

Mental Health Project

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1. Introduction of project

Whenever there is stress, it can become very overwhelming. It increases the risks of mental health problems. In addition to numerous medical problems, such as high blood pressure. Stress(long-term) increases mental health problems such as depression and anxiety. It also increases sleep problems, as well as muscle tension. Our project is designed to help with tracking people's mental health condition in the workforce.

In our project, users can type in all their information, such as name, state, and country and also add in if they have a history of mental problems and if they suffer from job stress. Once the users input all their information, they are allowed to grade their mental health on an A-D scale, in relation to how their job stress is affecting them. A is the highest grade and D is the lowest grade they can score themselves with. Our project will store all of the information as a text file that can be saved for next usage, and users can do some simple analyzation on these data, such as displaying, inserting, deleting, modifying, searching, sorting and counting.

Our project can record mental health conditions of each person, and should be helpful for making specific treatment plans. Psychologists can be much easier to know whether a worker should take necessary treatment according to the recorded data.

For further study, we want to add more complex analyzation functions, which means our project can do much detailed tasks, like sorting each feature (ID, Age, Gender, Country, State, History, Work and Score) and display people with certain problems. It is also possible to add more features in the project for accuracy.

Source.cpp link:

https://github.com/Yizhe07/Project_Mental_Health/blob/master/Source.cpp

Stack_version.cpp link:

https://github.com/Yizhe07/Project_Mental_Health/blob/master/stack_version.cpp

2. Division of duties

Yizhe Wang:

1. (The stack version display code)
2. Create the data structure for person (Class person and sequences of strings)
3. Read data from the txt file
4. Save the dataset in a new text file
5. Menu
6. Delete function
7. Modify function (Individual work)
8. Search function
9. Sort function
10. Read and Write function (Individual work)
11. Documentation and user guideline

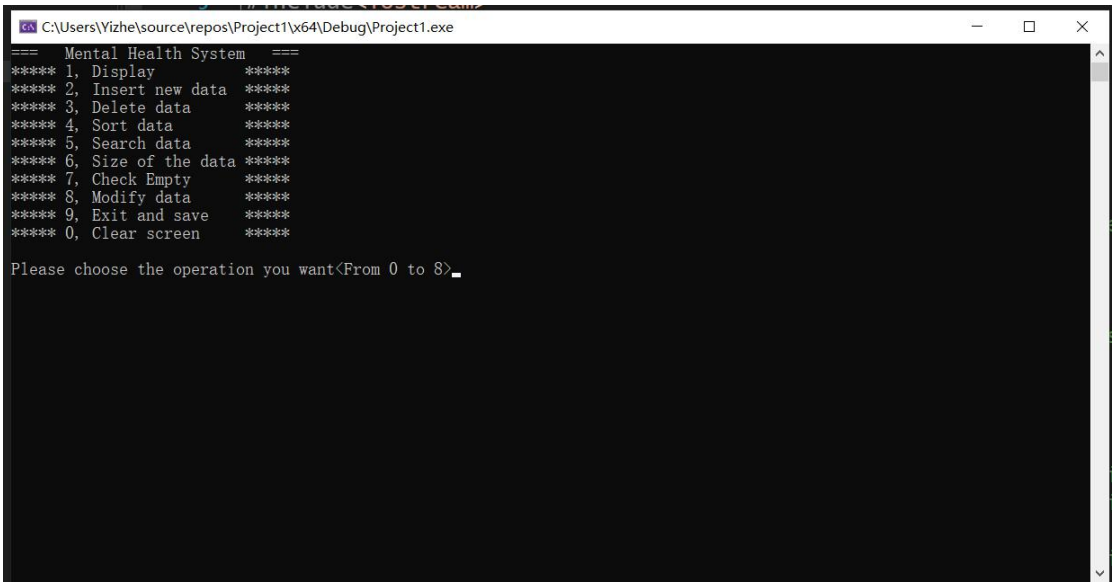
Jalen Smith:

1. Find and the dataset
2. Display function
3. Empty function (Individual work)
4. PowerPoint for presentation
5. Documentation
6. Menu

