Practice as project for FSD06

Create only 1 project which has only 1 java class with all the answers.

The answers will be different methods.

1- Implement Four patterns in 1 method the same as the question

a. Pattern A

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

b. Pattern B

```
1 2 3 4 5 6
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

c. Pattern C

```
        1
      1 2
    1 2 3
  1 2 3 4
1 2 3 4 5
```

d. 1 2 3 4 5 6

```
  1 2 3 4 5
    1 2 3 4
      1 2 3
        1 2
          1
```

e.

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

2- Create a table of numbers like this

1 1 1
2 2 4
3 3 27
…..
7 7 ????

Which the first and second column is the numbers from 1 to 7 and the third column is power the first column and second column.

3- Find the smallest and biggest element in an array and return the SUM of those numbers.

4-

Given a string and a non-empty **word** string, return a version of the original String where all chars have been replaced by pluses ("+"), except for appearances of the word string which are preserved unchanged.

plusOut("12xy34", "xy") → "++xy++"
plusOut("12xy34", "1") → "1+++++"
plusOut("12xy34xyabcxy", "xy") → "++xy++xy+++xy"

5-

Returns true if for every '*' (star) in the string, if there are chars both immediately before and after the star, they are the same.

sameStarChar("xy*yzz") → true
sameStarChar("xy*zzz") → false
sameStarChar("*xa*az") → true

6-

We'll say that a value is "everywhere" in an array if for every pair of adjacent elements in the array, at least one of the pair is that value. Return true if the given value is everywhere in the array.

isEverywhere([1, 2, 1, 3], 1) → true
isEverywhere([1, 2, 1, 3], 2) → false
isEverywhere([1, 2, 1, 3, 4], 1) → false

7- `

Given an array length 1 or more of ints, return the difference between the largest and smallest values in the array. Note: the built-in Math.min(v1, v2) and Math.max(v1, v2) methods return the smaller or larger of two values.

bigDiff([10, 3, 5, 6]) → 7
bigDiff([7, 2, 10, 9]) → 8
bigDiff([2, 10, 7, 2]) → 8

8- The arrays list1 and list2 are identical if they have the same contents. Write a method that returns true if list1 and list2 are identical, using the following header:
public static boolean equals(int[] list1, int[] list2)
Write a test program that prompts the user to enter two lists of integers and displays whether the two are identical.
Here are the sample runs. Note that the first number in the input indicates the number of the elements in the list. This number is not part of the list.
Enter list1: 5 2 5 6 6 1
Enter list2: 5 5 2 6 1 6
Two lists are identical

9- Write a program that prompts the user to enter the number of students, the students' names, and their scores, and prints student names and scores in decreasing order of their scores. Assume that the name is a string without spaces, use the Scanner's next() method to read a name.

10- Write a program that randomly generates an array of 100,000 integers and a key.
   a. Estimate the execution time of invoking the linearSearch
   B. Sort the array and estimate the execution time of invoking the binarySearch method. You can use the following code
   long startTime = System.currentTimeMillis();
   perform the task;
   long endTime = System.currentTimeMillis();
   long executionTime = endTime - startTime;

   use https://www.geeksforgeeks.org/linear-search-vs-binary-search/ for finding the implementation of linear search and binary search.