Lab 4 report

1.

The objectives and concepts explored through this assignment include the fundamental concepts of object-oriented programming (OOP), which included inheritance and polymorphism. These concepts are used everyday in computer science and engineering by most software developers working in the industry and big companies as they enable code reusability, extensibility, and maintainability. The assignment explores implementation of classes to represent different types of shows using a base class and various derived classes and allows for dynamic method binding through polymorphism.

Inheritance facilitates the creation of specialized classes by inheriting attributes and behaviors from a base class. Polymorphism enables method calls on objects of different classes to be resolved at runtime.

2. In task 1, the base class is Shows.

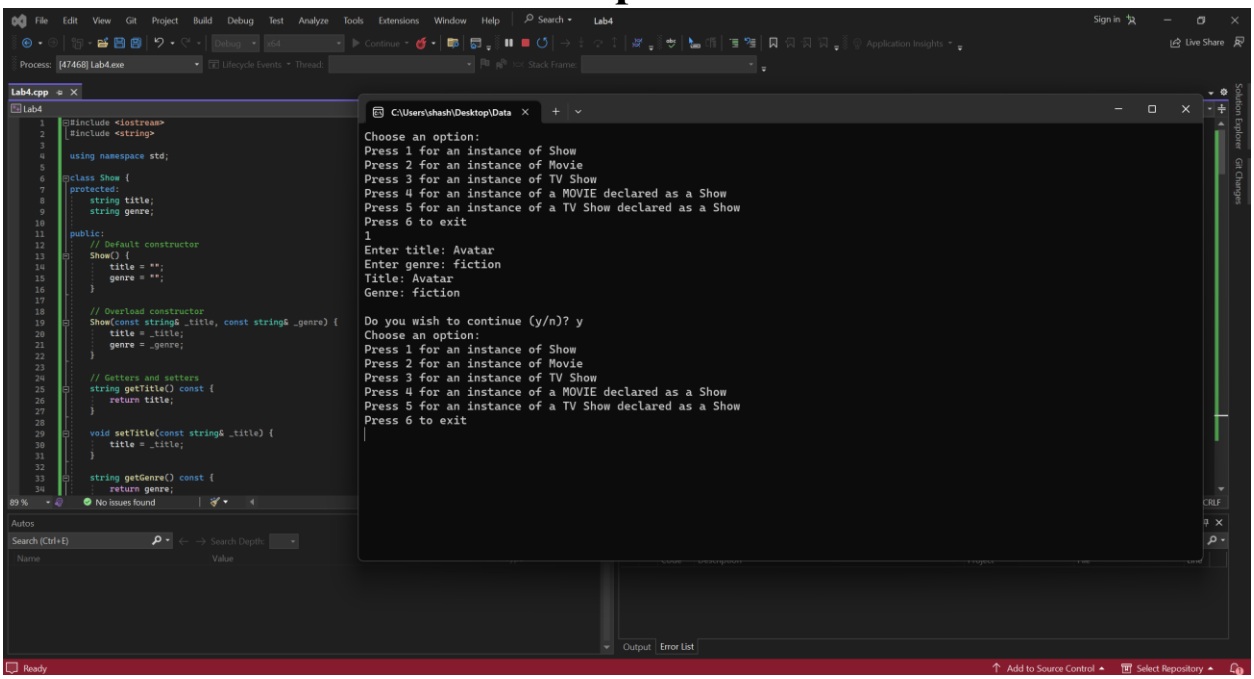
- getTitle and getGenre are public members which will be available in derived classes
- Play is a virtual function, which can be overridden in derived classes, and it will be available in overridden form
- Details is a non-virtual function that can also be used in derived classes. It will stay in its original implementation till its overridden