Jamal Beacham

1. Keep the dataset in right text format
2. Insert Function
3. Size Function (Individual work)
4. Documentation
5. Menu

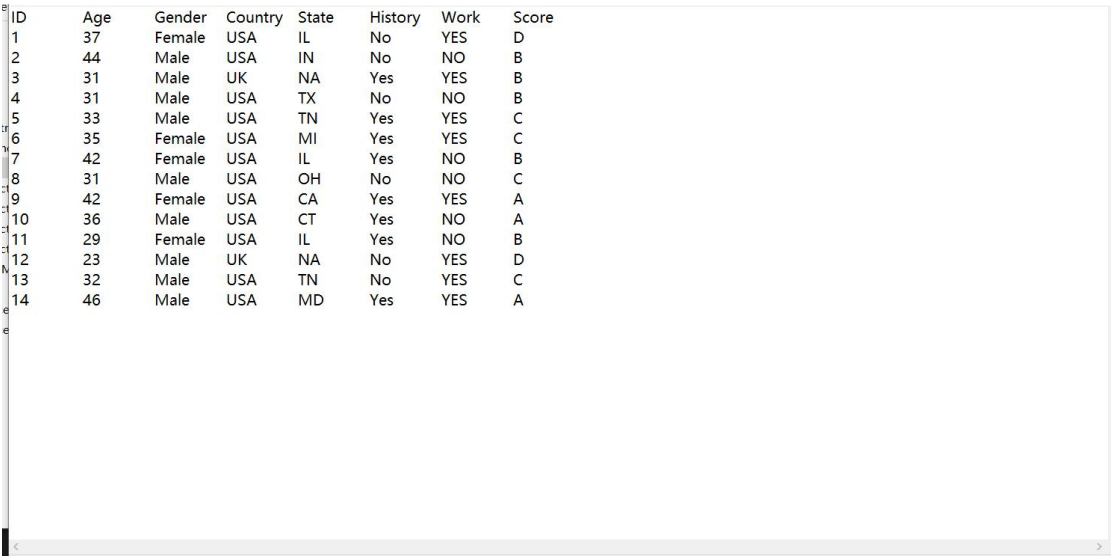
3. Instructions on how to run the code (Guideline)



```
==== Mental Health System ====
***** 1, Display *****
***** 2, Insert new data *****
***** 3, Delete data *****
***** 4, Sort data *****
***** 5, Search data *****
***** 6, Size of the data *****
***** 7, Check Empty *****
***** 8, Modify data *****
***** 9, Exit and save *****
***** 0, Clear screen *****

Please choose the operation you want<From 0 to 8>_
```

Before running the code, the user should import the dataset file called data.txt, just put this txt file in the resource files.



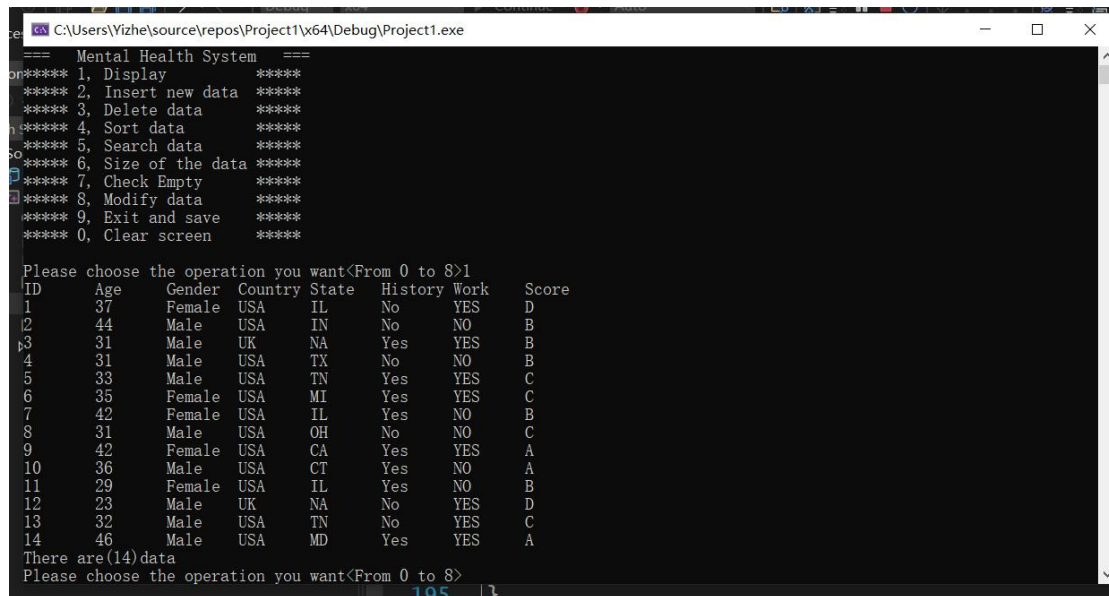
ID	Age	Gender	Country	State	History	Work	Score
1	37	Female	USA	IL	No	YES	D
2	44	Male	USA	IN	No	NO	B
3	31	Male	UK	NA	Yes	YES	B
4	31	Male	USA	TX	No	NO	B
5	33	Male	USA	TN	Yes	YES	C
6	35	Female	USA	MI	Yes	YES	C
7	42	Female	USA	IL	Yes	NO	B
8	31	Male	USA	OH	No	NO	C
9	42	Female	USA	CA	Yes	YES	A
10	36	Male	USA	CT	Yes	NO	A
11	29	Female	USA	IL	Yes	NO	B
12	23	Male	UK	NA	No	YES	D
13	32	Male	USA	TN	No	YES	C
14	46	Male	USA	MD	Yes	YES	A

