# COMP 273 Winter 2021

# Assignment 1

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`Movie` Class

- Field `aFormat` utilizes type `Format` to represent the file type
  - `Format` is an `Enum` type, which ensures that file type is one of the predefined accepted file types: MP4, MOV, WMV, AVI, FLV, and MKV
- Fields `aPath, aTitle, aLanguage, aPubStudio` represent the file path, title, language, and publishing studio of the movie using a `String` type respectively
  - Note that these fields are all `final private` fields, meaning that their values will be immutable once they have been established
    - This ensures that the client cannot access change their values (i.e. this helps prevent information leaking)
    - The only way to access these fields is through their respective "get" methods: `getPath()`, `getTitle()`, `getLanguage()`, and `getPubStudio()`.
- Field `Valid` represents whether or not the movie is valid (i.e. the file exists in the specified path) using a `Boolean` type
  - As the validity of a movie may be changed depending on whether or not the file still exists in the specified file path, this field is not `final`
  - A drawback to this design is that a client may set the validity of a movie without restriction if a method returns the `Valid` field directly
    - There is no such function currently. To check if a movie is valid, the `isValid()` method sees if the file path provided exists.
- Field `aCustomInfo` is a `HashMap<String,String>` of key-value pairs that the client may modify
  - The key-value pairs are initialized as `String`, but this may be problematic if the client chooses to store other types of information such as number of times watched and the date
    - This may be fixed by declaring our own `Pair` type with key-value types that fit the client's needs, or we may write a generic method and give the choice of the types of key-pair values to the client.
  - The client is able to customize the information stored in this field using the `customizeInfo(String key,String value)` method which adds information to the `HashMap`
  - The client may view the whole `HashMap` using `getCustomInfo()`, which returns a deep copy of the `HashMap`
    - By using a deep copy, we ensure that the client cannot modify the information stored in `aCustomInfo` outside of pre-defined methods (i.e. this ensures that there is no information leak)

`Watchlist` Class

- Field `aName` uses a `String` to represent the name of the watchlist
    - This is accessible using `getName()` and may be changed using `changeName()`
- Field `aMovies` is an `ArrayList` of objects of class `Movie`. This represents the movies in the watchlist
    - Users may see all movies in the watchlist using the method `getMovies()`, which returns a deep copy of `aMovies`
        - By using a deep copy, we ensure that the client cannot modify the information stored in `aMovies` (i.e. this ensures that there is no information leak)
    - Users may remove the first movie in `aMovies` using the method `removeFirstMovie()`
    - `numValid()` iterates through the watchlist and returns the number of valid movies
    - `allPubStudios()` and `allLanguages()` return an `ArrayList<String>` of all the publishing studios and languages in the watchlist by iterating through the watchlist and returning a new `ArrayList<String>` with the relevant information.

`Library` Class

- Field `aMovies` is an `ArrayList<Movie>` that stores all the movies in the library
- Field `aWatchlist` is an `ArrayList<Watchlist>` that stores all the watchlists in the library

Using classes in this implementation is a better choice than using interfaces, as classes allow us to directly declare what the object is and what fields it must have. There is no need for interfaces here, as we do not need to have a polymorphic structure that can represent a library, a watchlist, and a movie at the same time. An object diagram below shows the relationship between an instance of each type of object:


lib : Library
aMovie =
aWatchlist =
: ArrayList<Movie>
elementData =
: Movie
aFormat =
aPath =
Valid = True
aTitle =
aLanguage =
aPubStudio =
aCustomInfo =
MP4 : Format
C:\Users\user\Downloads\LifeofPi.MP4 : File
"Life of Pi" : String
"English" : String
"20th Century Fox" : String
: HashMap<String,String>
string1 =
string2 =
"Simon" : String
"February 5th, 2019" : String
: ArrayList<Watchlist>
elementData =
: Watchlist
aName =
aMovie =
"First Watchlist" : String
: ArrayList<Movie>
elementData =
: Movie
aFormat =
aPath =
Valid = False
aTitle =
aLanguage =
aPubStudio =
aCustomInfo =
MOV: Format
C:\Users\user\Downloads\HarryPotter1.MOV : File
"Harry Potter a l'ecole des sorciers" : String
"French" : String
"Warner Brothers" : String
: HashMap<String,String>
string1 =
string2 =
"Ariel" : String
"January 24th, 2021" : String