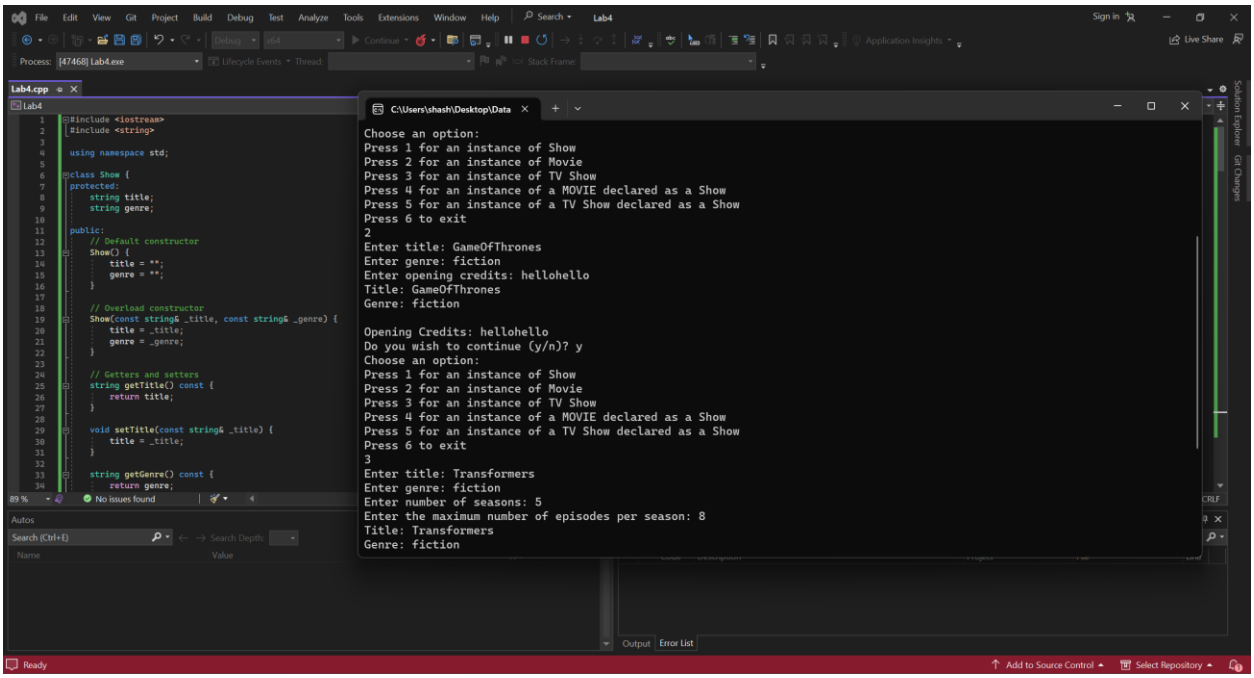
3. In task 2, we create two derived classes TVShows and Movies.

- A 2D vector is added to hold seasons and episodes.
- Play function is overridden to ask the user for the season and episode as input to play from the seasonsAndEpisodes attribute which is the 2D vector.
- The Details function has been overridden to include the number of seasons
- openingCredits is added under Movies with getters and setters.
- Play function is overridden to print the opening credits
- Public members from the base class, getTitle and setGenre are available in instances of derived classes
- Play is available in instances of derived classes as a virtual function
- Details is also available in instances of derived classes

4. Overall, the final results matched the expected results from Task 2. The additional attributes were correctly implemented in the derived classes such as the 2D vector, and the availability of members in instances of derived classes and instances declared as the base class type followed the expected inheritance behavior.