The dataset is shown above.

Then we can start debug the code. When debugging, a menu should be shown and the user can choose from 0 to 9.

1. Display

Once choose the display function, the original data set and the size of the dataset will be shown in the screen, as shown below:



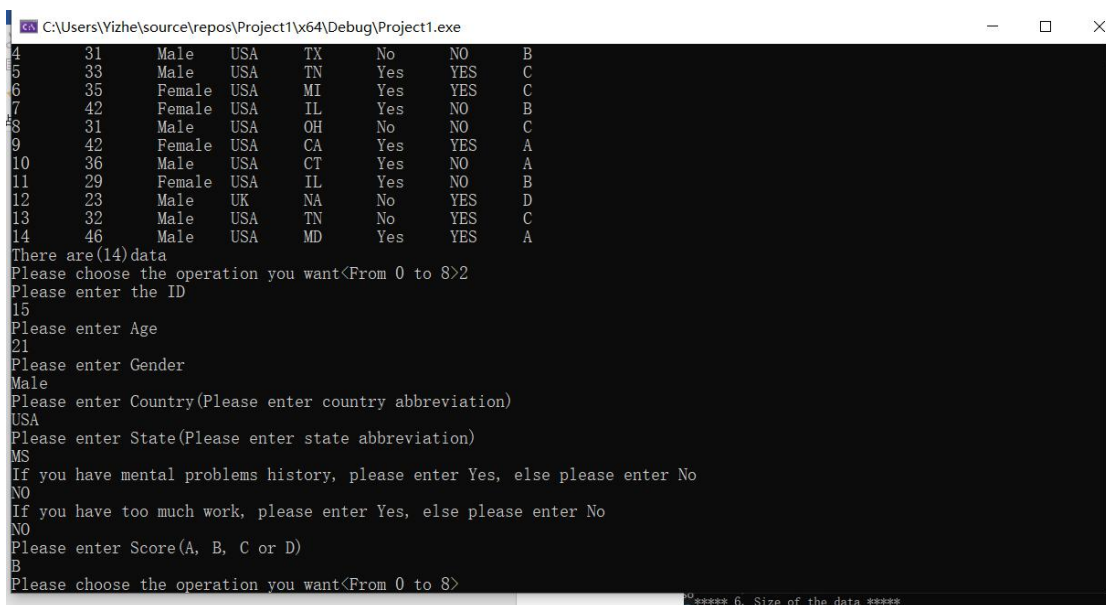
```
==== Mental Health System ====
***** 1, Display *****
***** 2, Insert new data *****
***** 3, Delete data *****
***** 4, Sort data *****
***** 5, Search data *****
***** 6, Size of the data *****
***** 7, Check Empty *****
***** 8, Modify data *****
***** 9, Exit and save *****
***** 0, Clear screen *****

Please choose the operation you want<From 0 to 8>1
ID   Age   Gender Country State   History Work   Score
1    37    Female USA    IL     No    YES    D
2    44    Male   USA    IN     No    NO     B
3    31    Male   UK     NA     Yes   YES    B
4    31    Male   USA    TX     No    NO     B
5    33    Male   USA    TN     Yes   YES    C
6    35    Female USA    MI     Yes   YES    C
7    42    Female USA    IL     Yes   NO     B
8    31    Male   USA    OH     No    NO     C
9    42    Female USA    CA     Yes   YES    A
10   36    Male   USA    CT     Yes   NO     A
11   29    Female USA    IL     Yes   NO     B
12   23    Male   UK     NA     No    YES    D
13   32    Male   USA    TN     No    YES    C
14   46    Male   USA    MD     Yes   YES    A

There are(14) data
Please choose the operation you want<From 0 to 8>1
```

