Hei Wang Andre Law

4017 5600

Due on May 10, 2021

I certify that this submission is my original work and meets the faculty's Expectations of Originality.

4017 5600

Driver.cpp

```cpp
1   // COEN 243 Project, Week 10
2   // Hei Wang Andre Law, 4017 5600
3   // Program: System that Handles the Records of Students at Concordia
4   // File: driver.cpp
5
6   #include <iostream>
7   #include <fstream>
8   #include <array>
9   #include <string>
10  #include <algorithm>
11  #include "student.h"
12  #include "faculty.h"
13  using namespace std;
14
15  int main() { // main function to test the whole system
16      //------------------------Faculty Start-------------------------//
17      Faculty fa; // assign object "Faculty" to fa
18      int count;
19      int numSize1 = 41; // lines of 1 txt file
20      int numSize2 = 82; // lines of 2 txt files
21      int numSize3 = 123; // lines of 3 txt files
22      const int arraySize = 123;
23      string numMax;
24      int counterGpa = 0;
25
26      // reads studentCivil.txt and create a dynamic array
27      string* lineCivil = fa.getFile("studentCivil.txt", numSize1, &count);
28
29      // reads studentMech.txt and create a dynamic array
30      string* lineMech = fa.getFile("studentMech.txt", numSize1, &count);
31
32      // reads studentElecComp.txt and create a dynamic array
33      string* lineElecComp = fa.getFile("studentElecComp.txt", numSize1, &count);
34
35      // obtain highest number for each txt file
36      for (int i = 5; i < numSize1-8; i = i + 8) {
37          if (lineCivil[5] < lineCivil[i])
38              lineCivil[5] = lineCivil[i];
39      }
```

```
The highest gpa in this faculty is 4.1

Fill in the information of five students.
The following will be for student number ONE
First Name: Sam
Last Name : Tippot
Id: 123112233
Date of Birth: 1998
GPA (0 - 4.4): 2
Start Year: 2019
Completed Credit: 60
Program (B, M, P): B

The following will be for student number TWO
First Name: Park
Last Name : Pepper
Id: 987987987
Date of Birth: 2002
GPA (0 - 4.4): 3
Start Year: 2020
Completed Credit: 35
Program (B, M, P): B

The following will be for student number THREE
First Name: Larl
Last Name : Sarl
Id: 1122112211
Date of Birth: 2000
GPA (0 - 4.4): 3.5
Start Year: 2018
Completed Credit: 90
Program (B, M, P): B

The following will be for student number FOUR
First Name: Amy
Last Name : Yam
Id: 43434343
Date of Birth: 1999
GPA (0 - 4.4): 3.9
Start Year: 2020
Completed Credit: 90
Program (B, M, P): M

The following will be for student number FIVE
First Name: Tem
Last Name : Mark
Id: 654321
Date of Birth: 2000
GPA (0 - 4.4): 4.3
Start Year: 2019
Completed Credit: 45
Program (B, M, P): P
```

```
38              lineCivil[5] = lineCivil[i];
39          }
40          for (int i = 5; i < numSize1- 8; i = i + 8) {
41              if (lineMech[5] < lineMech[i])
42                  lineMech[5] = lineMech[i];
43          }
44          for (int i = 5; i < numSize1- 8; i = i + 8) {
45              if (lineElecComp[5] < lineElecComp[i])
46                  lineElecComp[5] = lineElecComp[i];
47          }
48
49          fa.highestGpa(lineCivil[5], lineMech[5], lineElecComp[5]);
50
51          /*Pseudo-Code:
52          * 1-Combine lineCivil, lineMech and lineElecComp into a single dynamic array
53          * 2-Member function for numOfUnderGrad:
54          *    a-Use linear search array => Find amount of M (masters) and P (Ph.D)
55          *    b-Use linear search array => Find amount of B (bachelor) with completed
56          *    c-Total num of students - (part a + part b) = numOfUnderGrad
57          * 3-Member function for numOfGrad:
58          *    a-Add part a and part b from point 2
59          * 4-Member function for AvgunderGrad:
60          *    a-For every underGrad found previously, determine their info and locate
61          *    b-Add specific array pointer, then divide by numOfUnderGrad for the aver
62          * 5-Member function for avgGrad:
63          *    a-For all graduate found earlier, determine their info, locate their gpa
64          *    b-Add this array pointer together and divide by total amount of graduate
65          */
66
67          //fa.numUnderGrad();
68          //fa.numGrad();
69          //fa.avgunderGrad();
70
71          //------------------------Faculty End------------------------------//
72          //------------------------Student Start----------------------------//
73          Student st1; // assign object "Student" to st1
74          Student st2; // assign object "Student" to st2
75          Student st3; // assign object "Student" to st3
76          Student st4; // assign object "Student" to st4
```