Outputs:


Lab4.cpp
#include <iostream>
#include <string>
using namespace std;
class Show {
protected:
string title;
string genre;
public:
// Default constructor
Show() {
title = "";
genre = "";
}
// Overload constructor
Show(const string& _title, const string& _genre) {
title = _title;
genre = _genre;
}
// Getters and setters
string getTitle() const {
return title;
}
void setTitle(const string& _title) {
title = _title;
}
string getGenre() const {
return genre;
C:\Users\shash\Desktop\Data
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit
1
Enter title: Avatar
Enter genre: fiction
Title: Avatar
Genre: fiction
Do you wish to continue (y/n)? y
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit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Choose an option:
Press 1 for an instance of Show
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Press 3 for an instance of TV Show
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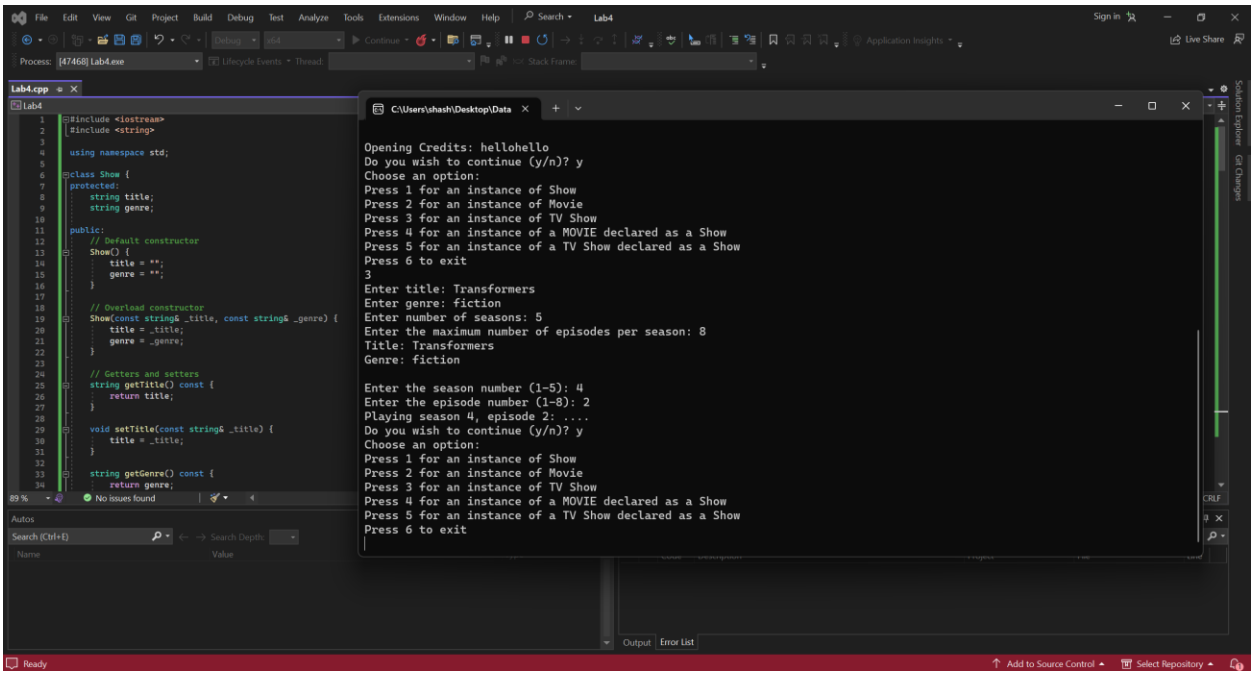
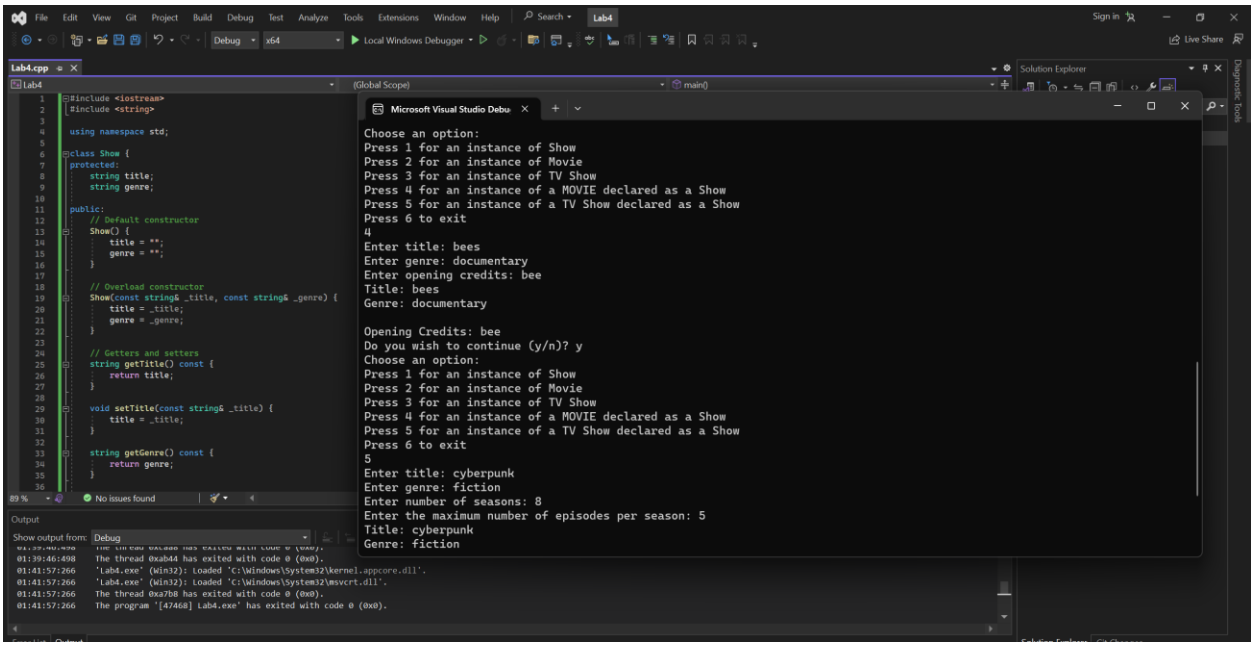
Press 6 to exit
2
Enter title: GameOfThrones
Enter genre: fiction
Enter opening credits: hellohello
Title: GameOfThrones
Genre: fiction
Opening Credits: hellohello
Do you wish to continue (y/n)? y
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit
3
Enter title: Transformers
Enter genre: fiction
Enter number of seasons: 5
Enter the maximum number of episodes per season: 8
Title: Transformers
Genre: fiction



