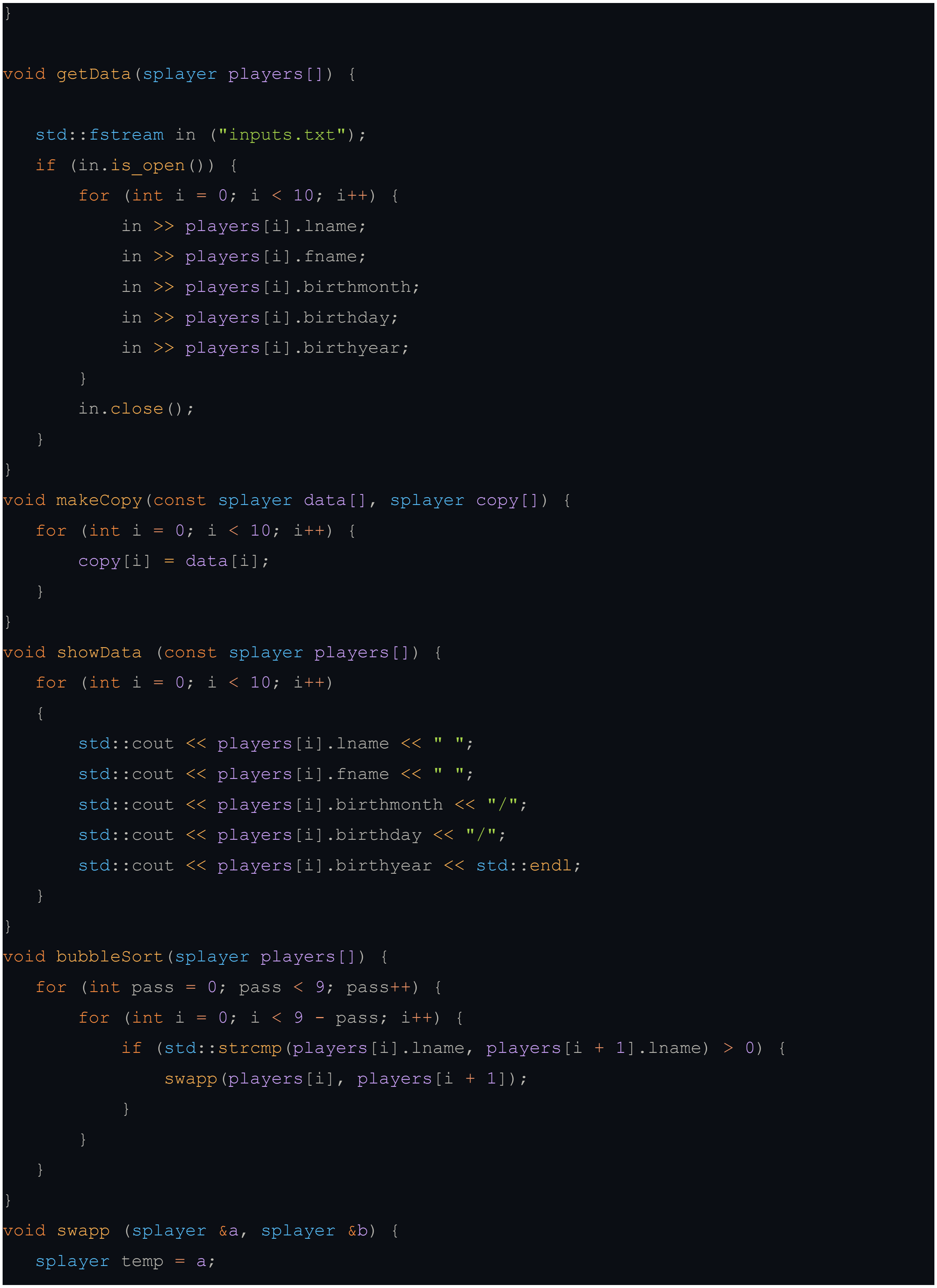
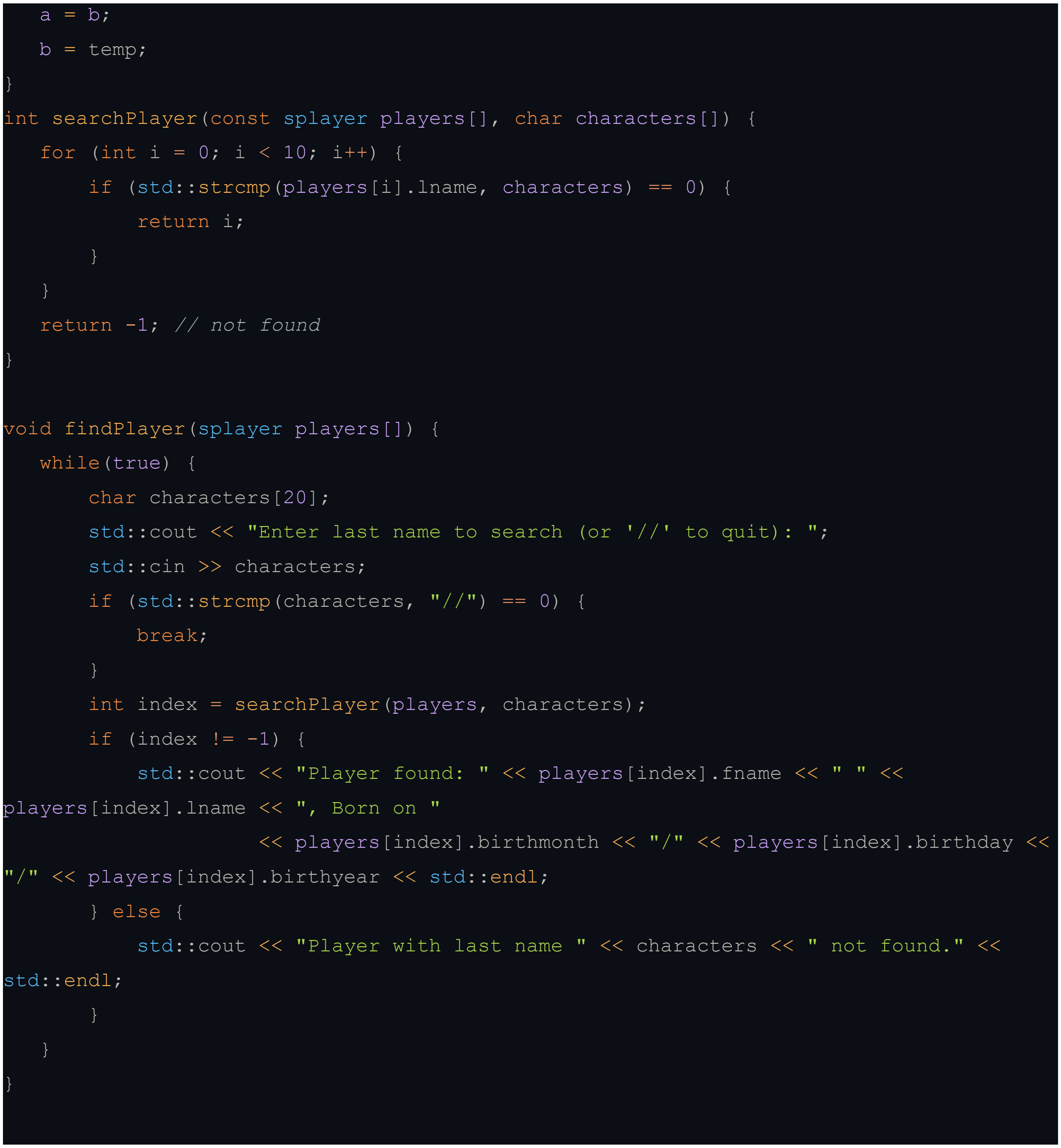
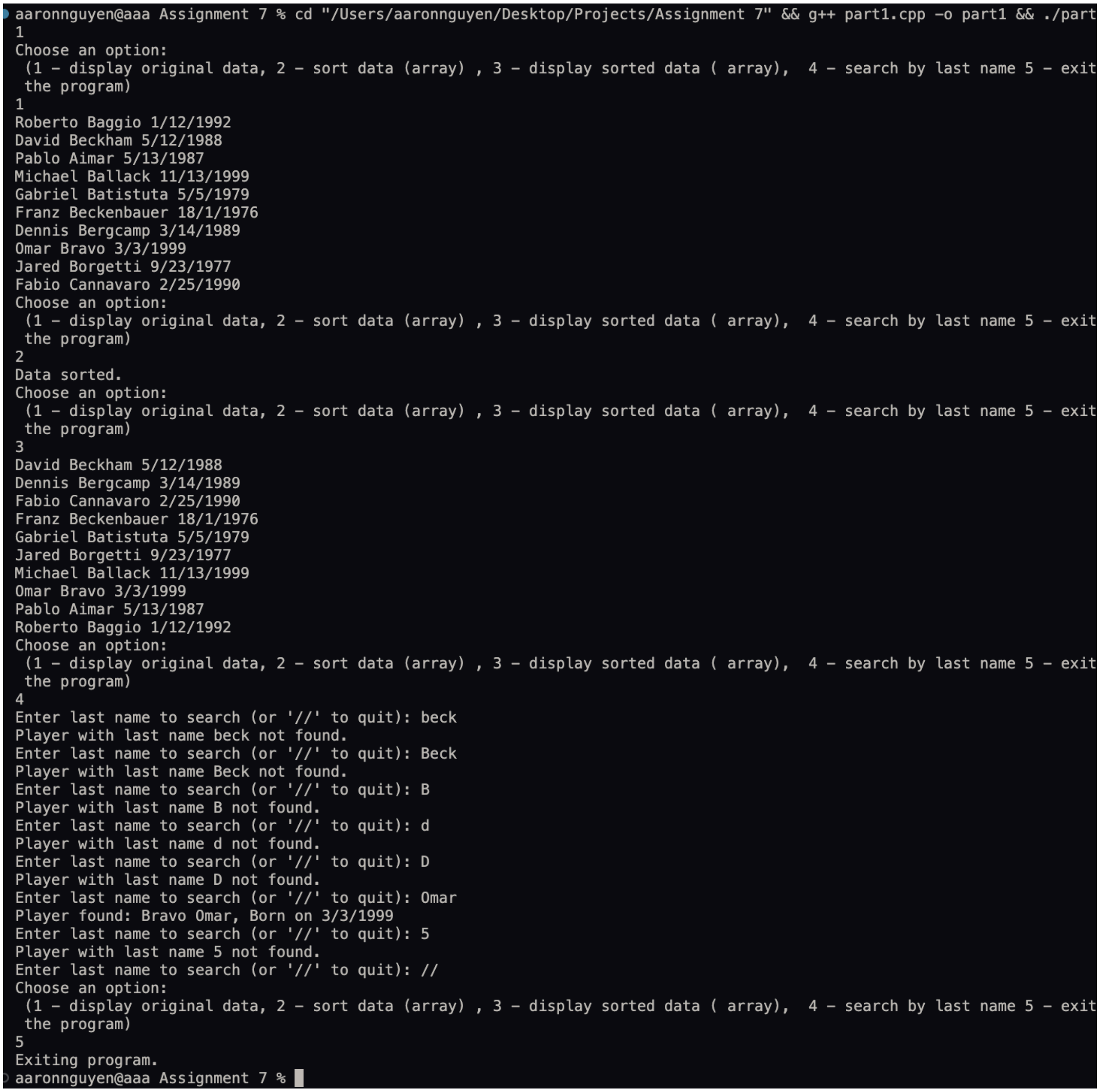
```
// *******************************
// Description: Sort soccer players by last name using Structured Data Types!
// Aaron Nguyen
// COMSC-165-5065
// Date: October 26, 2025
// Status: Complete
// *******************************

#include <iostream>
#include <fstream>
#include <string>
#include <cstring>
#include <cstdlib>



struct splayer
{
   char lname[20];
   char fname[20];
   int birthmonth;
   int birthday;
   int birthyear;
};

// prototypes
void getData(splayer[]);
void makeCopy(const splayer [], splayer[]);
void showData (const splayer []);
void bubbleSort(splayer []);
void swapp (splayer &, splayer &);
int searchPlayer(const splayer [], char[]);
void findPlayer(splayer players[]);


int main()
{
   splayer players[10];
   splayer sortPlayers[10];
   int choice;

   getData(players);
   makeCopy(players, sortPlayers);

   std::cout << "Choose an option:\n (1 - display original data, 2 - sort data (array)
, 3 - display sorted data ( array),  4 - search by last name 5 - exit the program) "
<< std::endl;
   while (std::cin >> choice)
   {
       if (choice == 1)
       {
           showData(players);
       }
       else if (choice == 2)
       {
           bubbleSort(sortPlayers);
           std::cout << "Data sorted." << std::endl;
       }
       else if (choice == 3)
       {
           showData(sortPlayers);
       }
       else if (choice == 4)
       {
           findPlayer(sortPlayers);
       }