2. Insert

If you want to insert a new data, press 2, and then enter all of the information.



```
==== Mental Health System ====
***** 1, Display *****
***** 2, Insert new data *****
***** 3, Delete data *****
***** 4, Sort data *****
***** 5, Search data *****
***** 6, Size of the data *****
***** 7, Check Empty *****
***** 8, Modify data *****
***** 9, Exit and save *****
***** 0, Clear screen *****

Please choose the operation you want<From 0 to 8>2
Please enter the ID
15
Please enter Age
21
Please enter Gender
Male
Please enter Country(Please enter country abbreviation)
USA
Please enter State(Please enter state abbreviation)
MS
If you have mental problems history, please enter Yes, else please enter No
NO
If you have too much work, please enter Yes, else please enter No
NO
Please enter Score(A, B, C or D)
B
Please choose the operation you want<From 0 to 8>

***** 6, Size of the data *****
```

If you want to check whether the data is inserted, press 1 to display.

```
C:\Users\Yizhe\source\repos\Project1\Debug\Project1.exe
Male
Please enter Country(Please enter country abbreviation)
USA
Please enter State(Please enter state abbreviation)
MS
If you have mental problems history, please enter Yes, else please enter No
NO
If you have too much work, please enter Yes, else please enter No
NO
Please enter Score(A, B, C or D)
B
Please choose the operation you want<From 0 to 8>1
ID      Age      Gender  Country State  History Work  Score
1       37       Female  USA     IL     No     YES     D
2       44       Male    USA     IN     No     NO      B
3       31       Male    UK       NA     Yes    YES     B
4       31       Male    USA     TX     No     NO      B
5       33       Male    USA     TN     Yes    YES     C
6       35       Female  USA     MI     Yes    YES     C
7       42       Female  USA     IL     Yes    NO      B
8       31       Male    USA     OH     No     NO      C
9       42       Female  USA     CA     Yes    YES     A
10      36       Male    USA     CT     Yes    NO      A
11      29       Female  USA     IL     Yes    NO      B
12      23       Male    UK       NA     No     YES     D
13      32       Male    USA     TN     No     YES     C
14      46       Male    USA     MD     Yes    YES     A
15      21       Male    USA     MS     NO     NO      B
There are(15) data
Please choose the operation you want<From 0 to 8>
```

As you can see in the screenshot, the new dataset entered has been added to the end of the text file and the size of the function has changed to 15.

3. Delete

If you want to delete a data, just press 3 and enter the ID

```
C:\Users\Yizhe\source\repos\Project1\Debug\Project1.exe
7       42       Female  USA     IL     Yes    NO      B
8       31       Male    USA     OH     No     NO      C
9       42       Female  USA     CA     Yes    YES     A
10      36       Male    USA     CT     Yes    NO      A
11      29       Female  USA     IL     Yes    NO      B
12      23       Male    UK       NA     No     YES     D
13      32       Male    USA     TN     No     YES     C
14      46       Male    USA     MD     Yes    YES     A
15      21       Male    USA     MS     NO     NO      B
There are(15) data
Please choose the operation you want<From 0 to 8>3
Please enter the ID of the person you want to delete>15
Please choose the operation you want<From 0 to 8>1
ID      Age      Gender  Country State  History Work  Score
1       37       Female  USA     IL     No     YES     D
2       44       Male    USA     IN     No     NO      B
3       31       Male    UK       NA     Yes    YES     B
4       31       Male    USA     TX     No     NO      B
5       33       Male    USA     TN     Yes    YES     C
6       35       Female  USA     MI     Yes    YES     C
7       42       Female  USA     IL     Yes    NO      B
8       31       Male    USA     OH     No     NO      C
9       42       Female  USA     CA     Yes    YES     A
10      36       Male    USA     CT     Yes    NO      A
11      29       Female  USA     IL     Yes    NO      B
12      23       Male    UK       NA     No     YES     D
13      32       Male    USA     TN     No     YES     C
14      46       Male    USA     MD     Yes    YES     A
There are(14) data
Please choose the operation you want<From 0 to 8>
```

