >> idsearch;
    cout <<endl;
    }
    catch (exception e)
    {
        cout << "Please Enter a valid number."<<endl;
    }
            if(Myfile.is_open())
    {
        found = false;
         while (getline(Myfile,line))
        {
            f.ID = line.substr(0,5);
            if(f.ID == idsearch)
            {
                found = true;
                break;
            }
            else{
                found = false;
            }
        }


    if (found == false )
    {
        //system("cls");
            cout<< "New ID : ";cin>> newid;cout<<endl;
            cout << "update name: "; cin>> newname;
            //getline(cin.newname);
            //getline(cin.newname);

            //linearr[recon] = idsearch+"," + newname + "," ;

            fstream write("auto.txt");
            //write.open("auto.txt",ios::out);
            for(int i=0;i<counter;i++)
            {
                write << idsearch <<endl;
                write << newname << endl;
            }
            cout << "update successfully!\n";
            cin.get();
    write.close();
    }
    Myfile.close();
    }

}
```

c. Exit Progrm

Finally, when you click on the program's last number. The program has ended.



```
void exit()
{
        cout<<endl;
        cout <<"\nPress 'b' back:";cin>>m;
        if (m=='b'||m=='B')
        {
            system("cls");
            FullOption();
            //main();
        }
}
```

III. Conclusion

Automata theory is a diverse and difficult science with several applications. In this section, we will examine briefly some of the important points from our discussion.

To begin, automata are abstract devices that can be utilized to mimic real-world system behavior. As a result, they are a powerful tool for comprehending and developing complicated systems.

Second, formal languages can be recognized using automata. This is a strong tool for natural language analysis and processing, as well as for creating compilers and other software tools.

Third, automata theory has a solid mathematical basis. As a result, it is a rigorous and well-founded subject of research.

Finally, automata theory is a rapidly expanding topic with a plethora of fascinating new applications. As computer science advances, automata theory is anticipated to play a larger role in the development of new technologies.

IV. Member Evaluation

Name	Group Contribution Score
SOEM Seakmeng	27%
PIN Seavmuy	20%
RORN Makara	15%
RATHA Sothea	15%
POM Mouylang	23%