No issues found

```
Start Year: 2019
Completed Credit: 45
Program (B, M, P): P

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
1

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
1
Sam

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
2

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
```

```cpp
        Student st3; // assign object "Student" to st3
        Student st4; // assign object "Student" to st4
        Student st5; // assign object "Student" to st5

        // input variables, used in filling the txt file
        string fName; // first name
        string lName; // last name
        int id; // student id
        int birth; // date of birth
        float gpa; // student gpa
        int startYear; // start year date
        float comCre; // completed credit
        string program; // program (bachelor, master, Ph.D)

        int numFunc = 0; // switch, number input performing the selected function
        int numId; // switch, number input selecting the right student
        float numCompareGpa1 = 0; // student 1, compare gpa function
        float numCompareGpa2 = 0; // student 2, compare gpa function
        int numId1; // switch, number input selecting the first student
        int numId2; // switch, number input selecting the second student

        // Request input to fill in the student.txt file, repeat five times
        // and assign set functions for each.
        cout << "Fill in the information of five students.";
        cout << "\nThe following will be for student number ONE";
        cout << "\nFirst Name: "; cin >> fName; st1.setfName(fName);
        cout << "Last Name : "; cin >> lName; st1.setlName(lName);
        cout << "Id: "; cin >> id; st1.setId(id);
        cout << "Date of Birth: "; cin >> birth; st1.setDateBirth(birth);
        cout << "GPA (0 - 4.4): "; cin >> gpa; st1.setGpa(gpa);
        cout << "Start Year: "; cin >> startYear; st1.setStartYear(startYear);
        cout << "Completed Credit: "; cin >> comCre; st1.setCompCredit(comCre);
        cout << "Program (B, M, P): "; cin >> program; st1.setProgram(program);

        cout << "\nThe following will be for student number TWO";
        cout << "\nFirst Name: "; cin >> fName; st2.setfName(fName);
        cout << "Last Name : "; cin >> lName; st2.setlName(lName);
        cout << "Id: "; cin >> id; st2.setId(id);
        cout << "Date of Birth: "; cin >> birth; st2.setDateBirth(birth);
```

```
11. Print Student Info
12. Compare GPA
2

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
1
Tippot

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
3

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
4
43434343

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
```

No issues found

```cpp
        cout << "Id: "; cin >> id; st2.setId(id);
        cout << "Date of Birth: "; cin >> birth; st2.setDateBirth(birth);
        cout << "GPA (0 - 4.4): "; cin >> gpa; st2.setGpa(gpa);
        cout << "Start Year: "; cin >> startYear; st2.setStartYear(startYear);
        cout << "Completed Credit: "; cin >> comCre; st2.setCompCredit(comCre);
        cout << "Program (B, M, P): "; cin >> program; st2.setProgram(program);

        cout << "\nThe following will be for student number THREE";
        cout << "\nFirst Name: "; cin >> fName; st3.setfName(fName);
        cout << "Last Name : "; cin >> lName; st3.setlName(lName);
        cout << "Id: "; cin >> id; st3.setId(id);
        cout << "Date of Birth: "; cin >> birth; st3.setDateBirth(birth);
        cout << "GPA (0 - 4.4): "; cin >> gpa; st3.setGpa(gpa);
        cout << "Start Year: "; cin >> startYear; st3.setStartYear(startYear);
        cout << "Completed Credit: "; cin >> comCre; st3.setCompCredit(comCre);
        cout << "Program (B, M, P): "; cin >> program; st3.setProgram(program);

        cout << "\nThe following will be for student number FOUR";
        cout << "\nFirst Name: "; cin >> fName; st4.setfName(fName);
        cout << "Last Name : "; cin >> lName; st4.setlName(lName);
        cout << "Id: "; cin >> id; st4.setId(id);
        cout << "Date of Birth: "; cin >> birth; st4.setDateBirth(birth);
        cout << "GPA (0 - 4.4): "; cin >> gpa; st4.setGpa(gpa);
        cout << "Start Year: "; cin >> startYear; st4.setStartYear(startYear);
        cout << "Completed Credit: "; cin >> comCre; st4.setCompCredit(comCre);
        cout << "Program (B, M, P): "; cin >> program; st4.setProgram(program);

        cout << "\nThe following will be for student number FIVE";
        cout << "\nFirst Name: "; cin >> fName; st5.setfName(fName);
        cout << "Last Name : "; cin >> lName; st5.setlName(lName);
        cout << "Id: "; cin >> id; st5.setId(id);
        cout << "Date of Birth: "; cin >> birth; st5.setDateBirth(birth);
        cout << "GPA (0 - 4.4): "; cin >> gpa; st5.setGpa(gpa);
        cout << "Start Year: "; cin >> startYear; st5.setStartYear(startYear);
        cout << "Completed Credit: "; cin >> comCre; st5.setCompCredit(comCre);
        cout << "Program (B, M, P): "; cin >> program; st5.setProgram(program);
        cout << endl;

        // while loop for set/get and member functions, continues until -1
```

