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COSC 120 – 751

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Project 3

Source Code:

Main.cpp

```
//Nick Krisulevicz
//Project 3
//01/25/2021



#include <iostream>
#include <fstream>
#include <string>
#include "employee.h"
using namespace std;

const int DBSIZE = 10; // constant value to determine size of the database

int main()
{
   ofstream employeeFile; // creating object to use to manipulate file
   employeeFile.open("employee.db"); // opening the file where the database is stored

   if(employeeFile.is_open()) //quick check to see if file opened properly
   {
```

```
    cout << "File opened successfully." << endl;
  }
  else
  {
    cout << "Error opening file." << endl;
  }

  employeeFile << "First name, last name, SSN, gender, DOB, salary" << endl; //formatting the data file
  employeeFile << "-----------------------------------------------------------" << endl;

  Employee employee; //creation of employee object which holds first and last names, SSN, gender, DOB and salary
  Employee employees[DBSIZE]; //creation of object array for employees

  string fn; //variables for inputting the traits of the employees before they are stored in the private members of the class
  string ln;
  string ssn;
  char g;
  string d;
  float s;

  int addnew; //variables used during the client section when prompting user to manipulate database
  char firesomeone;
  string firechoice;
  char fireconfirm;
  char modsomeone;
  string modchoice;
  char retsomeone;
```

```
    string retchoice;
    string searchfn;
    string searchln;
    char searchg;
    string searchd;
    float searchs;
    int counter = 1;

//-----------------------------------------


    cout << "How many employees do you want to add to the database? "; //prompting user to input how many employees to add
    cin >> addnew;
    cout << endl;


    if(addnew > 0)
    {
        for(int i = 0; i < addnew; i++) //for loop to add employee's information
        {
            cout << "Enter the employee's first name: ";
            cin >> fn; //input is temporarily stored in local variable
            employees[i].setFirstName(fn); //information is stored in private class member variables
            cout << endl;


            cout << "Enter the employee's last name: ";
            cin >> ln;
            employees[i].setLastName(ln);
            cout << endl;
```

```
        cout << "Enter the employee's nine digit social security number: ";
        cin >> ssn;
        employees[i].setSSN(ssn);
        cout << endl;

        cout << "Enter the employee's gender (M/F): ";
        cin >> g;
        employees[i].setGender(g);
        cout << endl;

        cout << "Enter the employee's date of birth (DD/MM/YYYY): ";
        cin >> d;
        employees[i].setDOB(d);
        cout << endl;

        cout << "Enter the employee's salary: $";
        cin >> s;
        employees[i].setSalary(s);
        cout << endl;

        employees[i].displayEmployeeInfo(); //prints to console the information just entered
        employeeFile << fn << " " << ln << " " << ssn << " " << g  << " " << d << " " << s << endl;
//information is input to data file
        cout << endl;
      }
   }

   else if(addnew <= 0) //output if user declines to add employees
```

```
    {
        cout << "Okay bye." << endl;
    }

    else
    {
        cout << "Invalid input. " << endl;
    }

//-------------------------------------------------

    cout << "Do you want to modify any employee's data? (Y/N) "; //prompt to modify an employee's data
    cin >> modsomeone;
    cout << endl;

    if(modsomeone == 'Y' || modsomeone == 'y')
    {
        cout << "Enter the SSN of the employee you would like to modify: "; //user must input SSN of the
employee they wish to edit
        cin >> modchoice;

        for(int k = 0; k < DBSIZE; k++)
        {