The 15th data has been deleted and the size of the dataset has changed to 14.

4. Sort

If you want to sort the data, please press 4. For now, our program can only sort the dataset in ID. However, you can sort the dataset from low or high or high to low. As shown in the screenshot below. Once the operation is done, you can press 1 to display it.

```
C:\Users\Yizhe\source\repos\Project1\x64\Debug\Project1.exe
***** 4, Sort data *****
***** 5, Search data *****
***** 6, Size of the data *****
***** 7, Check Empty *****
***** 8, Modify data *****
***** 9, Exit and save *****
***** 0, Clear screen *****

Please choose the operation you want<From 0 to 8>4
If want to sort ID from low to high, enter 1, if you want to sort ID from high to low, enter 2
2
Sorting succeed
Please choose the operation you want<From 0 to 8>1
ID   Age   Gender Country State History Work  Score
14   46    Male   USA    MD    Yes   YES   A
13   32    Male   USA    TN    No    YES   C
12   23    Male   UK     NA    No    YES   D
11   29    Female USA    IL    Yes   NO    B
10   36    Male   USA    CT    Yes   NO    A
9    42    Female USA    CA    Yes   YES   A
8    31    Male   USA    OH    No    NO    C
7    42    Female USA    IL    Yes   NO    B
6    35    Female USA    MI    Yes   YES   C
5    33    Male   USA    TN    Yes   YES   C
4    31    Male   USA    TX    No    NO    B
3    31    Male   UK     NA    Yes   YES   B
2    44    Male   USA    IN    No    NO    B
1    37    Female USA    IL    No    YES   D

There are (14) data
Please choose the operation you want<From 0 to 8>
```

5. Search

If you want to search a certain person dataset, please enter the ID of the person. If the person is in the list, the data will be shown in the screen.

```
C:\Users\Yizhe\source\repos\Project1\x64\Debug\Project1.exe
***** 8, Modify data *****
***** 9, Exit and save *****
***** 0, Clear screen *****

Please choose the operation you want<From 0 to 8>4
If want to sort ID from low to high, enter 1, if you want to sort ID from high to low, enter 2
2
Sorting succeed
Please choose the operation you want<From 0 to 8>1
ID   Age   Gender Country State History Work  Score
14   46    Male   USA    MD    Yes   YES   A
13   32    Male   USA    TN    No    YES   C
12   23    Male   UK     NA    No    YES   D
11   29    Female USA    IL    Yes   NO    B
10   36    Male   USA    CT    Yes   NO    A
9    42    Female USA    CA    Yes   YES   A
8    31    Male   USA    OH    No    NO    C
7    42    Female USA    IL    Yes   NO    B
6    35    Female USA    MI    Yes   YES   C
5    33    Male   USA    TN    Yes   YES   C
4    31    Male   USA    TX    No    NO    B
3    31    Male   UK     NA    Yes   YES   B
2    44    Male   USA    IN    No    NO    B
1    37    Female USA    IL    No    YES   D

There are (14) data
Please choose the operation you want<From 0 to 8>5
Please enter the ID of the person you want to search for
3
Found 3 31      Male   UK     NA    Yes   YES   B
Please choose the operation you want<From 0 to 8>
```

