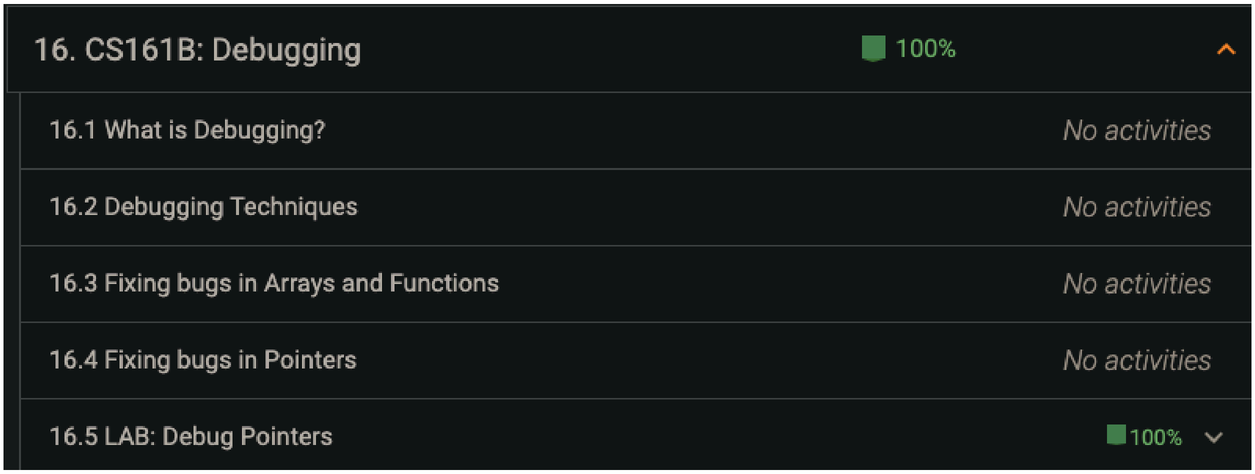

16. CS161B: Debugging 🟩 100%

16.1 What is Debugging? *No activities*

16.2 Debugging Techniques *No activities*

16.3 Fixing bugs in Arrays and Functions *No activities*

16.4 Fixing bugs in Pointers *No activities*

16.5 LAB: Debug Pointers 🟩 100%

REQUIREMENTS:

- ☑ ~~Name the file containing main() function, “finprj.cpp”~~
- ☑ ~~Make it a menu-driven program~~
- ☑ ~~The program must loop until the user enters QUIT to end the program~~
- □ No breaks or returns inside loops
- □ No while true loops
- □ no global variables
- ☑ ~~Must use structs~~
- □ Must use multiple files: see Zybooks Ch 14
- ☑ ~~Must have a “Remove” option in your menu. You must be able to shift and remove an item from your list.~~
- □ Must have functions and function prototypes (all must be written after main())
- □ Must have an array of struct and c-strings (no string class, vectors, or anything not covered in this class)
- ☑ ~~Must do data validation for input read from the user.~~
  - □ Users aren’t allowed to enter invalid or negative numbers, all options must be validated
- ☑ ~~Must read data from a file. See Zybooks Ch 12~~

DATASET: Source: TMDB Box Office Secrets

Movie_Title | Release_Date | Vote_Average | Vote_Count

```
Everything Everywhere All at Once;2022-03-24; 7.928;3873
John Wick: Chapter 4;2023-03-22;9.094;16
Cocaine Bear;2023-02-22;6.706;260
Boston Strangler;2023-03-17;6.7;43
Noise;2023-03-17;6.1;13
Scream VI;2023-03-08;7.394;302
The Whale;2022-12-09;8.07;1384
In His Shadow;2023-03-17;7.5;8
Still Time;2023-03-16;7.0;28
Shazam! Fury of the Gods;2023-03-15;7.54;89
```

