


BIRZEIT UNIVERSITY
COMP231 – Advanced Programming
Assignment # 2

Objectives:

1. Create Classes and Objects.
2. Process Array of objects.
3. To use UML graphical notation to describe classes and objects.
4. To use the **String** class to process immutable strings.
5. To use the **StringBuilder** class to process mutable strings.

Specification

Submission: **Online through Ritaj.**

What to submit: Your **OWN** well-structured and well-commented JAVA files (.java) + PDF file (compressed into a **studentId_sec#.rar** file, e.g. **1234567_sec1.rar**).

Deadline: **6/4/2016** by midnight. (The online submission will be disabled after this time).

Tasks

Task 1: Movie class

A movie, also called a film, has many attributes. Consider the following Minions movie as an example:

	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Title:</td> <td>Minions</td> </tr> <tr> <td>Directed by:</td> <td>Kyle Balda</td> </tr> <tr> <td>Produced by:</td> <td>Chris Meledandri</td> </tr> <tr> <td>Written by:</td> <td>Brian Lynch</td> </tr> <tr> <td>Starring:</td> <td>Sandra Bullock , Jon Hamm, Michael Keaton , Allison Janney, Steve Coogan</td> </tr> <tr> <td>Music by:</td> <td>Heitor Pereira</td> </tr> <tr> <td>Edited by:</td> <td>Claire Dodgson</td> </tr> <tr> <td>Production company:</td> <td>Illumination Entertainment</td> </tr> <tr> <td>Release dates:</td> <td>June 11, 2015</td> </tr> <tr> <td>Running time:</td> <td>91 minutes</td> </tr> <tr> <td>Country:</td> <td>United States</td> </tr> <tr> <td>Language:</td> <td>English</td> </tr> </table>	Title:	Minions	Directed by:	Kyle Balda	Produced by:	Chris Meledandri	Written by:	Brian Lynch	Starring:	Sandra Bullock , Jon Hamm, Michael Keaton , Allison Janney, Steve Coogan	Music by:	Heitor Pereira	Edited by:	Claire Dodgson	Production company:	Illumination Entertainment	Release dates:	June 11, 2015	Running time:	91 minutes	Country:	United States	Language:	English
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- Create a **Movie** class using at least the following 5 attributes:
 - **Title, Starring, Running time, Country, and Language.**
- Create two constructors as follow:
 - No-argument constructor: that creates a movie object using the default Minions values.
 - A constructor with arguments using the basic 5 attributes that mentioned before.
- Create a public function called “**toString**” that returns a string contains the movie object information.
- Draw **Movie** class UML. (use any free online tool to draw **UML** and save it as a **PDF** file)
e.g. <https://www.draw.io/>

Task 2: Library class

Create a **Library** class that contains an array of **Movies**.

- The Library class has the following methods:
 - **addMovie** : which adds a new movie object to the Library’s array.
 - **borrowMovie** : search for a movie in the Library’s array using movie’s title and if it’s found and not borrowed mark it as borrowed else show a meaningful error message. Considering the following:
 - You can’t borrow a movie twice unless it has been returned.
 - If the movie is not in the Library’s array it should indicate that the movie is not available.
 - **returnMovie** : if a movie was borrowed mark it to indicates that it has been returned.
 - **printAvailableMovies** : should print all the available movies in the library.
- Draw Library class UML. (use any free online tool to draw UML and save it as a PDF file)

Task 3: Driver class

Create a **Driver** class to test the **Library** and **Movie** classes as follow:

- Add 10 different **Movie** objects to the library.
- Borrow the 5th and 6th movies from the library.
- Try to borrow the 5th movie again.
- Return the 6th movie to the library.
- Print the available movies in the library.

Good Luck!