6. Size

If you want to know the size of the data, you can press 6 to display it.

```
C:\Users\Yizhe\source\repos\Project1\Debug\Project1.exe
Sorting succeed
Please choose the operation you want<From 0 to 8>1
ID   Age   Gender Country State   History Work   Score
14   46    Male   USA    MD     Yes   YES   A
13   32    Male   USA    TN     No    YES   C
12   23    Male   UK     NA     No    YES   D
11   29    Female USA    IL     Yes   NO    B
10   36    Male   USA    CT     Yes   NO    A
9    42    Female USA    CA     Yes   YES   A
8    31    Male   USA    OH     No    NO    C
7    42    Female USA    IL     Yes   NO    B
6    35    Female USA    MI     Yes   YES   C
5    33    Male   USA    TN     Yes   YES   C
4    31    Male   USA    TX     No    NO    B
3    31    Male   UK     NA     Yes   YES   B
2    44    Male   USA    IN     No    NO    B
1    37    Female USA    IL     No    YES   D
There are (14) data
Please choose the operation you want<From 0 to 8>5
Please enter the ID of the person you want to search for
3
Found 3 31    Male   UK     NA     Yes   YES   B
Please choose the operation you want<From 0 to 8>6
The total number of the data is 14
Please choose the operation you want<From 0 to 8>
```

7. Check empty

If you want to check whether the list is empty, press 7.

```
C:\Users\Yizhe\source\repos\Project1\Debug\Project1.exe
14   46    Male   USA    MD     Yes   YES   A
13   32    Male   USA    TN     No    YES   C
12   23    Male   UK     NA     No    YES   D
11   29    Female USA    IL     Yes   NO    B
10   36    Male   USA    CT     Yes   NO    A
9    42    Female USA    CA     Yes   YES   A
8    31    Male   USA    OH     No    NO    C
7    42    Female USA    IL     Yes   NO    B
6    35    Female USA    MI     Yes   YES   C
5    33    Male   USA    TN     Yes   YES   C
4    31    Male   USA    TX     No    NO    B
3    31    Male   UK     NA     Yes   YES   B
2    44    Male   USA    IN     No    NO    B
1    37    Female USA    IL     No    YES   D
There are (14) data
Please choose the operation you want<From 0 to 8>5
Please enter the ID of the person you want to search for
3
Found 3 31    Male   UK     NA     Yes   YES   B
Please choose the operation you want<From 0 to 8>6
The total number of the data is 14
Please choose the operation you want<From 0 to 8>7
The data file is not empty
Please choose the operation you want<From 0 to 8>
```


8. Modify

If you want to modify a data, press 8. You should first enter the ID of the person, and then enter the new information you want to modify.

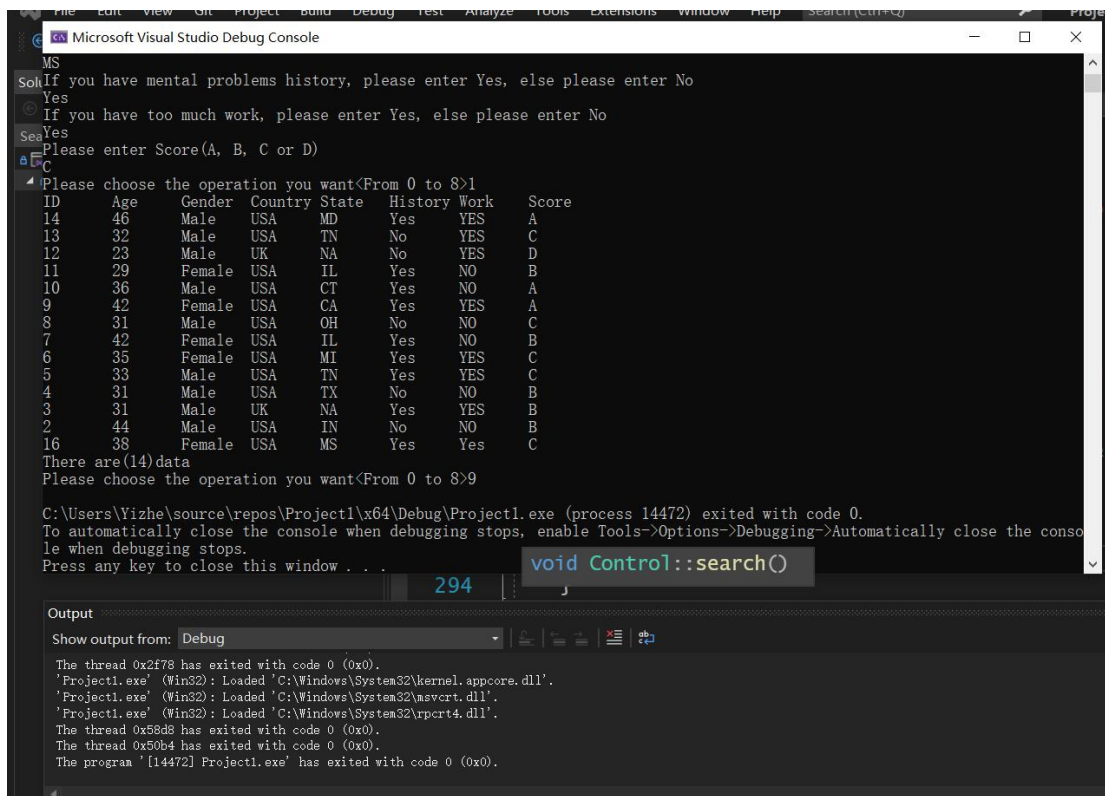
```
C:\Users\Yizhe\source\repos\Project1\x64\Debug\Project1.exe
***** 2, Insert new data *****
***** 3, Delete data *****
***** 4, Sort data *****
***** 5, Search data *****
***** 6, Size of the data *****
***** 7, Check Empty *****
***** 8, Modify data *****
***** 9, Exit and save *****
***** 0, Clear screen *****

Please choose the operation you want<From 0 to 8>8
Please enter the ID of the person you want to modify
1
Please enter the new ID
16
Please enter new Age
38
Please enter new Gender
Female
Please enter new Country(Please enter country abbreviation)
USA
Please enter new State(Please enter state abbreviation)
MS
If you have mental problems history, please enter Yes, else please enter No
Yes
If you have too much work, please enter Yes, else please enter No
Yes
Please enter Score(A, B, C or D)
C
Please choose the operation you want<From 0 to 8>
```

