Lab Report 5 : Templates

1.

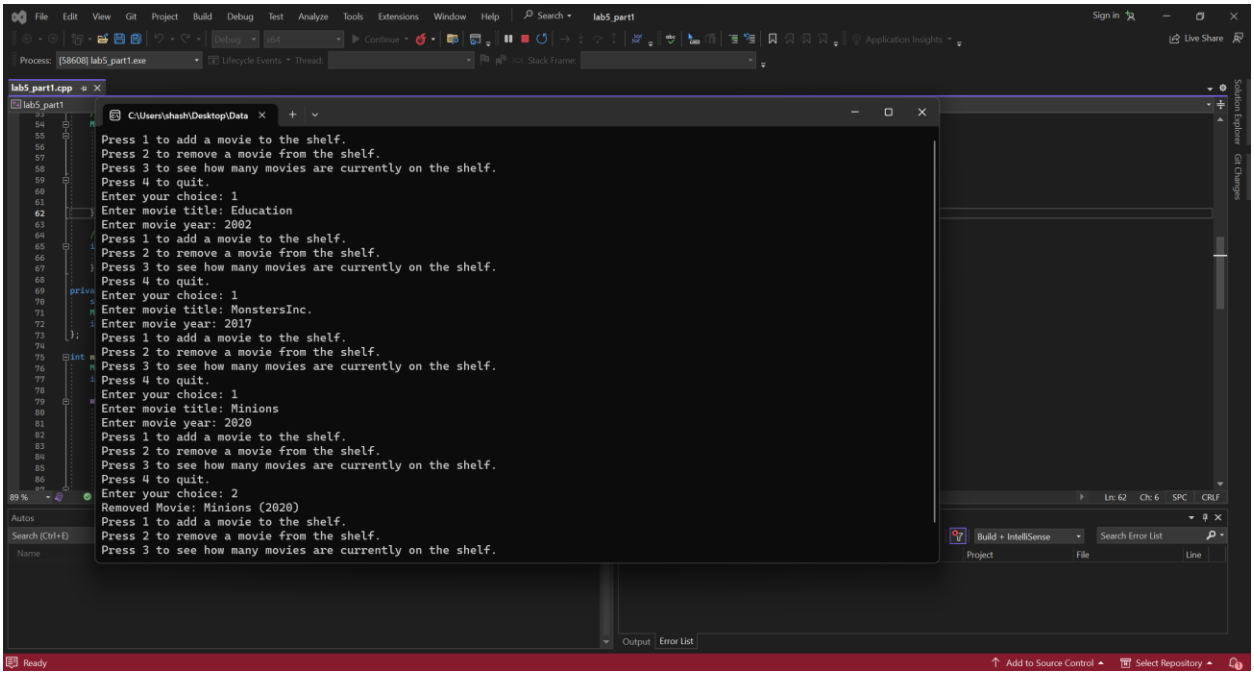
The objectives and concepts explored in this assignment include classes, templates, error throwing and catching. These are very important concepts for a software engineer as it builds the foundations of software development. Classes allow code to be more reusable and readable which is very important when working in the industry. Using templates allows code reusability as we don't need to duplicate code, reduces runtime related errors, and it makes code more readable and maintainable.

