LakeheadUniversity
Faculty of Science and Environmental Studies
Department of Computer Science
CS 2477 Object Oriented Programming
Practical Assignment No. 1

Q1: Write a program that tells what day of the week someone's birthday falls on this year. Write a method named getDayOfWeek that takes an int parameter, representing what day of the year it is, and returns a string like "Monday". For example, for 2004, a leap year, the first day of the year was on Thursday. The thirty-second day of the year (February 1, 2004) was a Saturday, so getDayOfWeek(1) should return "Thursday" and getDayOfWeek(32) should return "Sunday". (Hint: if you divide the day of the year by 7, the remainder will always be a numeric value between 0 and 6, which can be made to correspond to the days of the week).

As part of this program, you'll also want a method that takes the month and day as parameters and returns what day of the year it is. For example, getDay(1,1) should return 1; getDay (2,1) should return 32; and getDay (12,31) should return 365. (Hint: If the month is 3, and the day is 5, you have to add the number of days in January plus the number of days in February to 5 to get the result: 31 + 28 + 5 = 64.)

Q2: Write a Java method that shifts a char by n places in the alphabet, wrapping around to the start of the alphabet, if necessary. For example, shift('a',2) should return ' c ' ; shift('y',2) should return ' a ' . This method can be used to create a Caesar cipher, in which every letter in a message is shifted by n places.

Q3: Write a method that converts its boolean parameter to a String . For example, boolToString(true) should return "true".

Q4: Write a Java application that prints the following table:

N	SQUARE	CUBE
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125

Q5: In the main method, create a menu to test the following methods.

1- Write a method that is passed two parametersa char Ch and an int N and prints a string of N Chs .

2- Write a method that uses a nested `for` loop to print the following multiplication table:

```
   1  2  3  4  5  6  7  8  9
1  1
2  2  4
3  3  6  9
4  4  8 12 16
5  5 10 15 20 25
6  6 12 18 24 30 36
7  7 14 21 28 35 42 49
9  8 16 24 32 40 48 56 64
9  9 18 27 36 45 54 63 72 81
```

3- Write methods that use nested for loops to print the following patterns. Your method should use the following statement to print the patterns: System.out.print('#').

Q6: Write a Java application that lets the user input a sequence of consecutive numbers. In other words, the program should let the user keep entering numbers as long as the current number is one greater than the previous number.

Q7: The Nuclear Regulatory Agency wants you to write a program that will help determine how long certain radioactive substances will take to decay. The program should let the user input two values: a string giving the substance's name and its half-life in years. (A substance's half-life is the number of years required for the disintegration of half of its atoms.) The program should report how many years it will take before there is less than 2 percent of the original number of atoms remaining.

Q8: Write an application that prompts the user for four values and draws corresponding bar graphs. For example, if the user inputs 5, 2, 3, and 4, the program should display

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

Due date: January 26