No issues found

```
11. Print Student Info
12. Compare GPA
4

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
4
1999

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
2
3

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
```

```cpp
            // while loop for set/get and member functions, continues until -1
            // -1: stops this loop, 1 to 8: get functions, 9 to 12: member functions
            while (numFunc != -1) {
                cout << "\n\nNumber input which performs the following member functions:";
                cout << "\n-1. Terminate this section";
                cout << "\n1. Get First Name";
                cout << "\n2. Get Last Name  ";
                cout << "\n3. Get Id ";
                cout << "\n4. Get Date of Birth ";
                cout << "\n5. Get GPA (0 - 4.4) ";
                cout << "\n6. Get Start Year ";
                cout << "\n7. Get Completed Credit ";
                cout << "\n8. Get Program ";
                cout << "\n9. Complete Program (0:False, 1:True";
                cout << "\n10. Student Status";
                cout << "\n11. Print Student Info";
                cout << "\n12. Compare GPA\n";

                // user select which function to perform with a switch case
                cin >> numFunc;
                switch (numFunc) {
                case 1: // get first name case
                    cout << "\nWhich student? (Enter Number): ";
                    cout << "\n1. " << st1.getId();
                    cout << "\n2. " << st2.getId();
                    cout << "\n3. " << st3.getId();
                    cout << "\n4. " << st4.getId();
                    cout << "\n5. " << st5.getId() << endl;
                    // user determine specific student through Id
                    cin >> numId;
                    switch (numId) {
                    case 1:
                        cout << st1.getfName();
                        break;
                    case 2:
                        cout << st2.getfName();
                        break;
                    case 3:
```

Console output:
```
11. Print Student Info
12. Compare GPA
8

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
1
B

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True)
10. Student Status
11. Print Student Info
12. Compare GPA
9

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
3
0

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True)
10. Student Status
11. Print Student Info
12. Compare GPA
```

```cpp
                    break;
            case 3:
                cout << st3.getfName();
                break;
            case 4:
                cout << st4.getfName();
                break;
            case 5:
                cout << st5.getfName();
                break;
            default:
                cout << "This isn't an option";
            }
            break;
        case 2: // get last name case
            cout << "\nWhich student? (Enter Number): ";
            cout << "\n1. " << st1.getId();
            cout << "\n2. " << st2.getId();
            cout << "\n3. " << st3.getId();
            cout << "\n4. " << st4.getId();
            cout << "\n5. " << st5.getId() << endl;
            // user determine specific student through Id
            cin >> numId;
            switch (numId) {
            case 1:
                cout << st1.getlName();
                break;
            case 2:
                cout << st2.getlName();
                break;
            case 3:
                cout << st3.getlName();
                break;
            case 4:
                cout << st4.getlName();
                break;
            case 5:
                cout << st5.getlName();
                break;
```

```
10. Student Status
11. Print Student Info
12. Compare GPA
10

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
1
C

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
11

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
1
Sam
Tippot
123112233
1998
2
2019
60
B

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
```