SAMPLE RUN:

```
Welcome! This program gives statistical information from the TMDB Box
Office where movies have been ranked popularity from 1-10, and
average vote of movie. There will also be vote count, and release
date columns.

You can Add to the dataset, Print the dataset, Find the movie title
with the highest rating, or Quit the program.

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

P

Index #                             Movie_Title   Release_Date   Vote_Average   Vote_Count

0           Everything Everywhere All at Once     2022-03-24          7.928           3873
1                        John Wick: Chapter 4     2023-03-22          9.094             16
2                                Cocaine Bear     2023-02-22          6.706            260
3                            Boston Strangler     2023-03-17            6.7             43
4                                       Noise     2023-03-17            6.1             13
5                                   Scream VI     2023-03-08          7.394            302
6                                   The Whale     2022-12-09           8.07           1384
7                               In His Shadow     2023-03-17            7.5              8
8                                  Still Time     2023-03-16              7             28
9                    Shazam! Fury of the Gods     2023-03-15           7.54             89

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

A

Enter the movie title that you would like to add: Barbie

Enter the release date in YYYY-MM-DD format: 2023-07-21
Enter the vote average (Decimals ok!): 6.9

Enter the total number of votes: 4321

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

P

Index #                             Movie_Title   Release_Date   Vote_Average   Vote_Count

0           Everything Everywhere All at Once     2022-03-24          7.928           3873
1                        John Wick: Chapter 4     2023-03-22          9.094             16
2                                Cocaine Bear     2023-02-22          6.706            260
3                            Boston Strangler     2023-03-17            6.7             43
4                                       Noise     2023-03-17            6.1             13
5                                   Scream VI     2023-03-08          7.394            302
6                                   The Whale     2022-12-09           8.07           1384
7                               In His Shadow     2023-03-17            7.5              8
8                                  Still Time     2023-03-16              7             28
9                    Shazam! Fury of the Gods     2023-03-15           7.54             89
10                                     Barbie     2023-07-21            6.9           4321

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

F

Enter partial or entire movie title to find: bear

Movie found:
Title: Cocaine Bear
Release Date:2023-02-22
Vote Average: 6.706
Vote Count: 260
```

```
Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

a

Enter the movie title that you would like to add: Beetlejuice

Enter the release date in YYYY-MM-DD format: x

Invalid date format. Please enter in YYYY-MM-DD format.

Enter the release date in YYYY-MM-DD format: 1988-03-30

Enter the vote average (Decimals ok!): x

Invalid input. Please enter a non-negative number for the vote
average: 5.4

Enter the total number of votes: 3555

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

g

Invalid option. Please try again.

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
```

```
(F)IND
(M)AX
(Q)UIT

P

Index #                             Movie_Title   Release_Date   Vote_Average   Vote_Count

0           Everything Everywhere All at Once     2022-03-24          7.928         3873
1                        John Wick: Chapter 4     2023-03-22          9.094           16
2                                Cocaine Bear     2023-02-22          6.706          260
3                            Boston Strangler     2023-03-17            6.7           43
4                                       Noise     2023-03-17            6.1           13
5                                   Scream VI     2023-03-08          7.394          302
6                                   The Whale     2022-12-09           8.07         1384
7                               In His Shadow     2023-03-17            7.5            8
8                                  Still Time     2023-03-16              7           28
9                    Shazam! Fury of the Gods     2023-03-15           7.54           89
10                                     Barbie     2023-07-21            6.9         4321
11                                Beetlejuice     1988-03-30            5.4         3555

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

M

The movie with the highest rating is: John Wick: Chapter 4 with an
average rating of 9.094 out of 10!



Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

R
Enter the index of the movie to remove: 3
```

```
The movie, Boston Strangler, was removed successfully.


Index #                             Movie_Title   Release_Date   Vote_Average   Vote_Count

0           Everything Everywhere All at Once     2022-03-24          7.928           3873
1                        John Wick: Chapter 4     2023-03-22          9.094             16
2                                Cocaine Bear     2023-02-22          6.706            260
3                                       Noise     2023-03-17            6.1             13
4                                   Scream VI     2023-03-08          7.394            302
5                                   The Whale     2022-12-09           8.07           1384
6                               In His Shadow     2023-03-17            7.5              8
7                                  Still Time     2023-03-16              7             28
8                    Shazam! Fury of the Gods     2023-03-15           7.54             89
9                                      Barbie     2023-07-21            6.9           4321
10                                Beetlejuice     1988-03-30            5.4           3555

Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT

Q

Thank you so much for using my movie rating program! I hope you can
watch one of these feature films soon :)
```

Struct Movie_Title_Data

Data Member:

1. **char movieTitles [MAX]** to hold the movie names, MAX = 100
2. **char releaseDate[MAX];** to store the release date in YYYY-MM-DD format
3. **double averageRating** to store the average rating number by TMDB data
4. **int countVotes** to hold the number of votes total for each movie