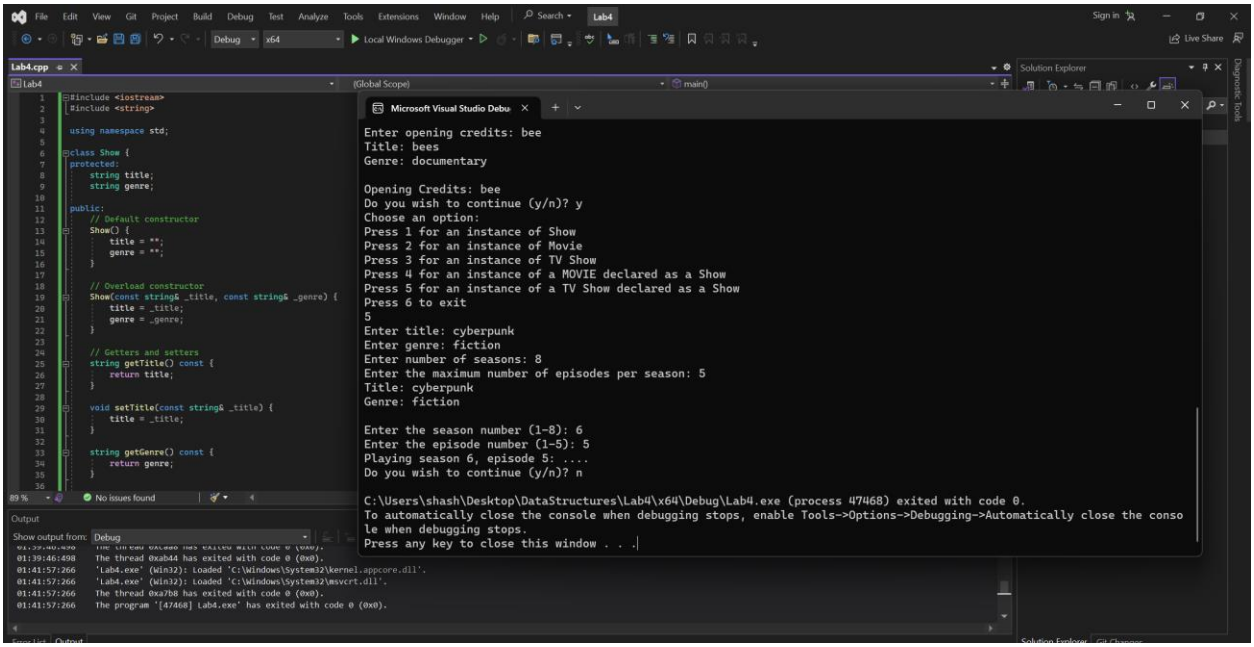
```
Opening Credits: hellohello
Do you wish to continue (y/n)? y
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit
3
Enter title: Transformers
Enter genre: fiction
Enter number of seasons: 5
Enter the maximum number of episodes per season: 8
Title: Transformers
Genre: fiction

Enter the season number (1-5): 4
Enter the episode number (1-8): 2
Playing season 4, episode 2: ....
Do you wish to continue (y/n)? y
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit
```



```
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit
4
Enter title: bees
Enter genre: documentary
Enter opening credits: bee
Title: bees
Genre: documentary

Opening Credits: bee
Do you wish to continue (y/n)? y
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit
5
Enter title: cyberpunk
Enter genre: fiction
Enter number of seasons: 8
Enter the maximum number of episodes per season: 5
Title: cyberpunk
Genre: fiction
```