No issues found

```cpp
            case 5:
                cout << st5.getlName();
                break;
            default:
                cout << "This isn't an option";
            }
            break;
        case 3: // get id case
            cout << "\nWhich student? (Enter Number): ";
            cout << "\n1. " << st1.getId();
            cout << "\n2. " << st2.getId();
            cout << "\n3. " << st3.getId();
            cout << "\n4. " << st4.getId();
            cout << "\n5. " << st5.getId() << endl;
            // user determine specific student through Id
            cin >> numId;
            switch (numId) {
            case 1:
                cout << st1.getId();
                break;
            case 2:
                cout << st2.getId();
                break;
            case 3:
                cout << st3.getId();
                break;
            case 4:
                cout << st4.getId();
                break;
            case 5:
                cout << st5.getId();
                break;
            default:
                cout << "This isn't an option";
            }
            break;
        case 4: // get date of birth id case
            cout << "\nWhich student? (Enter Number): ";
            cout << "\n1. " << st1.getId();
```

```
2019
60
B

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
11

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
5
Tem
Mark
654321
2000
4.3
2019
45
P

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
```

```
259             cout << "\nWhich student? (Enter Number): ";
260             cout << "\n1. " << st1.getId();
261             cout << "\n2. " << st2.getId();
262             cout << "\n3. " << st3.getId();
263             cout << "\n4. " << st4.getId();
264             cout << "\n5. " << st5.getId() << endl;
265             // user determine specific student through Id
266             cin >> numId;
267             switch (numId) {
268             case 1:
269                 cout << st1.getDateBirth();
270                 break;
271             case 2:
272                 cout << st2.getDateBirth();
273                 break;
274             case 3:
275                 cout << st3.getDateBirth();
276                 break;
277             case 4:
278                 cout << st4.getDateBirth();
279                 break;
280             case 5:
281                 cout << st5.getDateBirth();
282                 break;
283             default:
284                 cout << "This isn't an option";
285             }
286             break;
287         case 5: // get gpa case
288             cout << "\nWhich student? (Enter Number): ";
289             cout << "\n1. " << st1.getId();
290             cout << "\n2. " << st2.getId();
291             cout << "\n3. " << st3.getId();
292             cout << "\n4. " << st4.getId();
293             cout << "\n5. " << st5.getId() << endl;
294             // user determine specific student through Id
295             cin >> numId;
296             switch (numId) {
297             case 1:
```

No issues found

```
Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
12
Choose two student to compare their GPA.
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321

Student n.1: 1

Student m.2:2
3

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
```

```cpp
296              switch (numId) {
297              case 1:
298                  cout << st1.getGpa();
299                  break;
300              case 2:
301                  cout << st2.getGpa();
302                  break;
303              case 3:
304                  cout << st3.getGpa();
305                  break;
306              case 4:
307                  cout << st4.getGpa();
308                  break;
309              case 5:
310                  cout << st5.getGpa();
311                  break;
312              default:
313                  cout << "This isn't an option";
314              }
315              break;
316          case 6: // get start year case
317              cout << "\nWhich student? (Enter Number): ";
318              cout << "\n1. " << st1.getId();
319              cout << "\n2. " << st2.getId();
320              cout << "\n3. " << st3.getId();
321              cout << "\n4. " << st4.getId();
322              cout << "\n5. " << st5.getId() << endl;
323              // user determine specific student through Id
324              cin >> numId;
325              switch (numId) {
326              case 1:
327                  cout << st1.getStartYear();
328                  break;
329              case 2:
330                  cout << st2.getStartYear();
331                  break;
332              case 3:
333                  cout << st3.getStartYear();
334                  break;
```

`No issues found`

```
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321

Student n.1: 1

Student m.2:2
3

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
12
Choose two student to compare their GPA.
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321

Student n.1: 1

Student m.2:5
4.3

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
```

```cpp
                    cout << st3.getStartYear();
                    break;
                case 4:
                    cout << st4.getStartYear();
                    break;
                case 5:
                    cout << st5.getStartYear();
                    break;
                default:
                    cout << "This isn't an option";
                }
                break;
            case 7: // get completed credit case
                cout << "\nWhich student? (Enter Number): ";
                cout << "\n1. " << st1.getId();
                cout << "\n2. " << st2.getId();
                cout << "\n3. " << st3.getId();
                cout << "\n4. " << st4.getId();
                cout << "\n5. " << st5.getId() << endl;
                // user determine specific student through Id
                cin >> numId;
                switch (numId) {
                case 1:
                    cout << st1.getCompCredit();
                    break;
                case 2:
                    cout << st2.getCompCredit();
                    break;
                case 3:
                    cout << st3.getCompCredit();
                    break;
                case 4:
                    cout << st4.getCompCredit();
                    break;
                case 5:
                    cout << st5.getCompCredit();
                    break;
                default:
                    cout << "This isn't an option";
```

```
Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
12
Choose two student to compare their GPA.
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321

Student n.1: 4

Student m.2:5
4.3

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
```

