**Release date** : June 5, 2025

**Due date**: June 25, 2025

Movie Management System (SciFi, Animation, Action)

📚 **Project Objective**

Design and implement a Movie Management System in C++ using object-oriented programming principles. The project must demonstrate core OOP concepts including inheritance, composition, aggregation, function overloading, function overriding, and dynamic polymorphism via virtual functions.

The system will manage movies of three genres: SciFi, Animation, and Action.

### 🧩 Every Movie has a title, releaseDate, rating and a director. Your system should be able to displayDetails() and calculateScore(), search by title, rating and both title and rating. Apart from these, you will need constructors, destructor, accessors and mutators. Kindly note that you may need to keep some accessors virtual as well. *A score is computed by (rating \* number of days of release )%10.*

### 📆 A Date has day, month, and year. Your system should be able to displayDate(), getDate(), setDate(). Apart from these, you will need constructors, destructor, accessors and mutators.

### 🎬 A Director has name, experienceYears, nationality. Your system should be able to displayDirector(), getDirector(), setDirector(). Apart from these, you will need constructors, destructor, accessors and mutators.

### *Note: the director of a movie may be set at a later time.*

### 🎭 A Name has firstName and a LastName. Your system should be able to displayName(), getName(), setName(). Apart from these, you will need constructors, destructor, accessors and mutators.

### 🌌 Each sciFiMovie has a techLevel *[can only be 1, 2, 3]*, hasAliens *(does it contains aliens)*, futureYear *(is set in some future year)*. Your system should be able to displayDetails(), calculateScore() [*(rating \* number of days of release \*techLevel)%10]*, getGenre(), showTechAnalysis() *[if score is above 7, display awesome else display not so awesome]*, simulateFutureScenario() *[if score is above 7, and has Aliens and is set in future display future is bright else display future is not so bright]*, toggleAlienInvasion(). Apart from these, you will need constructors, destructor, accessors and mutators.

### 🎨 Each AnimationMovie has an animationStyle*[can only be 1, 2, 3]*, ageGroup*[can only be 5, 7, 18]*, isMusical. Your system should be able to displayDetails(), calculateScore()[*(rating \* number of days of release \*(ageGroup/animationStyle))%10]*, getGenre(), suggestMerchandise()*[if animationStyle is 2, 3 then display cool else display not cool]*, isFamilyFriendly()*[it is family friendly only if its ageGroup is 18 and is musical OR its agegroup 5 or 7 and not ismusical OR animationStyle is 3]*, changeAnimationStyle(). Apart from these, you will need constructors, destructor, accessors and mutators.

### 💥 Each ActionMovie has violenceLevel *[can only be D,M,U]*, noOfFightScenes, hasStunts. Your system should be able to displayDetails(), calculateScore()()[*(rating \* number of days of release \*(if noOfFightScenes >7 then 2 otherwise just multiply with noOfFightScenes )/ countExplosions())%10]*, getGenre(), countExplosions() [*if noOfFightScenes >5 then 8 otherwise 2*], assessCensorship() *[if violenceLevel is D then display domestic violence else if its M display Mafia else display Ultra Cool ]*, stuntCoordinatorReport() *[if hasStunt and noOfFightScenes is between 5 and 10 display Very cool else display might be boring]*.

### 📋 Implement an abstraction based, menu based project in c++ that requires you to select from following menu

* Press 1 to Add new movie with user-selected genre
* Press 2 to Assign existing Director to a movie (aggregation)
* Press 3 to Display a sub menu
  + Press a to display all movies
  + Press b to display scifi movies
  + Press c to display animation movies
  + Press d to display action movies
  + Press e to display directors
  + Press f to display movies by specific director
* Press 4 to Search in sub menu
  + Press a to search and display a movie (all movies) by director
  + Press b to search and display a movie (all movies) by certain score
  + Press c to search and display a movie (all movies) by year
  + Press d to search and display a movie (all movies) by title
  + Press e to search and display a movie (all movies) by rating
  + Press f to search and display a movie (all movies) by title and ranking
* Press 5 to sort movies by year

Store all data in a Movie\* movieList[50] array.