

Practice Problems: Classes and Objects (Chapters 5 and 6)

1) The Java class called `Holiday` is started below. An object of class `Holiday` represents a holiday during the year. This class has three instance variables:

- `name`, which is a `String` representing the name of the holiday
- `day`, which is an `int` representing the day of the month of the holiday
- `month`, which is a `String` representing the month the holiday is in

```
public class Holiday {
    private String name;
    private int day;
    private String month;

    // your code goes here
}
```

a) Write a constructor for the class `Holiday`, which takes a `String` representing the name, an `int` representing the day, and a `String` representing the month as its arguments, and sets the class variables to these values.

b) Write a method `inSameMonth`, which compares two instances of the class `Holiday`, and returns the Boolean value `true` if they have the same `month`, and `false` if they do not.

c) Write a method `avgDate` which takes an array of base type `Holiday` as its argument, and returns a `double` that is the average of the `day` variables in the `Holiday` instances in the array. You may assume that the array is full (i.e. does not have any `null` entries).

d) Write a piece of code that creates a `Holiday` instance with the name "Independence Day", with the day "4", and with the month "July".

2) The class `Movie` is started below. An instance of class `Movie` represents a film. This class has the following three class variables:

- `title`, which is a `String` representing the title of the movie
- `studio`, which is a `String` representing the studio that made the movie
- `rating`, which is a `String` representing the rating of the movie (i.e. PG-13, R, etc)

```
public class Movie {
    private String title;
    private String studio;
    private String rating;

    // your code goes here
}
```

- a) Write a constructor for the class `Movie`, which takes a `String` representing the title of the movie, a `String` representing the studio, and a `String` representing the rating as its arguments, and sets the respective class variables to these values.

- b) Write a second constructor for the class `Movie`, which takes a `String` representing the title of the movie and a `String` representing the studio as its arguments, and sets the respective class variables to these values, while the class variable `rating` is set to "PG".

- c) Write a method `getPG`, which takes an array of base type `Movie` as its argument, and returns a new array of only those movies in the input array with a rating of "PG". You may assume the input array is full of `Movie` instances. The returned array need not be full.

- d) Write a piece of code that creates an instance of the class `Movie` with the title "Casino Royale", the studio "Eon Productions", and the rating "PG-13".