You can press 1 to check whether the data has been modified

```
C:\Users\Yizhe\source\repos\Project1\x64\Debug\Project1.exe
USA
Please enter new State(Please enter state abbreviation)
MS
If you have mental problems history, please enter Yes, else please enter No
Yes
If you have too much work, please enter Yes, else please enter No
Yes
Please enter Score(A, B, C or D)
C
Please choose the operation you want<From 0 to 8>1
ID      Age      Gender  Country State  History Work  Score
14      46      Male   USA    MD    Yes   YES   A
13      32      Male   USA    TN    No    YES   C
12      23      Male   UK     NA    No    YES   D
11      29      Female USA    IL    Yes   NO    B
10      36      Male   USA    CT    Yes   NO    A
9       42      Female USA    CA    Yes   YES   A
8       31      Male   USA    OH    No    NO    C
7       42      Female USA    IL    Yes   NO    B
6       35      Female USA    MI    Yes   YES   C
5       33      Male   USA    TN    Yes   YES   C
4       31      Male   USA    TX    No    NO    B
3       31      Male   UK     NA    Yes   YES   B
2       44      Male   USA    IN    No    NO    B
16      38      Female USA    MS    Yes   Yes   C
There are(14)data
Please choose the operation you want<From 0 to 8>
```

9. Exit and save



The screenshot shows the Microsoft Visual Studio Debug Console. The program has executed several prompts: "If you have mental problems history, please enter Yes, else please enter No", "If you have too much work, please enter Yes, else please enter No", "Please enter Score(A, B, C or D)", and "Please choose the operation you want(From 0 to 8)>1". It then displays a table of 14 data entries. After the table, it prompts "Please choose the operation you want(From 0 to 8)>9". The program then exits with code 0. The console also shows system messages about DLL loading and thread exit. A code snippet `void Control::search()` is visible in the background.

```
MS
SolIf you have mental problems history, please enter Yes, else please enter No
Yes
If you have too much work, please enter Yes, else please enter No
Yes
Please enter Score(A, B, C or D)
C
Please choose the operation you want(From 0 to 8)>1
ID   Age   Gender  Country State  History Work   Score
14   46     Male   USA    MD    Yes   YES   A
13   32     Male   USA    TN    No    YES   C
12   23     Male   UK     NA    No    YES   D
11   29     Female USA    IL    Yes   NO    B
10   36     Male   USA    CT    Yes   NO    A
9    42     Female USA    CA    Yes   YES   A
8    31     Male   USA    OH    No    NO    C
7    42     Female USA    IL    Yes   NO    B
6    35     Female USA    MI    Yes   YES   C
5    33     Male   USA    TN    Yes   YES   C
4    31     Male   USA    TX    No    NO    B
3    31     Male   UK     NA    Yes   YES   B
2    44     Male   USA    IN    No    NO    B
16   38     Female USA    MS    Yes   Yes   C
There are(14)data
Please choose the operation you want(From 0 to 8)>9

C:\Users\Yizhe\source\repos\Project1\64\Debug\Project1.exe (process 14472) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

void Control::search()
```