No issues found

```cpp
                default:
                    cout << "This isn't an option";
                }
                break;
            case 8: // get program case
                cout << "\nWhich student? (Enter Number): ";
                cout << "\n1. " << st1.getId();
                cout << "\n2. " << st2.getId();
                cout << "\n3. " << st3.getId();
                cout << "\n4. " << st4.getId();
                cout << "\n5. " << st5.getId() << endl;
                // user determine specific student through Id
                cin >> numId;
                switch (numId) {
                case 1:
                    cout << st1.getProgram();
                    break;
                case 2:
                    cout << st2.getProgram();
                    break;
                case 3:
                    cout << st3.getProgram();
                    break;
                case 4:
                    cout << st4.getProgram();
                    break;
                case 5:
                    cout << st5.getProgram();
                    break;
                default:
                    cout << "This isn't an option";
                }
                break;
            case 9: // complete program function case
                cout << "\nWhich student? (Enter Number): ";
                cout << "\n1. " << st1.getId();
                cout << "\n2. " << st2.getId();
                cout << "\n3. " << st3.getId();
                cout << "\n4. " << st4.getId();
```

```
10. Student Status
11. Print Student Info
12. Compare GPA
11

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
3
Larl
Sarl
1122112211
2000
3.5
2018
90
B


Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True)
10. Student Status
11. Print Student Info
12. Compare GPA
11

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
2
Park
Pepper
987987987
2002
3
2020
35
B
```

No issues found

```cpp
408                cout << "\n4. " << st4.getId();
409                cout << "\n5. " << st5.getId() << endl;
410                // user determine specific student through Id
411                cin >> numId;
412                switch (numId) {
413                case 1:
414                    cout << st1.completeprogram();
415                    break;
416                case 2:
417                    cout << st2.completeprogram();
418                    break;
419                case 3:
420                    cout << st3.completeprogram();
421                    break;
422                case 4:
423                    cout << st4.completeprogram();
424                    break;
425                case 5:
426                    cout << st5.completeprogram();
427                    break;
428                default:
429                    cout << "This isn't an option";
430                }
431                break;
432            case 10: // student status function case
433                cout << "\nWhich student? (Enter Number): ";
434                cout << "\n1. " << st1.getId();
435                cout << "\n2. " << st2.getId();
436                cout << "\n3. " << st3.getId();
437                cout << "\n4. " << st4.getId();
438                cout << "\n5. " << st5.getId() << endl;
439                // user determine specific student through Id
440                cin >> numId;
441                switch (numId) {
442                case 1:
443                    cout << st1.studentStatus();
444                    break;
445                case 2:
446                    cout << st2.studentStatus();
```

`No issues found`

```
Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
3

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
2
987987987

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
3

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
3
1122112211

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
```

```cpp
            case 2:
                cout << st2.studentStatus();
                break;
            case 3:
                cout << st3.studentStatus();
                break;
            case 4:
                cout << st4.studentStatus();
                break;
            case 5:
                cout << st5.studentStatus();
                break;
            default:
                cout << "This isn't an option";
            }
            break;
        case 11: // print student info function case
            cout << "\nWhich student? (Enter Number): ";
            cout << "\n1. " << st1.getId();
            cout << "\n2. " << st2.getId();
            cout << "\n3. " << st3.getId();
            cout << "\n4. " << st4.getId();
            cout << "\n5. " << st5.getId() << endl;
            // user determine specific student through Id
            cin >> numId;
            switch (numId) {
            case 1:
                st1.printStdInfo();
                break;
            case 2:
                st2.printStdInfo();
                break;
            case 3:
                st3.printStdInfo();
                break;
            case 4:
                st4.printStdInfo();
                break;
            case 5:
```

```
Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
1

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
2
Park

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
1

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
3
Larl

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
```