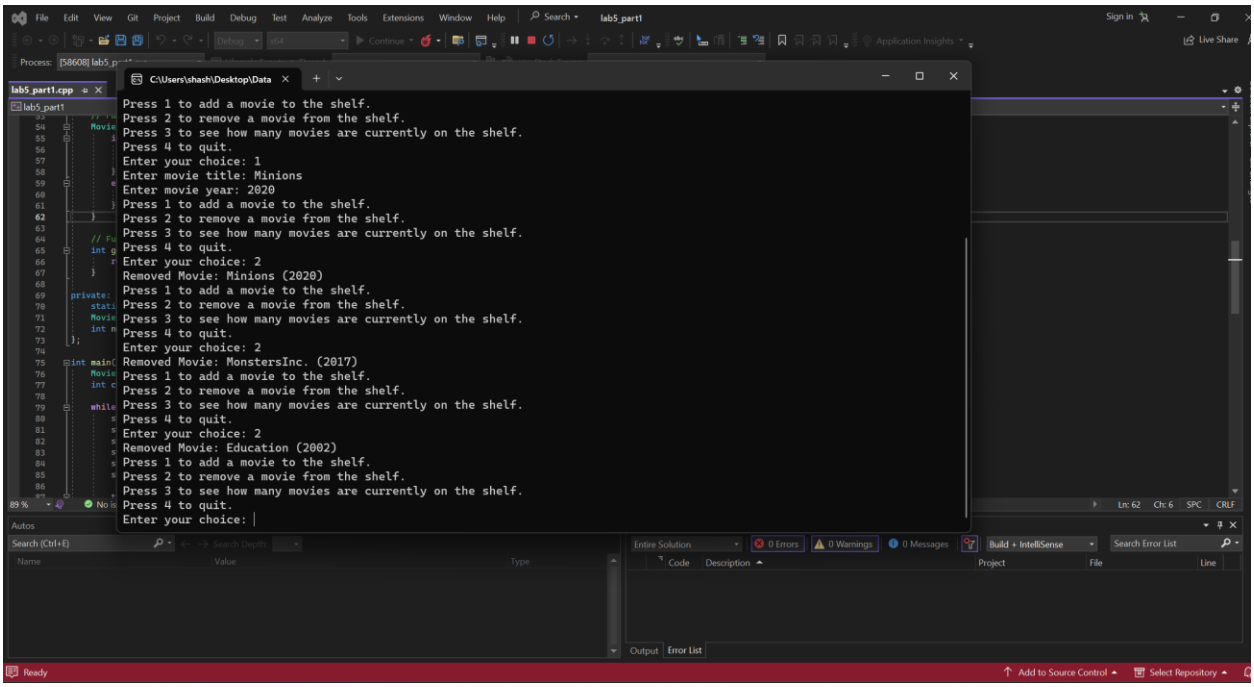
2. Sections from each task:

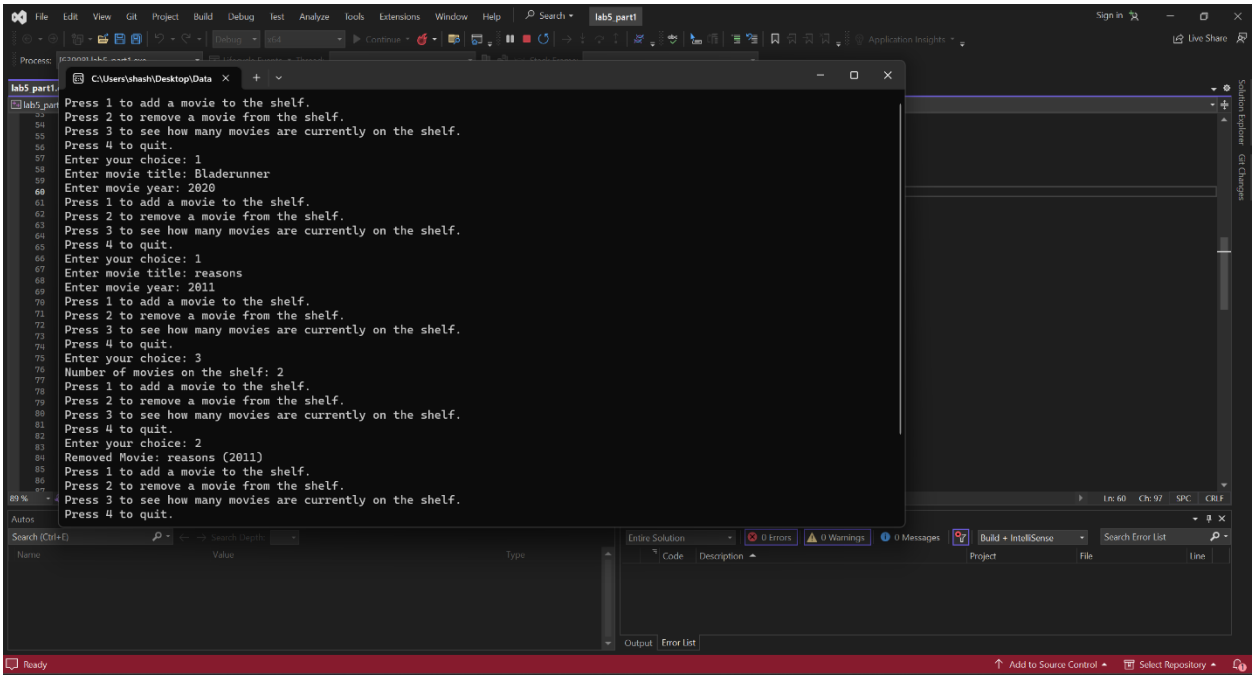
Task 1:

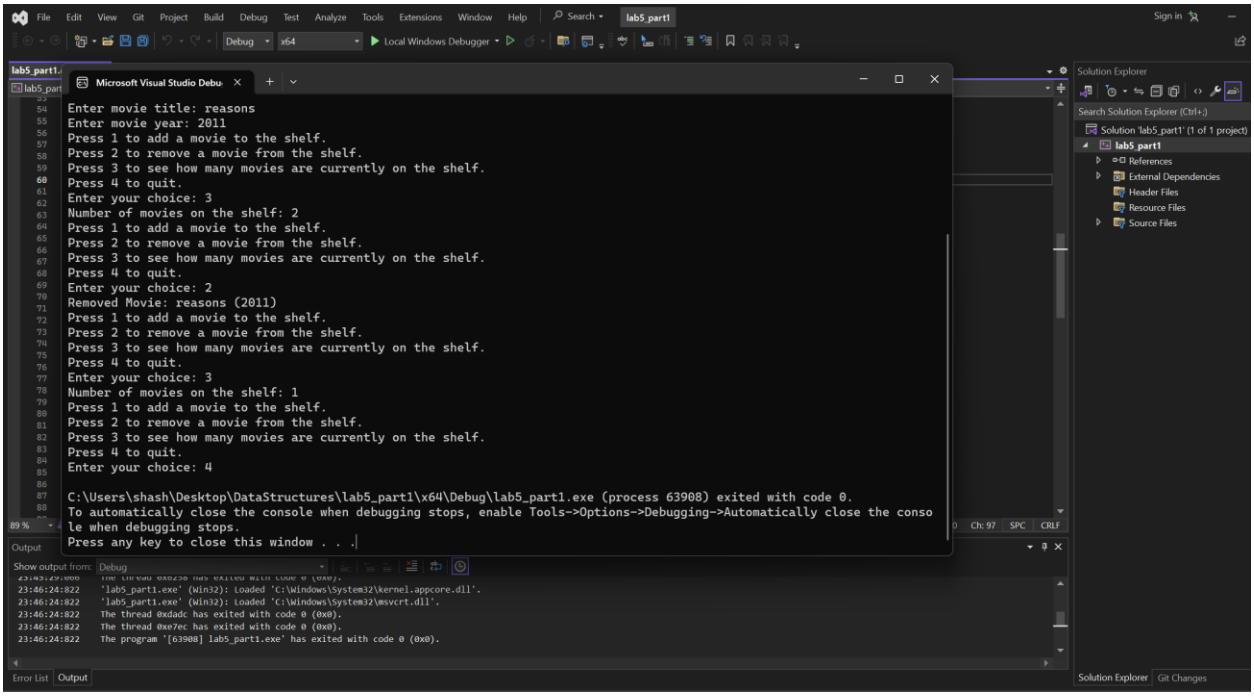
The add and remove methods for the movie class first take a movie as an input object and then it checks the array if it has available space, then it adds or removes the movie that was passed as input and based on the number of movies in the shelf. It updates the count.

