Homework #2

Due: **9/11/18 at 10:00 PM**
Late Collections: **9/12/18 at 10:00 PM**
Directory: **Hw2**
Program Name: **Play.java**

For this assignment, assume you have been tasked to write a computer system to manage the productions of a local community theater. Write a program **Play.java** that includes a **Play** class which can represent a specific production in the theater's season. This class has the following data fields and methods:

- A data field named **title** for the name of the play.
- A data field named **director** that stores the name of the play's director.
- A data field named **dateList** that is an array of Strings, one for each date that the play is scheduled to be performed. Each date will be in *mm*/*dd* form.
- A three-arg constructor that creates a new play object given parameters for the play's name, the director, and an array of Strings representing the dates the play will be performed (each in *mm*/*dd* form).
- A two-arg constructor that creates a new play object given parameters for the play's name and an array of Strings representing the dates the play will be performed (each in *mm*/*dd* form). The **director** will be set to "TBD".
- An instance method named **getNumberOfDates** which returns the number of times the play is scheduled to be performed.
- A method named **estimateRevenue** that takes four parameters: an array of Plays, a ticket price (which may include cents as well as dollars), a number of seats in the theater, and a number between 0 and 1 representing the percentage of tickets that are expected to sell per performance. The method returns the total money that will be collected over the run of all plays if each show sells the specified percentage of tickets at the specified price.
- A method named **printRevenueTable** that takes three parameters: an array of Plays, a ticket price (which may include cents as well as dollars) and a number of seats in the theater. The method prints a table that shows the revenue the theater would earn for the entire season considering ticket sales between 70% and 100% of full capacity inclusive, with values for each 5% in-between. The table should have a header with "Seats Sold" and "Revenue." Each line should show the number of seats sold and the parenthetical percentage of total seats in the first column and the total revenue with two places after the decimal for total revenue. See the example output on the opposite side of this sheet for how this should look. Note, the "Seats Sold" must be an integer value, and for this purpose all fractions should be truncated (i.e., always round down) . **Hint:** casting a float or double to an int will always truncate the result.

Note, you should decide what types are appropriate for the fields, and what is the minimal set of parameters needed for each method. For those of you who know what packages are, the class should go in the default package.

When you feel that your class is complete and correct, write a **main** method in the **Play** class that begins by creating five **Play** objects, with details as specified in the table below:

Title	**Director**	**Performance Dates**
The Royal Family	Robert Callan Adams	1/31, 2/1, 2/7, 2/8, 2/9, 2/13, 2/14, 2/15, 2/16
La Cage aux Folles	Brenda McGuire	3/28, 3/29, 4/4, 4/5, 4/6, 4/10, 4/11, 4/12, 4/13
To Kill a Mockingbird	George Miller	5/30, 5/31, 6/6, 6/7, 6/8, 6/12, 6/13, 6/14 , 6/15
Annie Get Your Gun	Mark Breiner	7/25, 7/26, 8/1, 8/2, 8/3, 8/7, 8/8, 8/9, 8/10
I Love You, You're Perfect, Now Change	*use default value*	9/26, 9/27, 10/3, 10/4, 10/5, 10/9, 10/11, 10/12, 10/13

Next, print a numbered list of the plays' titles, numbering the first show as 1. The program then asks the user to enter the number of a play, and prints its director (note the number is different from the array index). It then asks the user to enter the number of another play, and prints out the dates it will be performed. Finally, it asks for a ticket price, and then uses the **printRevenueTable** method to print out possible revenues for the season. Assume that the theater has 160 seats for these calculations. Do not include any other tests or method calls in your main method. The output should look like the following (note, user inputs are shown in bold):

```
1: The Royal Family
2: La Cage aux Folles
3: To Kill a Mockingbird
4: Annie Get Your Gun
5: I Love You, You're Perfect, Now Change
Enter a show's number and I'll tell you the director:
5
TBD

Enter a show's number and I'll tell you it's dates:
2
3/28, 3/29, 4/4, 4/5, 4/6, 4/10, 4/11, 4/12, 4/13

Enter a ticket price:
22.00
 Seats Sold   Revenue
 -----------  ----------
  112 ( 70%)   110880.00
  120 ( 75%)   118800.00
  128 ( 80%)   126720.00
  136 ( 85%)   134640.00
  144 ( 90%)   142560.00
  152 ( 95%)   150480.00
  160 (100%)   158400.00
```

At a minimum provide a **Javadoc** comment explaining what each method does, and another one that summarizes the class. Remember, Javadoc comments start with the characters "/**" and end with "*/". Include additional comments for lines that are especially complicated. At the top of the program include a comment with the following form:

```
/*
CSE 017
Your name
Your user id
[if you used a tutor, provide his/her contact information here]
Homework #2      DEADLINE: September 11, 2018
Program Description: A class for theatrical plays.
*/
```

Once the program functions properly, upload the file **Play.java** to Course Site. To do so, click on the name of the assignment in the Course Site page, and then press the "Add submission" button at the bottom of the next page. Drag and drop your file into the area under "File submissions". If necessary, you can update your submission at any time before the deadline passes. Note, if you named your file anything other than **Play.java** or it does not contain a class called **Play**, then you will lose points. In particular, do NOT create a Hw2.java file for this assignment. Your main method should be in the same file as your class.