Java Projects 1 - 10

Project #1:

Write 3 programs that prints the following output:

```
                    *

                  * * *

                * * * * *

              * * * * * *

            * * * * * * * *

          * * * * * * * * * *
```

NOTE: Each program uses different way to print the output.

Project #2:

Write a program that calculates sum of N consecutive integer numbers with N entered from the keyboard. On startup, the program asks:

```
Please enter N: _
```

If N is not a number (e.g. a String or a letter), print the message:

```
N must be a number!
```

Then ask to the user to enter again:

```
Please enter N: _
```

Repeat until N is an integer number.

Then print the following output:

```
Sum of 1..N is: S
```

Replace N and S with the actual numbers.

Then the program exits.

Project #3:

Write a program that accepts a String as input and prints the reverse form of that String. For example:

```
Input String: hello world

Output String: dlrow olleh
```

Project #4:

Write a program that calculates the number of occurrences of each letter in a given input String. For example:

```
Input String: hello world
```

Letters Occurrence:

```
l: 3  o: 2  d: 1  e: 1  h: 1  r: 1  w: 1
```

Sort the result by the most occurrences first.

Project #5:

Write a program that accepts two dates from the console like this:

```
Begin date: _

End Date: _
```

The date format is mm/dd/yyyy.

If the user enters an invalid input, display the message:

```
The date is invalid.
```

Then prompt the user to re-enter the date. Repeat until the two dates are correctly entered.

Check if the end date is before the start date, display the message:

```
The end date must be after the start date.
```

Then prompts the user to re-enter the end date.

If both the dates are valid, then the program prints all Saturdays which fall within the start and end dates. For example:

```
        Start date: 06/01/2015

        End date: 06/30/2015

There are 4 Saturdays from 06/01/2015 to 06/30/2015:

        06/06/2015

        06/13/2015

        06/20/2015

        06/27/2015
```

Project #6:

Write a program that allows the user to enter a 2-dimension array which holds only Integer numbers. The process of input should be like this:

```
        Enter the 1st dimension: 3

        Enter the 2nd dimension: 3

        Enter value for element [0, 0]: 3

        Enter value for element [0, 1]: 9

        …

        Enter value for element [2, 2]: 8
```

Check the validity of all inputs (must be an integer number). Then the program updates the array by the following rule: all event numbers are replaced by 0s, and all odd numbers are replaced by 1s. Then print the output like the following:

```
        Input:              Output:

        [3, 9, 2]               [1, 1, 0]

        [1, 1, 7]               [1, 1, 1]

        [8, 9, 9]               [0, 1, 1]
```

Project #7:

Write a program that prints a calendar of a given month. For example (the month is July 2015):

Input:

```
Enter month: 07/2015
```

Output:

```
Mon     Tue     Wed     Thu     Fri     Sat     Sun

                 1       2       3       4       5

 6       7       8       9       10      11      12

13      14      15      16      17      18      19

20      21      22      23      24      25      26

27      28      29      30      31
```

Project #8:

Write a program that accepts a number from the console. Print "OK" if the number is multiple of 3, otherwise print "KO".

IMPORTANT: Do not use if…then…else and switch…case constructs.

Project #9:

Write a program that allows the user to enter a list of N numbers. The process of input should be like this:

```
Enter N = 8

Enter number #1: 0

Enter number #2: 8

…

Enter number #8: 5
```

Then calculate and print the following information:

+ Average of all odd numbers.

+ Average of all even numbers.

+ The biggest number.

+ The smallest number.

Project #10:

Write a program that provides some functions to manipulate a String input. The program displays the following menu:

```
1. Input a String
2. Reverse the String
3. Uppercase all letters
4. Lowercase all letters
5. Count words
6. Count letters
7. Exit
```

The user can type an option which is a number ranging from 1 to 7, then the appropriate function is invoked and the result is displayed. For example:

- The user types '1':

```
Input a String:
```

- Then he enters:

```
I'm a Java expert
```

- Then he types '3' (uppercase all letters), the program displays:

```
I'M A JAVA EXPERT
```

The program should wait until the user types '7' to exit.