If you want to exit the program, press 9. The debug will be ended and the program will create a new txt file called save.txt to store the data, as shown below.

ID	Age	Gender	Country	State	History	Work	Score
14	46	Male	USA	MD	Yes	YES	A
13	32	Male	USA	TN	No	YES	C
12	23	Male	UK	NA	No	YES	D
11	29	Female	USA	IL	Yes	NO	B
10	36	Male	USA	CT	Yes	NO	A
9	42	Female	USA	CA	Yes	YES	A
8	31	Male	USA	OH	No	NO	C
7	42	Female	USA	IL	Yes	NO	B
6	35	Female	USA	MI	Yes	YES	C
5	33	Male	USA	TN	Yes	YES	C
4	31	Male	USA	TX	No	NO	B
3	31	Male	UK	NA	Yes	YES	B
2	44	Male	USA	IN	No	NO	B
16	38	Female	USA	MS	Yes	Yes	C

10. clear screen

You can press 10 to clear the screen.

4. Data structure and design

The data structure used in our project is std strings. In the beginning, our group thought of whether we could use stacks to do the project. It took me some time to do the display code called stack_version.cpp, but found that this solution is not appropriate, because the code needs to read data from the text file and show them. Therefore, I changed my mind and decided to use std strings as our data structure.

One of the biggest advantages of using std strings is that we can import our dataset as a text file and save it as another text file once the modification is completed. Also, we can store much more data as large as the size of uint32, the code of creating data structures is shown below:

```
using namespace std;

class Person
{
    using uint32 = unsigned; //Use uint32 to restore more data because there is no negative numbers.
public:
    Person(); //The function itself
    Person(uint32 ID); //Use ID to identify different people.
    Person(uint32 ID, int Age, const std::string& Gender, //use std to store the the data. Data structure used is std string.
           const std::string& Country, const std::string& State,
           const std::string& History, const std::string& Work,
           const std::string& Score);
    void display(); //The display operation.
    std::string datainfo(); //To get our data information as strings.
    void datawrite(const std::string& str); //To write our data information down.
public:
    bool operator==(const Person& right) const; // To eliminate inappropriate data and be more efficient.
    bool operator>(const Person& right) const;
    bool operator<(const Person& right) const;
public:
    uint32 ID; //All of the different types in our data
    int Age;
    std::string Gender;
    std::string Country;
    std::string State;
    std::string History;
    std::string Work;
    std::string Score;
};
```

The stark version code is in the GitHub. Please copy the link to see it.

https://github.com/Yizhe07/Project_Mental_Health/blob/master/stack_version.cpp

5. Dataset

DATA SET

ID	Age	Gender	Country	State	History	Work	Score
1	37	Female	USA	IL	No	YES	D
2	44	Male	USA	IN	No	NO	B
3	31	Male	UK	NA	Yes	YES	B
4	31	Male	USA	TX	No	NO	B
5	33	Male	USA	TN	Yes	YES	C
6	35	Female	USA	MI	Yes	YES	C
7	42	Female	USA	IL	Yes	NO	B
8	31	Male	USA	OH	No	NO	C
9	42	Female	USA	CA	Yes	YES	A
10	36	Male	USA	CT	Yes	NO	A
11	29	Female	USA	IL	Yes	NO	B
12	23	Male	UK	NA	No	YES	D
13	32	Male	USA	TN	No	YES	C
14	46	Male	USA	MD	Yes	YES	A

Initially, we will have 14 different data in our set, and each data has 8 different features: ID, Age, Gender, Country, State, History, Work and Score.