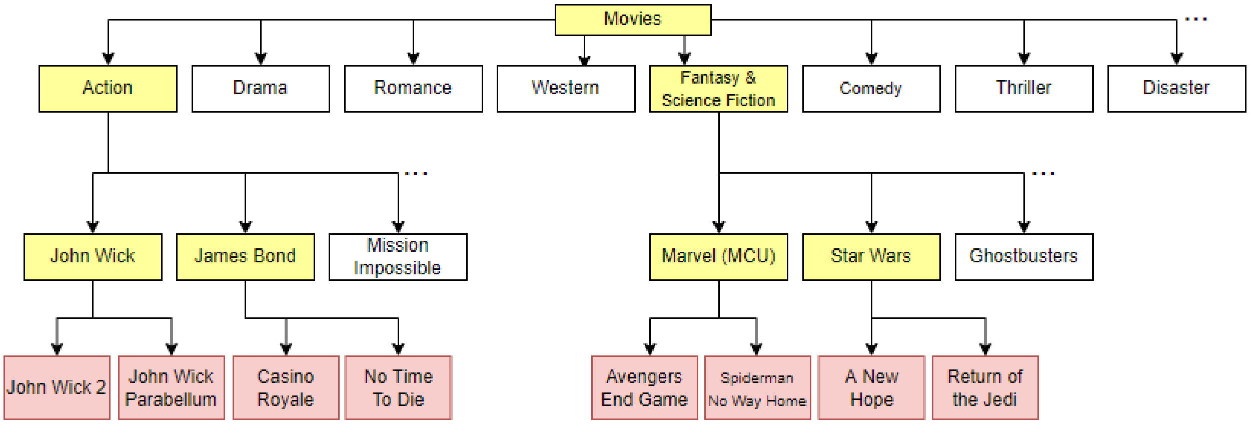
SE311 SPRING 2021-2022 / 01-04-2022
Lab Work 4 Composite Pattern
Goal: Use *Composite Pattern* to represent a hierarchy.

Movies are a way to escape reality for us for a long time. Since the beginning of motion picture, different genres of movies are created and some of the well-known titles became franchises in time. They can be thought as a hierarchy.

In this lab you will represent this hierarchy by using composite pattern. Below you can see a graphic that shows a part of this hierarchy.



Your task is to write a program that uses composite pattern to represent just the colored parts of the graphic.

You may start from scratch or you may use the Composite Pattern sample code from Blackboard as a starting point. Composite Pattern sample code is very similar to this structure and it may be comfortable for some of you to do this lab by modifying the sample code. However, please give meaningful class/variable names that is suitable to this problem.

The leaves (i.e., "No Time To Die"), should have two extra attributes besides name: *director* and *year*. For instance, No Time To Die's *director* would be "Cary Fukunaga" and *year* is the year that the movie released.

Next, please write a function called "*int find(String)*". This function will take a name as parameter and will traverse the hierarchy to find the object with that name. Then, it will return the number of children of that object as a result. Think carefully on how to calculate and retrieve this information.

Furthermore, we want to make sure that nobody could add anything to a specific movie. To achieve this, use "Safety" implementation discussed in class.

Lastly, in your main function test your code. Create the hierarchy given in the graph and display it. To display, you can utilize the display() method from Composite Pattern sample code. Then, test your *find* function by calling it once with "Action" parameter and once more with "Marvel (MCU)" parameter.