            if(modchoice == employees[k].getSSN()) //if the user enters correct SSN, they can edit all
information about an employee
            {
                cout << "Please re-enter the employee's information" << endl;
                cout << "Enter the employee's first name: ";
                cin >> fn;
```

```
employees[k].setFirstName(fn);
cout << endl;

cout << "Enter the employee's last name: ";
cin >> ln;
employees[k].setLastName(ln);
cout << endl;

cout << "Enter the employee's nine digit social security number: ";
cin >> ssn;
employees[k].setSSN(ssn);
cout << endl;

cout << "Enter the employee's gender (M/F): ";
cin >> g;
employees[k].setGender(g);
cout << endl;

cout << "Enter the employee's date of birth (DD/MM/YYYY): ";
cin >> d;
employees[k].setDOB(d);
cout << endl;

cout << "Enter the employee's salary: $";
cin >> s;
employees[k].setSalary(s);
cout << endl;

employees[k].displayEmployeeInfo(); //outputs changes to console
```

```
            employeeFile << fn << " " << ln << " " << ssn << " " << g  << " " << d << " " << s << endl; //outputs changes to data file
            cout << endl;
          }
       }
   }



//----------------------------------------


   cout << "Do you want to delete any employees from the database? (Y/N) "; //prompt to fire employees
   cin >> firesomeone;
   cout << endl;


   if(firesomeone == 'Y' || firesomeone == 'y')
   {
      cout << "Enter the SSN of the employee you would like to fire: ";
      cin >> firechoice;


      for(int l = 0; l < DBSIZE; l++)
      {
         if(firechoice == employees[l].getSSN()) //once again, user must input SSN of employee they wish to change
         {
            cout << "Are you sure you want to fire this employee? (Y/N) "; //asking user for confirmation if they want to fire the employee
            cin >> fireconfirm;
            cout << endl;
```

```
            if(fireconfirm == 'Y' || fireconfirm == 'y')
            {
               employees[l].fireEmployee(); //member function to fire the employee
            }
            else if(fireconfirm == 'N' || fireconfirm == 'n')
            {
               cout << "This employee's job is safe, for now..." << endl; //output if user declines to fire
employee
            }
            else
            {
               cout << "Invalid input" << endl;
            }
            cout << endl;
         }
      }
   }

//-----------------------------------------


   cout << "Do you want to retrieve an employee? (Y/N) "; // prompt to retrieve an employee by
entering matching SSN
   cin >> retsomeone;
   cout << endl;
   if(retsomeone == 'Y' || retsomeone == 'y')
   {
      cout << "Enter the SSN of the employee you would like to retrieve: ";
      cin >> retchoice;
```

```
      for(int l = 0; l < DBSIZE; l++)
      {
         if(retchoice == employees[l].getSSN())
         {
            cout << "Enter a criteria to search an employee."; //the user can retrieve an employee by inputting their first or last names, gender, DOB or salary
            cin >> searchfn, searchln, searchg, searchd, searchs;
            if(searchfn == employees[l].getFirstName() || searchln == employees[l].getLastName() || searchg == employees[l].getGender() || searchd == employees[l].getDOB() || searchs == employees[l].getSalary())
            {
               cout << "Here is the employee you retrieved." << endl; //output of retrieved employee to console
               employees[l].displayEmployeeInfo(); //output of retrieved employee to data file
               cout << endl;
            }
         }
      }
   }
   else if(retsomeone == 'N' || retsomeone == 'n')
   {
      cout << "Okay bye." << endl;
   }
   else
   {
      cout << "Invalid input." << endl;
   }
//-------------------------------------------
```

```
    employeeFile.close(); //closes the file at the conclusion of the program
    return 0;
}
```

