Description:

This project is a simple database for space missions. It allows user to add, remove, search, and display missions. The data is stored in a file called "missions.txt". The user can save changes to the file before quitting the program. The program uses a struct to store mission data and a few functions to interact with the data. The program also includes a few helper functions to validate user input and clear the input buffer. The program is menu-driven and uses a loop to keep running while the user chooses to remove, add, search or display missions until the user chooses to quit.

Sample Run:

```
--------- SPACE MISSION DATABASE ---------
1. Display all missions
2. Add a new mission
3. Find a mission
4. Remove a mission
5. Quit
Enter your choice (1-6): 1

MISSION DATABASE:
-----------------------------------------------------------------------------------------
Name        Launch Site                 Rocket Type       Cost      Status
-----------------------------------------------------------------------------------------
SpaceX      LC-39A, USA                 Falcon 9          50.00     Success
CASC        Site 9401 (SLS-2), China    Long March 2D     29.75     Success
SpaceX      Pad A-Boca Chica, USA       Starship Prototype  0.00    Success
Roscosmos   Site 200/39, Kazakhstan     Proton-M/Briz-M   65.00     Success
ULA         SLC-41, USA                 Atlas V 541       145.00    Success
CASC        LC-9, China                 Long March 4B     64.68     Success
Roscosmos   Site 31/6, Kazakhstan       Soyuz 2.1a        48.50     Success
CASC        LC-101, China               Long March 5      0.00      Success
SpaceX      SLC-40, USA                 Falcon 9          50.00     Success
JAXA        LA-Y1, Japan                H-IIA 202         90.00     Success
Northrop    LP-0B, USA                  Minotaur IV       46.00     Success
ExPace      Site 95, China              Kuaizhou 11       28.30     Failure
CASC        LC-3, China                 Long March 3B/E   29.15     Success
IAI         Pad 1, Israel               Shavit-2          0.00      Success
CASC        Site 9401 (SLS-2), China    Long March 2D     29.75     Success
Rocket Lab  Rocket Lab LC-1A, New Zealand  Electron/Curie  7.50      Failure
CASC        LC-9, China                 Long March 4B     64.68     Success
SpaceX      SLC-40, USA                 Falcon 9          50.00     Success
CASC        LC-2, China                 Long March 3B/E   29.15     Success
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CASC        Site 9401 (SLS-2), China        Long March 2D     29.75     Success
SpaceX      SLC-40, USA                     Falcon 9          50.00     Success
Rocket Lab  Rocket Lab LC-1A, New Zealand   Electron/Curie    7.50      Success
CASC        LC-9, China                     Long March 2C     30.80     Success
SpaceX      SLC-40, USA                     Falcon 9          50.00     Success
CASC        Site 9401 (SLS-2), China        Long March 2D     29.75     Success


--------- SPACE MISSION DATABASE ---------
1. Display all missions
2. Add a new mission
3. Find a mission
4. Remove a mission
5. Quit
Enter your choice (1-6): 2
Enter mission name: MHI
Enter launch site: LA-Y2,Japan^[[D^[[D^[[D^
Enter rocket type: H-II
Enter mission cost: 112.5
Enter mission status (Success/Failure): Success
Mission added successfully!

--------- SPACE MISSION DATABASE ---------
1. Display all missions
2. Add a new mission
3. Find a mission
4. Remove a mission
5. Quit
Enter your choice (1-6): 1

MISSION DATABASE:
-------------------------------------------------------------------------------------
Name        Launch Site                 Rocket Type       Cost      Status
-------------------------------------------------------------------------------------
SpaceX      LC-39A, USA                 Falcon 9          50.00     Success
CASC        Site 9401 (SLS-2), China    Long March 2D     29.75     Success
SpaceX      Pad A-Boca Chica, USA       Starship Prototype  0.00    Success
Roscosmos   Site 200/39, Kazakhstan     Proton-M/Briz-M   65.00     Success
ULA         SLC-41, USA                 Atlas V 541       145.00    Success
CASC        LC-9, China                 Long March 4B     64.68     Success
Roscosmos   Site 31/6, Kazakhstan       Soyuz 2.1a        48.50     Success
CASC        LC-101, China               Long March 5      0.00      Success
SpaceX      SLC-40, USA                 Falcon 9          50.00     Success
JAXA        LA-Y1, Japan                H-IIA 202         90.00     Success
```

