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Description:

The 4 Classes, Library, Movie, WatchList and Format compose the solution.

Two data members make up the Library:

* ***movies***: All the movies
* ***watchLists***: All of the watchlists

A tree map was used for the above to (O(log(n))) searching.

Encapsulation and information hiding was achieved using these design choices:

* All object data members are private
* Internal design choices, i.e. using tree maps, is not exposed to the user.
* The Format class/enumeration encapsulates the fixed movie formats supported.
* The objects are immutable unless required by the capabilities defined, ex: updating custom info or changing watch list names.
* Access to movie objects is provided without violating encapsulation by an extended interface where references to immutable Movie objects are returned.
* Design by contract was implemented through the use of assertion of pre and post conditions.
* The use of the overall framework is simplified by not requiring the use to manage individual objects, but can rather use conceptual notions of movie name and watchlists to perform operations.

Diagram

Description automatically generatedDiagram

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