Main Program:

1. When the program starts, it reads from one data file - movies.txt
2. movies.txt has the names of all movie titles, release dates, average

rating, and number of votes in it. The delimiter is a “;” with no spaces. Will think on this…

3. The displayMenu function is called to display the menu
4. The readOption function reads the option and gets the option (validated) by reference
5. The function exeOption runs through a switch expression and calls the other functions vased on the option
6. The menu loops until the user chooses to quit (typing “Q” or “q”)
7. Data validation is done for menu choices and for all numbers
8. When the user choose to quit, the data is written back to the same text file in the same format

The other functions are described below:

9. Then the menu is displayed - the options are to add a movie title, remove a movie title, print the list of movies, find a movie and the data associated, show the movie with the highest ratings (MAX option), and then Quit.

Display the menu (displayMenu):

1. This function displays the menu to the user:

```
Pick an option from below:

(A)DD
(R)EMOVE
(P)RINT
(F)IND
(M)AX
(Q)UIT
```

2. It does not take any parameters or return anything

Read the option (readOption):

1. This function takes a char variable by reference
2. The function reads and validates the option from the user and returns it by reference

Execute the options (exeOption):

1. This function takes the char option variable
2. It uses a switch expression to call the different functions based on the option:
   a. A or a - Add a movie

b. R or r - Remove a movie and its data
c. P or p - Prints the list of movies and their data
d. F or f - Finds the movie by name
e. M or m - Finds the movie with the highest ratings
f. Q or q - Quits the program

Load Movie Names:

1. This function loads the movie names, release date, average rating, and number of votes/ratings total from the file movies.txt into the movie_data struct array
2. The struct array and its count are passed by reference to the function
3. The file is opened, checked for validity
4. The movies titles are read from the file into the struct array called listMovies. Duplicate names are not checked.
5. This function also loads the release date, average rating, and number of ratings/votes from the file movies.txt
6. The data is maintained in an array of struct
7. The struct array and the count are passed by reference to the function
8. The file is opened, checked for validity
9. The movie title is read from the file, mathed with the name in the list and the corresponding release dates are then read from the file on the same line to the corresponding index in the 2-dim array
10. The values are separated by semicolons, so the appropriate syntax is used to separate the data.

Add a Movie from the user (addMovie):

1. This function reads a movie name, release date, average rating, and num of ratings from the user and adds to the end of the arrays
2. The struct array and the count are passed to the function by reference.
3. Data validation for the numbers is done through another function.
4. Duplicate building names are not checked.
5. Count is incremented to reflect the new addition

Remove a building from the list (removeMovie):

1. This function reads an index from the user (a number)
2. Make sure the index input is valid
3. Shift and remove the row or record with that index
4. Decrement the count by 1 to reflect the removal of a movie

Find a Movie by Name (findMovie):

1. This function reads a movie name from the user and searches for it in the arrays and if found, displays the information for the movie.
2. The struct array and the count are passed to the function.
3. Read the building name from the user inside the function.
4. Use strstr to do partial comparison and see if the name exists. IF it does, print the info and break out of the loop.
5. Else, output a message saying “Movie not found. Please try again.”

Finds the movie with the highest rating:

1. This function finds the movie with the highest rating
2. The struct array and the count are passed to the function.
3. Set a maxRating to the first rating value in the array.
4. Go through a loop and compare the annual use values in the array to the maxRating value.
5. If a value is larger than the maxRating value, set the maxRating value to the value in the array.
6. Mark the corresponding index value in maxIndex and continue the process through the entire array
7. Mark the corresponding index value in maxIndex and continue the process through the entire array
8. When you get to the end of the array, print the values corresponding to the maxIndex, and that will be the row with the maximum annual use.

Print Data (printData):

1. Go through a loop, and print the contents of the array to the same text file - movies.txt

2. The data is separated by “;”, not formatted with any manipulators.

Print Data (printData) [overloaded function to print to file]:

1. Go through a loop, and print the contents of the array to the same text file - movies.txt
2. The data is separated by ‘;’, not formatted with any manipulators

Validate a Number (validateNum):

1. Output a prompt, read a number from teh user
2. Check for validity - that it is a positive, whole numbers, and stay in a lopo until a valid number is entered
3. Return the number when it is valid

SOURCES:

- The final Project Sample Run doc | directions doc
- Zybooks chapters (all)