Lab 10: DArray Class Template

Part 1: DArray Functions

Using the start project **DArray_Template**, add the following **member** functions to the class **DArray** where indicated:

- Function **deleteElement**
  - **Assumption:** The array is non-empty.
  - **Parameter:** An int storing the element to delete.
  - Searches the array for the element passed by the parameter and deletes it, shifting all remaining elements.

- Function **search**
  - **Assumption:** The array is non-empty.
  - **Parameter:** An int storing the element to delete.
  - Returns true if the element was found and false otherwise.

- Function **emptyArray**
  - Empties the array.
  - Only one statement.

- Function **isEmpty**
  - Returns true if the array is empty and false otherwise.
  - Only one statement.

- Function **isFull**
  - Returns true if the array is full and false otherwise.
  - Only one statement.

Test your program by using the testing cases included in the **Main_1.cpp** file. Compare your output against the given **output_1.exe** file.

Part 2: DArray Template Class

Once you have tested your program, change the class **DArray** to a **template class**. Test your program by replacing the **Main_1.cpp** file with the **Main_2.cpp** file. Compare your output against the given **output_2.exe** file.

Part 3: Adding a Movie Class

In the same project, create the class **Movie** that has the following properties (note that this class is **NOT** a template class):

- **Member variables:**
  - Title of the movie stored as a **string**
  - Production year stored as an **int**
- **Constructor**
- **Overloaded constructor** to initialize all member variables to given values
- **Accessor functions** that return member variables
- **Mutator functions** that modify member variables
- **Overloaded insertion operator (<<)** to print out information about the movie in the following format (including quotes):

"TitleOfMovie" (year)

- **Overloaded comparison operator (==)**
    - **Parameter**: An object of the class **Movie**
    - Compares the movie stored in the calling object to the movie passed by the parameter.
    - Returns true if the movie is the same, false otherwise.
- **Destructor**
- Additional function (please read below).

Test your program by replacing the **Main_2.cpp** file with the **Main_3.cpp** file. You will get an error, because your Movie class does not have a function needed to make the program work. From the error given by Visual Studio, you should be able to identify which function is needed in the Movie class and implement it.