No issues found

```cpp
                        break;
            case 5:
                st5.printStdInfo();
                break;
            default:
                cout << "This isn't an option";
            }
            break;
        case 12: // compare gpa function case
            cout << "Choose two student to compare their GP/
            cout << "\n1. " << st1.getId();
            cout << "\n2. " << st2.getId();
            cout << "\n3. " << st3.getId();
            cout << "\n4. " << st4.getId();
            cout << "\n5. " << st5.getId() << endl;
            // user determine specific student through Id
            cout << "\nStudent n.1: ";
            cin >> numId1;
            cout << "\nStudent m.2:";
            cin >> numId2;
            switch (numId1) { // select first student
            case 1:
                numCompareGpa1 = st1.getGpa();
                break;
            case 2:
                numCompareGpa1 = st2.getGpa();
                break;
            case 3:
                numCompareGpa1 = st3.getGpa();
                break;
            case 4:
                numCompareGpa1 = st4.getGpa();
                break;
            case 5:
                numCompareGpa1 = st5.getGpa();
                break;
            default:
                cout << "This isn't an option";
            }
```

```
Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
2

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
4
Yam

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
2

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
5
Mark

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
```

No issues found

```cpp
                        numCompareGpa1 = st4.getGpa();
                        break;
                    case 5:
                        numCompareGpa1 = st5.getGpa();
                        break;
                    default:
                        cout << "This isn't an option";
                }
                switch (numId2) { // select second student
                    case 1:
                        numCompareGpa2 = st1.getGpa();
                        break;
                    case 2:
                        numCompareGpa2 = st2.getGpa();
                        break;
                    case 3:
                        numCompareGpa2 = st3.getGpa();
                        break;
                    case 4:
                        numCompareGpa2 = st4.getGpa();
                        break;
                    case 5:
                        numCompareGpa2 = st5.getGpa();
                        break;
                    default:
                        cout << "This isn't an option";
                }
                // compare gpa function
                cout << st1.compareGpa(numCompareGpa1, numCompareGpa2);
                break;
            default:
                break;
        }
    }
    //-----------------------Student End----------------------------//
    return 0;
}
```

Microsoft Visual Studio Debug Console

11. Print Student Info
12. Compare GPA
2

Which student? (Enter Number):
1. 123112233
2. 987987987
3. 1122112211
4. 43434343
5. 654321
5
Mark

Number input which performs the following member functions:
-1. Terminate this section
1. Get First Name
2. Get Last Name
3. Get Id
4. Get Date of Birth
5. Get GPA (0 - 4.4)
6. Get Start Year
7. Get Completed Credit
8. Get Program
9. Complete Program (0:False, 1:True
10. Student Status
11. Print Student Info
12. Compare GPA
-1

E:\vsCode\Project Location\COEN 243 Assignments\Project\coen243
ith code 0.
To automatically close the console when debugging stops, enable
le when debugging stops.
Press any key to close this window . . .

No issues found

Student.cpp

```cpp
1   // COEN 243 Project, Week 10
2   // Hei Wang Andre Law, 4017 5600
3   // Program: System that Handles the Records of Students at Concordia
4   // File: student.cpp
5
6   #include <iostream>
7   #include <string>
8   #include <fstream>
9   #include "student.h"
10  using namespace std;
11
12  // class implementaion for 'student'
13  Student::Student() {
14      fName = "";
15      lName = "";
16      id = 0;
17      dateBirth = 0;
18      gpa = 0.0;
19      startYear = 0;
20      compCredit = 0.0;
21      program = "";
22  }
23  // All set functions opens an ofstream 'outFile' and check if it exists, if it does
24  // write specific variable into the file, then close it. (Same for all 8 setters)
25  void Student::setfName(string fname) {
26      fName = fname;
27      ofstream outFile;
28      outFile.open("student.txt", ios::app);
29      if (!outFile) {
30          cout << "Error";
31      }
32      else {
33          outFile << fName << endl;
34      }
35      outFile.close();
36  }
37  void Student::setlName(string lname) {
38      lName = lname;
39      ofstream outFile;
40      outFile.open("student.txt", ios::app);
```

```cpp
void Student::setlName(string lname) {
    lName = lname;
    ofstream outFile;
    outFile.open("student.txt", ios::app);
    if (!outFile) {
        cout << "Error";
    }
    else {
        outFile << lName << endl;
    }
    outFile.close();
}
void Student::setId(int Id) {
    id = Id;
    ofstream outFile;
    outFile.open("student.txt", ios::app);
    if (!outFile) {
        cout << "Error";
    }
    else {
        outFile << id << endl;
    }
    outFile.close();
}
void Student::setDateBirth(int datebirth) {
    dateBirth = datebirth;
    ofstream outFile;
    outFile.open("student.txt", ios::app);
    if (!outFile) {
        cout << "Error";
    }
    else {
        outFile << dateBirth << endl;
    }
    outFile.close();
}
void Student::setGpa(float Gpa) {
    gpa = Gpa;
    ofstream outFile;
    outFile.open("student.txt", ios::app);
```

```cpp
        outFile.open("student.txt", ios::app);
        if (!outFile) {
            cout << "Error";
        }
        else {
            outFile << gpa << endl;
        }
        outFile.close();
    }
void Student::setStartYear(int startyear) {
        startYear = startyear;
        ofstream outFile;
        outFile.open("student.txt", ios::app);
        if (!outFile) {
            cout << "Error";
        }
        else {
            outFile << startYear << endl;
        }
        outFile.close();
    }
void Student::setCompCredit(float compcredit) {
        compCredit = compcredit;
        ofstream outFile;
        outFile.open("student.txt", ios::app);
        if (!outFile) {
            cout << "Error";
        }
        else {
            outFile << compCredit << endl;
        }
        outFile.close();
    }
void Student::setProgram(string prog) {
        program = prog;
        ofstream outFile;
        outFile.open("student.txt", ios::app);
        if (!outFile) {
            cout << "Error";
        }
```