Task2: Screen shots of test

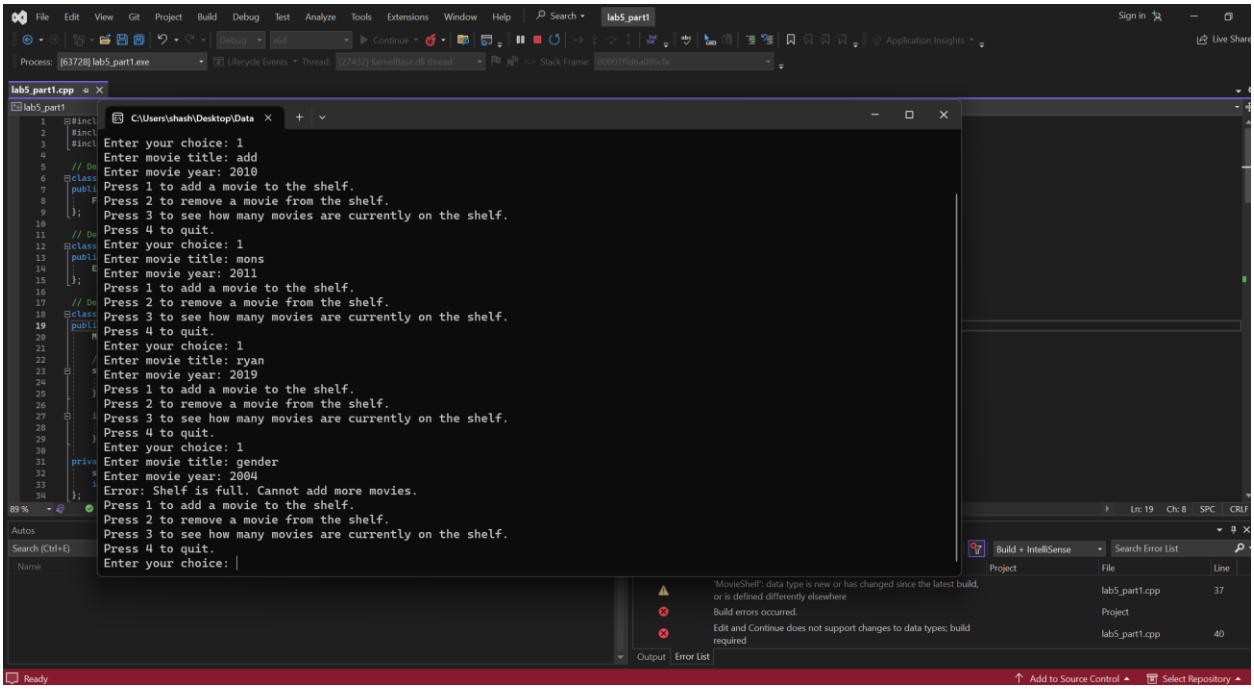


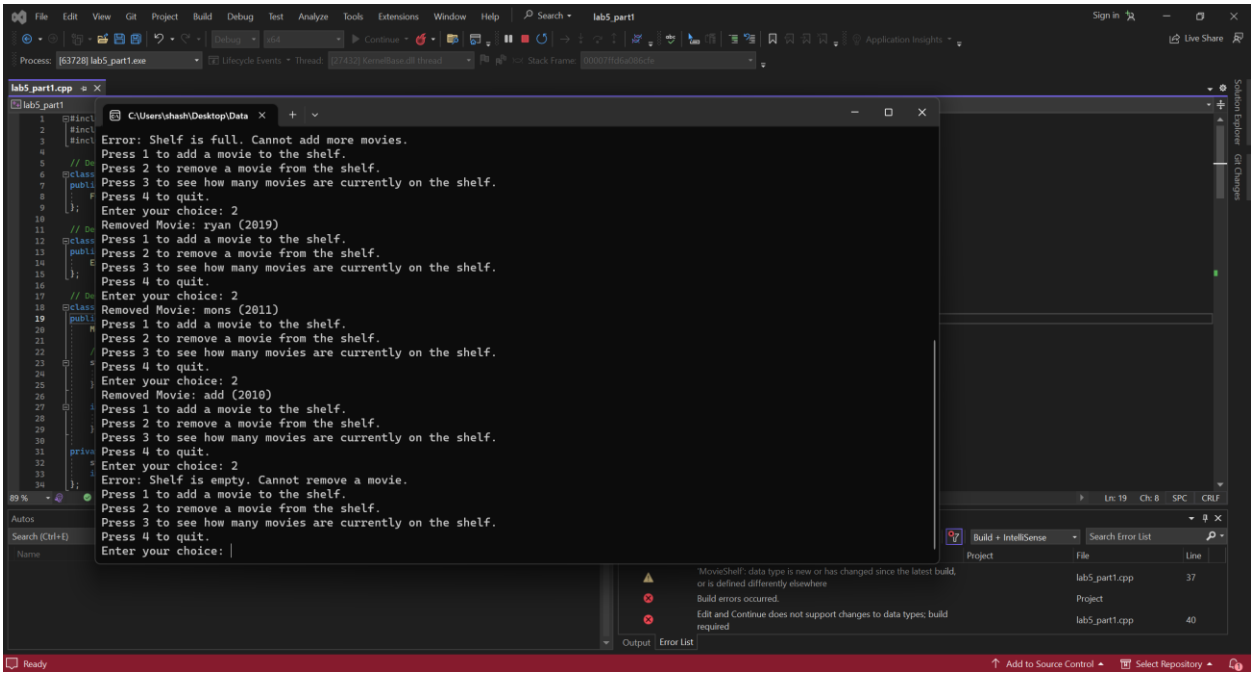

C:\Users\shash\Desktop\Data
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 1
Enter movie title: Minions
Enter movie year: 2020
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 2
Removed Movie: Minions (2020)
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 2
Removed Movie: MonstersInc. (2017)
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 2
Removed Movie: Education (2002)
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice:


C:\Users\shash\Desktop\Data
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 1
Enter movie title: Bladerunner
Enter movie year: 2020
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 1
Enter movie title: reasons
Enter movie year: 2011
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 3
Number of movies on the shelf: 2
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.
Enter your choice: 2
Removed Movie: reasons (2011)
Press 1 to add a movie to the shelf.
Press 2 to remove a movie from the shelf.
Press 3 to see how many movies are currently on the shelf.
Press 4 to quit.