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search
Lab4
Sign in
Live Share
Debug
x64
Local Windows Debugger
Lab4.cpp
Lab4
(Global Scope)
main()
Solution Explorer
Diagnostic Tools
#include <iostream>
#include <string>
using namespace std;
class Show {
protected:
string title;
string genre;
public:
// Default constructor
Show() {
title = "";
genre = "";
}
// Overload constructor
Show(const string& _title, const string& _genre) {
title = _title;
genre = _genre;
}
// Getters and setters
string getTitle() const {
return title;
}
void setTitle(const string& _title) {
title = _title;
}
string getGenre() const {
return genre;
}
89 %
No issues found
Microsoft Visual Studio Debu
Enter opening credits: bee
Title: bees
Genre: documentary
Opening Credits: bee
Do you wish to continue (y/n)? y
Choose an option:
Press 1 for an instance of Show
Press 2 for an instance of Movie
Press 3 for an instance of TV Show
Press 4 for an instance of a MOVIE declared as a Show
Press 5 for an instance of a TV Show declared as a Show
Press 6 to exit
5
Enter title: cyberpunk
Enter genre: fiction
Enter number of seasons: 8
Enter the maximum number of episodes per season: 5
Title: cyberpunk
Genre: fiction
Enter the season number (1-8): 6
Enter the episode number (1-5): 5
Playing season 6, episode 5: ....
Do you wish to continue (y/n)? n
C:\Users\shash\Desktop\DataStructures\Lab4\x64\Debug\Lab4.exe (process 47468) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
Output
Show output from: Debug
01:39:46:498 The thread 0xab44 has exited with code 0 (0x0).
01:41:57:266 'Lab4.exe' (Win32): Loaded 'C:\Windows\System32\kernel.appcore.dll'.
01:41:57:266 'Lab4.exe' (Win32): Loaded 'C:\Windows\System32\msvcrt.dll'.
01:41:57:266 The thread 0xa7b8 has exited with code 0 (0x0).
01:41:57:266 The program '[47468] Lab4.exe' has exited with code 0 (0x0).
Error List
Output
Solution Explorer
Git Changes