No issues found   Ln: 76

```cpp
            outFile.open("student.txt", ios::app);
            if (!outFile) {
                cout << "Error";
            }
            else {
                outFile << program << endl;
            }
            outFile.close();
    }

    // A;; get functions simply return specific variable of the called function
    string Student::getfName() {
        return fName;
    }
    string Student::getlName() {
        return lName;
    }
    int Student::getId() {
        return id;
    }
    int Student::getDateBirth() {
        return dateBirth;
    }
    float Student::getGpa() {
        return gpa;
    }
    int Student::getStartYear() {
        return startYear;
    }
    float Student::getCompCredit() {
        return compCredit;
    }
    string Student::getProgram() {
        return program;
    }

    // complete program boolean function
    bool Student::completeprogram() {
        // check which program student is enrolled. then
        // compare completed credits to said progaram
```

```cpp
        // check which program student is enrolled. then
        // compare completed credits to said progaram
        // return true(1) when completed, otherwise false(0)
        if (program == "B") {
            if (compCredit >= 140)
                return true;
            else
                return false;
        }
        else if (program == "M") {
            if (compCredit >= 16)
                return true;
            else
                return false;
        }
        else if (program == "P") {
            if (compCredit >= 12)
                return true;
            else
                return false;
        }
        else {
            cout << "Invalid.";
            return 0;
        }
}

// student status function, checks gpa range and returns
// appropriate letter grade of the student
string Student::studentStatus() {
    if (gpa >= 3.5)
        return "A+";
    else if (gpa >= 3.0)
        return "A";
    else if (gpa >= 2.5)
        return "B";
    else if (gpa >= 2.0)
        return "C";
    else
        return "D";
```

```cpp
180             if (gpa >= 3.5)
181                 return "A+";
182             else if (gpa >= 3.0)
183                 return "A";
184             else if (gpa >= 2.5)
185                 return "B";
186             else if (gpa >= 2.0)
187                 return "C";
188             else
189                 return "D";
190         }
191
192      // print student info function, 'cout' all 8 attributes
193      void Student::printStdInfo() {
194          cout << fName << endl;
195          cout << lName << endl;
196          cout << id << endl;
197          cout << dateBirth << endl;
198          cout << gpa << endl;
199          cout << startYear << endl;
200          cout << compCredit << endl;
201          cout << program << endl;
202      }
203
204      // compare gpa function, take in two floats and compares them
205      // return the higher gpa
206      float Student::compareGpa(float gpa1, float gpa2) {
207          if (gpa1 > gpa2)
208              return gpa1;
209          else
210              return gpa2;
211      }
```