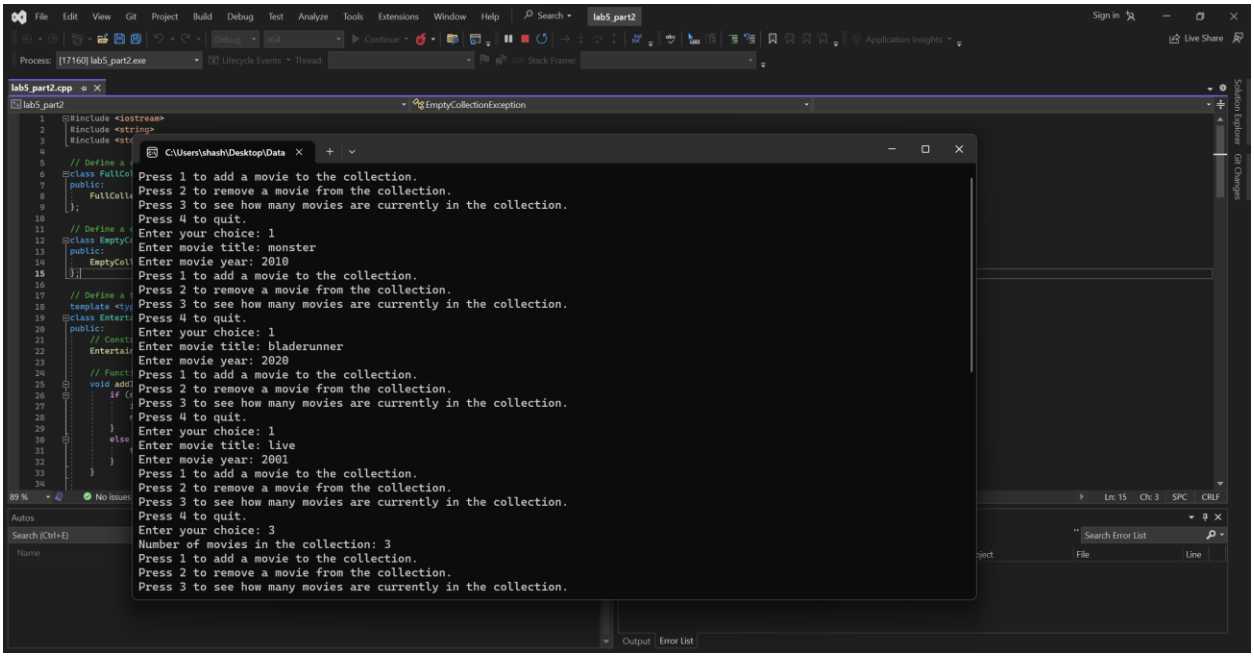
Task3: Screen shots of errors thrown when shelf is full or empty