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Northrop      LP-0B, USA                  Minotaur IV       46.00     Success
ExPace        Site 95, China              Kuaizhou 11       28.30     Failure
CASC          LC-3, China                 Long March 3B/E   29.15     Success
IAI           Pad 1, Israel               Shavit-2          0.00      Success
CASC          Site 9401 (SLS-2), China    Long March 2D     29.75     Success
Rocket Lab    Rocket Lab LC-1A, New Zealand  Electron/Curie  7.50      Failure
CASC          LC-9, China                 Long March 4B     64.68     Success
SpaceX        SLC-40, USA                 Falcon 9          50.00     Success
CASC          LC-2, China                 Long March 3B/E   29.15     Success
CASC          Site 9401 (SLS-2), China    Long March 2D     29.75     Success
SpaceX        SLC-40, USA                 Falcon 9          50.00     Success
Rocket Lab    Rocket Lab LC-1A, New Zealand  Electron/Curie  7.50      Success
CASC          LC-9, China                 Long March 2C     30.80     Success
SpaceX        SLC-40, USA                 Falcon 9          50.00     Success
CASC          Site 9401 (SLS-2), China    Long March 2D     29.75     Success
MHI           L                           H-II              112.50    Success


--------- SPACE MISSION DATABASE ---------
1. Display all missions
2. Add a new mission
3. Find a mission
4. Remove a mission
5. Quit
Enter your choice (1-6): 4
Enter mission name to remove: MHI
Mission "MHI" removed successfully!

--------- SPACE MISSION DATABASE ---------
1. Display all missions
2. Add a new mission
3. Find a mission
4. Remove a mission
5. Quit
Enter your choice (1-6): 1

MISSION DATABASE:
-------------------------------------------------------------------------------------
Name          Launch Site                 Rocket Type       Cost      Status
-------------------------------------------------------------------------------------
SpaceX        LC-39A, USA                 Falcon 9          50.00     Success
CASC          Site 9401 (SLS-2), China    Long March 2D     29.75     Success
SpaceX        Pad A-Boca Chica, USA       Starship Prototype  0.00    Success
Roscosmos     Site 200/39, Kazakhstan     Proton-M/Briz-M   65.00     Success
```

```
ULA          SLC-41, USA                  Atlas V 541        145.00     Success
CASC         LC-9, China                  Long March 4B      64.68      Success
Roscosmos    Site 31/6, Kazakhstan        Soyuz 2.1a         48.50      Success
CASC         LC-101, China                Long March 5       0.00       Success
SpaceX       SLC-40, USA                  Falcon 9           50.00      Success
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Rocket Lab   Rocket Lab LC-1A, New Zealand  Electron/Curie    7.50       Failure
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CASC         Site 9401 (SLS-2), China     Long March 2D      29.75      Success
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CASC         LC-9, China                  Long March 2C      30.80      Success
SpaceX       SLC-40, USA                  Falcon 9           50.00      Success
CASC         Site 9401 (SLS-2), China     Long March 2D      29.75      Success


--------- SPACE MISSION DATABASE ---------
1. Display all missions
2. Add a new mission
3. Find a mission
4. Remove a mission
5. Quit
Enter your choice (1-6): 6
Thank you for using the Space Mission Database. Goodbye!
```

Struct Mission

Data Members:

1. char name[50] to hold the mission company name
2. char launchSite[100] to hold where the rocket was launched
3. char rocketType[100] to hold the type of rocket type
4. double cost to hold the launch cost
5. char status[20] to hold whether the launch was a success or a fail

Main Program:

1. The program reads the contents of the file using the loadMissions() function.
2. The data in mission.txt consists of name launching company, launch site, rocket type, launching cost, and status of the mission.
3. It then displays the menu and menu information from calling the displayMenu function
4. The program then chooses whether the choice of the user is valid and clears the buffer.
5. The program then calls the appropriate function in line with the user's choice.
6. The program quits when the user chooses a quit option.

Load missions from file(loadMissions):

1. This function opens the file that contains the missions data
2. It returns an error message if the file cannot be opened
3. It initializes the first line as a header file and reads all the data from the file into the program.
4. It closes the file afterwards.

Display the menu(displayMenu):

It prints to the user choices for them to pick:

1. Display all missions
2. Add a new mission
3. Find a mission
4. Remove a mission
5. Save changes
6. Quit

Display missions from file(displayMissions):

1. The program checks whether there is any mission listed in the database and outputs an error message if none is found
2. If there exists a mission listed in the database, the program displays the name of the company, launch site, rocket type, cost, and mission status separated by tabs

Add a mission into file(addMission):

1. The program checks if the number of missions has reached a maximum number before attempting to add another mission.
2. Given the database is not full, the program clears the buffer, then prompts the user to input the name of the company, followed by the launch site, rocket type, cost and finally the mission status.
3. It then adds the mission count and outputs mission added successfully statement.

Find a mission from file(findMissions):

1. The program allows the user to search for the information of a certain mission / a group of missions from the data using any of the categories of the missions data.
2. The program outputs all missions with the search term the user inputs and if not found, the program outputs an error message

Remove a mission from file(removeMission):

This function removes a mission by asking the user to input the name of the mission and deducts the number of missions from the group.

Validity of choice check(isValidChoice):

This function checks if the user's menu choice is valid.

Clear buffer from all input(clearInputBuffer):

Clears the buffer when called so as to allow for fresh input from the user.