Student.h

```cpp
1   // COEN 243 Project, Week 10
2   // Hei Wang Andre Law, 4017 5600
3   // Program: System that Handles the Records of Students at Concordia
4   // File: student.h
5
6   #include <string>
7   using namespace std;
8
9   // clas definition for 'student'
10  class Student {
11  private: // data member
12      string fName; // first name
13      string lName; // last name
14      int id; // student id
15      int dateBirth; // date of birth
16      float gpa; // student gpa
17      int startYear; // start year
18      float compCredit; // completed credit
19      string program; // program
20
21  public: // member function
22      Student(); // constructor
23      // setters
24      void setfName(string);
25      void setlName(string);
26      void setId(int);
27      void setDateBirth(int);
28      void setGpa(float);
29      void setStartYear(int);
30      void setCompCredit(float);
31      void setProgram(string);
32
33      // getters
34      string getfName();
35      string getlName();
36      int getId();
37      int getDateBirth();
38      float getGpa();
39      int getStartYear();
40      float getCompCredit();
```

```
25          void setlName(string);
26          void setId(int);
27          void setDateBirth(int);
28          void setGpa(float);
29          void setStartYear(int);
30          void setCompCredit(float);
31          void setProgram(string);
32
33          // getters
34          string getfName();
35          string getlName();
36          int getId();
37          int getDateBirth();
38          float getGpa();
39          int getStartYear();
40          float getCompCredit();
41          string getProgram();
42
43          // 'student' functions
44          bool completeprogram();
45          string studentStatus();
46          void printStdInfo();
47          float compareGpa(float, float);
48      };
49
```

Faculty.cpp

```cpp
// COEN 243 Project, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: System that Handles the Records of Students at Concordia
// File: faculty.cpp

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

// class implementaion for 'faculty'
Faculty::Faculty() { // constructor
    highNumCivil = 0.0;
    highNumMech = 0.0;
    highNumElecComp = 0.0;
};

string* Faculty::getFile(string name, const int max, int* count) {
    string* data = new string[max];
    ifstream is(name.c_str());
    *count = 0;
    while (*count < max && getline(is, data[*count])) {
        ++* count;
    }
    return data;
}


// display highest gpa member function
void Faculty::highestGpa(string gpa1, string gpa2, string gpa3) {
    cout << "The highest gpa in this faculty is ";
    const int numLine = 41;
    highNumCivil = stof(gpa1); // convert string to float
    highNumMech = stof(gpa2); // convert string to float
    highNumElecComp = stof(gpa3); // convert string to float
    // compare the highest gpa, then print it
    if (highNumCivil > highNumElecComp && highNumCivil > highNumMech)
        cout << highNumCivil;
    else if (highNumElecComp > highNumCivil && highNumElecComp > highNumMech)
```

No issues found   Ln: 9   Ch:

```cpp
31  void Faculty::highestGpa(string gpa1, string gpa2, string gpa3) {
32      cout << "The highest gpa in this faculty is ";
33      const int numLine = 41;
34      highNumCivil = stof(gpa1); // convert string to float
35      highNumMech = stof(gpa2); // convert string to float
36      highNumElecComp = stof(gpa3); // convert string to float
37      // compare the highest gpa, then print it
38      if (highNumCivil > highNumElecComp && highNumCivil > highNumMech)
39          cout << highNumCivil;
40      else if (highNumElecComp > highNumCivil && highNumElecComp > highNumMech)
41          cout << highNumElecComp;
42      else if (highNumMech > highNumElecComp && highNumMech > highNumCivil)
43          cout << highNumMech;
44      else
45          cout << "Error";
46      cout << endl << endl;
47  }
48
49  void Faculty::numUnderGrad() {
50
51  }
52  void Faculty::numGrad() {
53
54  }
55  void Faculty::avgunderGrad() {
56
57  }
```

Faculty.h

```cpp
1    // COEN 243 Project, Week 10
2    // Hei Wang Andre Law, 4017 5600
3    // Program: System that Handles the Records of Students at Concordia
4    // File: faculty.h
5
6    #include <string>
7    using namespace std;
8
9    // clas definition for 'faculty'
10   class Faculty {
11   private:
12       float highNumCivil; // num being the highest gpa in civil
13       float highNumMech; // num being the highest gpa in mech
14       float highNumElecComp; // num being the highest gpa in elec and comp
15   public:
16       Faculty(); // constructor
17       string *getFile(string, const int, int*);
18       void highestGpa(string, string, string);
19       void numUnderGrad();
20       void numGrad();
21       void avgunderGrad();
22   };
23
```