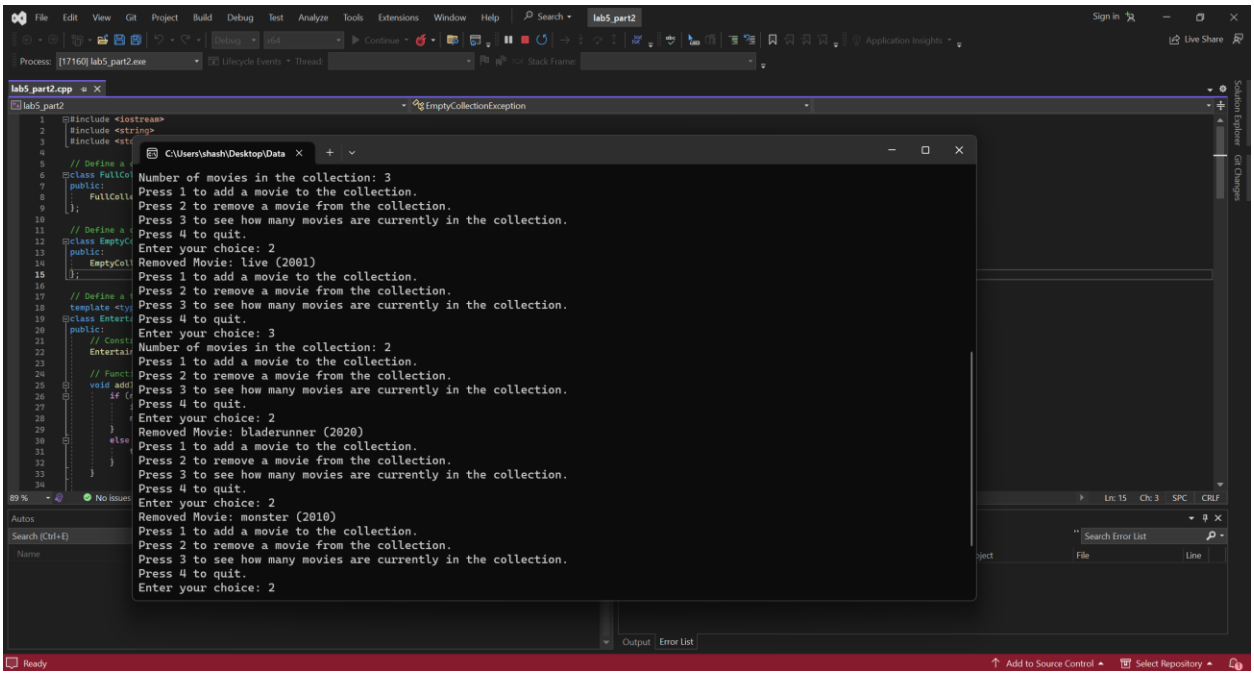


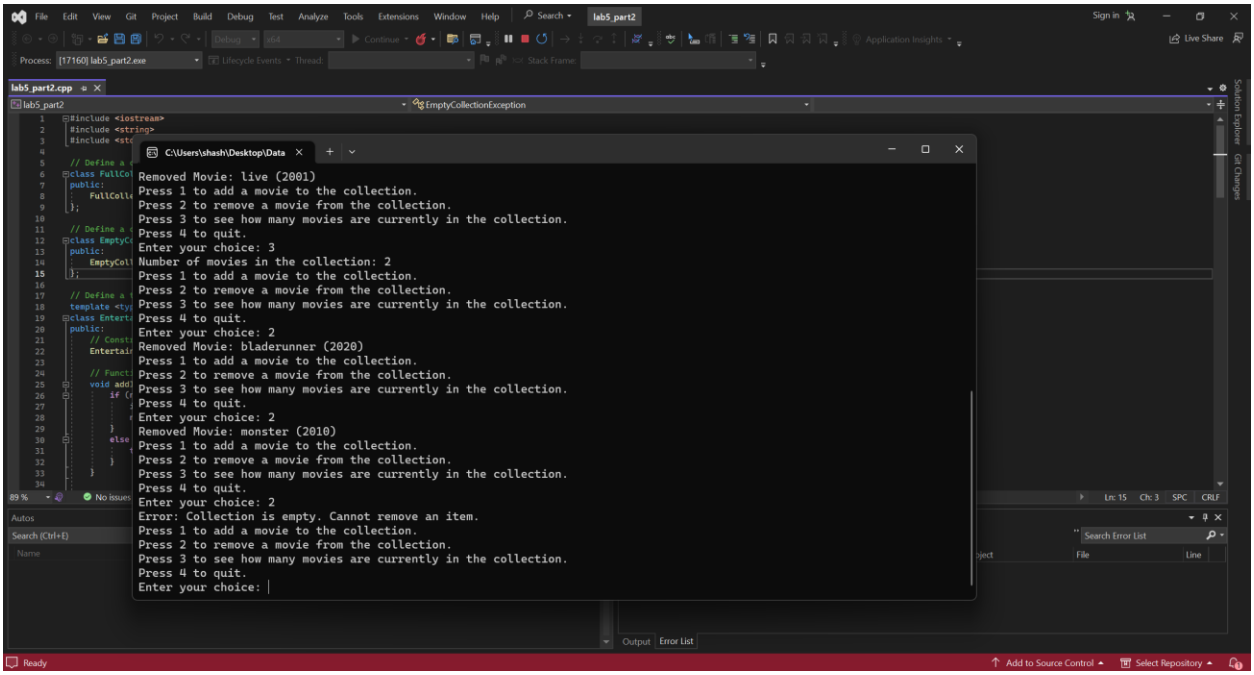


Here we trap the error in a class rather than using a function. This helps in easy debugging process whenever an error is thrown. Error handling with class encapsulation maintains a clean interface for the user as these errors won't need explicit handling. Moreover, it makes the code more readable as the error handling code can be written separately from the main code.

Task 4: Using templates







Templates are a great use for multiple functions that perform the same task with different parameter data types. This increases the reusability of the code making it easier to write the code without duplicating the functions. It also improves the readability of the code as we can separate the template functions and reuse them again. As seen in this task, we use the movie class and convert it into entertainmentcollection class to use different data types as parameters.

Instructions to compile the program:

1. The Task 1,2,3 with the original movie class are in the lab5_part1 folder.
2. The task 4 where we create a template is under lab5_part2 folder
3. Each folder has its own .sln file which should be opened to run the code