Employee.h

```
#ifndef EMPLOYEE_H
#define EMPLOYEE_H
#include <string>
#include <iostream>
using namespace std;

class Employee
{
    private:
        std::string firstName, lastName;
        std::string SSN;
        char gender;
        std::string DOB;
        float salary;

    public:
        // define contructors

        Employee();
        Employee(std::string fn, std::string ln, std::string ssn, char g, std::string d, float s);
```

```
    // define getter/setter for firstName, lastName, gender, salary

    std::string getFirstName();
    std::string getLastName();
    std::string getSSN();
    char getGender();
    std::string getDOB();
    float getSalary();
    void setFirstName(std::string fn);
    void setLastName(std::string ln);
    void setSSN(std::string ssn);
    void setGender(char g);
    void setDOB(std::string dob);
    void setSalary(float s);
    void displayEmployeeInfo();
    void fireEmployee();

};

#endif // EMPLOYEE_H
```

Employee.cpp

```
#include "Employee.h"
#include <string>
#include <iostream>
using namespace std;
```

```
Employee::Employee()
{

}

Employee::Employee(std::string fn, std::string ln, std::string ssn, char g, std::string d, float s)
{
   setFirstName(fn);
   setLastName(ln);
   setSSN(ssn);
   setGender(g);
   setDOB(d);
   setSalary(s);
}

std::string Employee::getFirstName()
{
   return firstName;
}

std::string Employee::getLastName()
{
   return lastName;
}

std::string Employee::getSSN()
{
   return SSN;
```

```
}

char Employee::getGender()
{
   return gender;
}

std::string Employee::getDOB()
{
   return DOB;
}

float Employee::getSalary()
{
   return salary;
}

void Employee::setFirstName(std::string fn)
{
   firstName = fn;
}

void Employee::setLastName(std::string ln)
{
   lastName = ln;
}

void Employee::setSSN(std::string ssn)
{
```

```
   SSN = ssn;
}

void Employee::setGender(char g)
{
   gender = g;
}

void Employee::setDOB(std::string d)
{
   DOB = d;
}

void Employee::setSalary(float s)
{
   salary = s;
}

void Employee::displayEmployeeInfo()
{
   cout << firstName << " " << lastName << " " << SSN << " " << gender << " " << DOB << " " << salary << endl;
}

void Employee::fireEmployee()
{
   cout << "Employee information redacted - " << firstName << " " << lastName << " " << SSN << " " << gender << " " << DOB << " " << salary << endl;
}
```

Testing Output:

By affirming every prompt, the program follows the sequence of operations that can be performed on the database. They go in the order of: add, modify, delete, and retrieve. If the user inputs 'Y' or 'y' to all questions when prompted, they will advance through each function and can perform actions as they see fit. The output from the first run is as follows.

Testing Run 1:

File opened successfully.

How many employees do you want to add to the database? 3

Enter the employee's first name: Mike

Enter the employee's last name: Sauer

Enter the employee's nine digit social security number: 556-18-3008

Enter the employee's gender (M/F): M

Enter the employee's date of birth (DD/MM/YYYY): 10/06/1999

Enter the employee's salary: $120000

Mike Sauer 556-18-3008 M 10/06/1999 120000

Enter the employee's first name: Natalie

Enter the employee's last name: DiStefano

Enter the employee's nine digit social security number: 141-57-1337

Enter the employee's gender (M/F): F

Enter the employee's date of birth (DD/MM/YYYY): 06/16/2000

Enter the employee's salary: $150000

Natalie DiStefano 141-57-1337 F 06/16/2000 150000

Enter the employee's first name: Kyle

Enter the employee's last name: McDook

Enter the employee's nine digit social security number: 096-49-0682

Enter the employee's gender (M/F): M

Enter the employee's date of birth (DD/MM/YYYY): 06/31/1979

Enter the employee's salary: $54000

Kyle McDook 096-49-0682 M 06/31/1979 54000

Do you want to modify any employee's data? (Y/N) Y

Enter the SSN of the employee you would like to modify: 556-18-3008

Please re-enter the employee's information

Enter the employee's first name: Mike

Enter the employee's last name: Sauer

Enter the employee's nine digit social security number: 556-18-3008

Enter the employee's gender (M/F): M

Enter the employee's date of birth (DD/MM/YYYY): 10/06/1999

Enter the employee's salary: $220000

Mike Sauer 556-18-3008 M 10/06/1999 220000

Do you want to delete any employees from the database? (Y/N) y

Enter the SSN of the employee you would like to fire: 096-49-0682

Are you sure you want to fire this employee? (Y/N) y

Employee information redacted - Kyle McDook 096-49-0682 M 06/31/1979 54000

Do you want to retrieve an employee? (Y/N) Y

Enter the SSN of the employee you would like to retrieve: 141-57-1337

Enter a criteria to search an employee.Natalie

Here is the employee you retrieved.