       else if (choice == 5)
       {
           std::cout << "Exiting program." << std::endl;
           break;
       }
       else
       {
           std::cout << "Invalid option. Please try again." << std::endl;
       }

       std::cout << "Choose an option:\n (1 - display original data, 2 - sort data
(array) , 3 - display sorted data ( array),  4 - search by last name 5 - exit the
program) " << std::endl;


   }

   return 0;
```



```
}

void getData(splayer players[]) {

   std::fstream in ("inputs.txt");
   if (in.is_open()) {
       for (int i = 0; i < 10; i++) {
           in >> players[i].lname;
           in >> players[i].fname;
           in >> players[i].birthmonth;
           in >> players[i].birthday;
           in >> players[i].birthyear;
       }
       in.close();
   }
}
void makeCopy(const splayer data[], splayer copy[]) {
   for (int i = 0; i < 10; i++) {
       copy[i] = data[i];
   }
}
void showData (const splayer players[]) {
   for (int i = 0; i < 10; i++)
   {
       std::cout << players[i].lname << " ";
       std::cout << players[i].fname << " ";
       std::cout << players[i].birthmonth << "/";
       std::cout << players[i].birthday << "/";
       std::cout << players[i].birthyear << std::endl;
   }
}
void bubbleSort(splayer players[]) {
   for (int pass = 0; pass < 9; pass++) {
       for (int i = 0; i < 9 - pass; i++) {
           if (std::strcmp(players[i].lname, players[i + 1].lname) > 0) {
               swapp(players[i], players[i + 1]);
           }
       }
   }
}
void swapp (splayer &a, splayer &b) {
   splayer temp = a;
```



```
    a = b;
    b = temp;
}
int searchPlayer(const splayer players[], char characters[]) {
    for (int i = 0; i < 10; i++) {
        if (std::strcmp(players[i].lname, characters) == 0) {
            return i;
        }
    }
    return -1; // not found
}

void findPlayer(splayer players[]) {
    while(true) {
        char characters[20];
        std::cout << "Enter last name to search (or '//' to quit): ";
        std::cin >> characters;
        if (std::strcmp(characters, "//") == 0) {
            break;
        }
        int index = searchPlayer(players, characters);
        if (index != -1) {
            std::cout << "Player found: " << players[index].fname << " " <<
players[index].lname << ", Born on "
                      << players[index].birthmonth << "/" << players[index].birthday <<
"/" << players[index].birthyear << std::endl;
        } else {
            std::cout << "Player with last name " << characters << " not found." <<
std::endl;
        }
    }
}
```



```
aaronnguyen@aaa Assignment 7 % cd "/Users/aaronnguyen/Desktop/Projects/Assignment 7" && g++ part1.cpp -o part1 && ./part
1
Choose an option:
 (1 - display original data, 2 - sort data (array) , 3 - display sorted data ( array),  4 - search by last name 5 - exit
 the program)
1
Roberto Baggio 1/12/1992
David Beckham 5/12/1988
Pablo Aimar 5/13/1987
Michael Ballack 11/13/1999
Gabriel Batistuta 5/5/1979
Franz Beckenbauer 18/1/1976
Dennis Bergcamp 3/14/1989
Omar Bravo 3/3/1999
Jared Borgetti 9/23/1977
Fabio Cannavaro 2/25/1990
Choose an option:
 (1 - display original data, 2 - sort data (array) , 3 - display sorted data ( array),  4 - search by last name 5 - exit
 the program)
2
Data sorted.
Choose an option:
 (1 - display original data, 2 - sort data (array) , 3 - display sorted data ( array),  4 - search by last name 5 - exit
 the program)
3
David Beckham 5/12/1988
Dennis Bergcamp 3/14/1989
Fabio Cannavaro 2/25/1990
Franz Beckenbauer 18/1/1976
Gabriel Batistuta 5/5/1979
Jared Borgetti 9/23/1977
Michael Ballack 11/13/1999
Omar Bravo 3/3/1999
Pablo Aimar 5/13/1987
Roberto Baggio 1/12/1992
Choose an option:
 (1 - display original data, 2 - sort data (array) , 3 - display sorted data ( array),  4 - search by last name 5 - exit
 the program)
4
Enter last name to search (or '//' to quit): beck
Player with last name beck not found.
Enter last name to search (or '//' to quit): Beck
Player with last name Beck not found.
Enter last name to search (or '//' to quit): B
Player with last name B not found.
Enter last name to search (or '//' to quit): d
Player with last name d not found.
Enter last name to search (or '//' to quit): D
Player with last name D not found.
Enter last name to search (or '//' to quit): Omar
Player found: Bravo Omar, Born on 3/3/1999
Enter last name to search (or '//' to quit): 5
Player with last name 5 not found.
Enter last name to search (or '//' to quit): //
Choose an option:
 (1 - display original data, 2 - sort data (array) , 3 - display sorted data ( array),  4 - search by last name 5 - exit
 the program)
5
Exiting program.
aaronnguyen@aaa Assignment 7 %
```