Natalie DiStefano 141-57-1337 F 06/16/2000 150000

Testing Run 2:

The second phase of testing involved denying prompts to edit employees information. This resulted in those processes being skipped. Employees were added but not changed in any subsequent way after they were added to the array. The output is as follows.

File opened successfully.

How many employees do you want to add to the database? 2

Enter the employee's first name: Colin

Enter the employee's last name: Montgomery

Enter the employee's nine digit social security number: 762-38-0220

Enter the employee's gender (M/F): M

Enter the employee's date of birth (DD/MM/YYYY): 10/26/2002

Enter the employee's salary: $240000

Colin Montgomery 762-38-0220 M 10/26/2002 240000

Enter the employee's first name: Ronnie

Enter the employee's last name: McDook

Enter the employee's nine digit social security number: 287-86-1488

Enter the employee's gender (M/F): M

Enter the employee's date of birth (DD/MM/YYYY): 08/14/1970

Enter the employee's salary: $80000

Ronnie McDook 287-86-1488 M 08/14/1970 80000

Do you want to modify any employee's data? (Y/N) n

Do you want to delete any employees from the database? (Y/N) n

Do you want to retrieve an employee? (Y/N) n

Okay bye.

Testing Run 3:

The third phase of testing said yes to some prompts and no to others. No invalid input was included during this test run.

File opened successfully.

How many employees do you want to add to the database? 2

Enter the employee's first name: Hailey

Enter the employee's last name: Hamshey

Enter the employee's nine digit social security number: 173-12-1887

Enter the employee's gender (M/F): F

Enter the employee's date of birth (DD/MM/YYYY): 12/06/1999

Enter the employee's salary: $100000

Hailey Hamshey 173-12-1887 F 12/06/1999 100000

Enter the employee's first name: Stephanie

Enter the employee's last name: Carl

Enter the employee's nine digit social security number: 106-72-8008

Enter the employee's gender (M/F): F

Enter the employee's date of birth (DD/MM/YYYY): 05/11/1972

Enter the employee's salary: $80000

Stephanie Carl 106-72-8008 F 05/11/1972 80000

Do you want to modify any employee's data? (Y/N) n

Do you want to delete any employees from the database? (Y/N) y

Enter the SSN of the employee you would like to fire: 173-12-1887

Are you sure you want to fire this employee? (Y/N) n

This employee's job is safe, for now...

Do you want to retrieve an employee? (Y/N) n

Okay bye.

Testing Run 4:

This time, the program was tested to see how invalid input would work. Each time an SSN was prompted, it was not matched with an existing one in the database. The output is as follows.

File opened successfully.

How many employees do you want to add to the database? 1

Enter the employee's first name: Kolt

Enter the employee's last name: Krisulevicz

Enter the employee's nine digit social security number: 123-45-6789

Enter the employee's gender (M/F): M

Enter the employee's date of birth (DD/MM/YYYY): 06/22/2001

Enter the employee's salary: $75000

Kolt Krisulevicz 123-45-6789 M 06/22/2001 75000

Do you want to modify any employee's data? (Y/N) y

Enter the SSN of the employee you would like to modify: 100-00-0000

Do you want to delete any employees from the database? (Y/N) y

Enter the SSN of the employee you would like to fire: 999-88-7777

Do you want to retrieve an employee? (Y/N) y

Enter the SSN of the employee you would like to retrieve: 555-66-7777

Testing Plan 5:

The final scenario in this program is if the user inputs zero or a negative number into the add prompt. The output is as follows.

File opened successfully.

How many employees do you want to add to the database? 0

Okay bye.

Do you want to modify any employee's data? (Y/N) n

Do you want to delete any employees from the database? (Y/N) n

Do you want to retrieve an employee? (Y/N) n

Okay bye.