Assignment 6 - Recursion

1. Take as input N, a number. Print odd numbers in decreasing sequence (up until 0) and even numbers in increasing sequence (up until N). E.g. for N = 6 print 5, 3, 1, 2, 4.
2. Take as input N, a number. Print the following pattern (for N = 5)

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

3. Take as input N, a number. Print the following pattern (for N = 5)

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

4. Take as input N, a number. Print the following pattern (for N = 6)

```
1
1   1
1   2   1
1   3   3   1
1   4   6   4   1
1   5   10  10  5   1
```

5. Take as input N, a number. Write a recursive function to find Nth triangle where 1st triangle is 1, 2nd triangle is 1 + 2 = 3, 3rd triangle is 1 + 2 + 3 = 6, so on and so forth. Print the value returned.
6. Take as input N, the size of array. Take N more inputs and store that in an array. Write a recursive function which returns true if the array is sorted and false otherwise. Print the value returned.
7. Take as input N, the size of array. Take N more inputs and store that in an array. Take as input M, a number. Write a recursive function which returns true if M is contained in the array and false otherwise. Print the value returned.
8. Take as input N, the size of array. Take N more inputs and store that in an array. Take as input M, a number. Write a recursive function which returns the first index at which M is found in the array and -1 if M is not found anywhere. Print the value returned.
9. Take as input N, the size of array. Take N more inputs and store that in an array. Take as input M, a number. Write a recursive function which returns the last index at which M is found in the array and -1 if M is not found anywhere. Print the value returned.
10. Take as input N, the size of array. Take N more inputs and store that in an array.

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Take as input M, a number. Write a recursive function which returns an array containing indices of all items in the array which have value equal to M. Print all the values in the returned array.

11. Take as input N, a number. Take N more inputs and store that in an array. Write a recursive function which tests if the array is a palindrome and returns a Boolean value. Print the value returned.
12. Take as input N, a number. Take N more inputs and store that in an array. Write a recursive function which reverses the array. Print the values of reversed array.
13. Take as input N, a number. Take N more inputs and store that in an array. Write a recursive function which inverses the array. Print the values of inverted array.
14. Take as input N, the size of array. Take N more inputs and store that in an array. Take as input M, a number. Write a recursive function which bubble sorts the given array. Print all the values in the sorted array.
15. Take as input N, the size of array. Take N more inputs and store that in an array. Take as input M, a number. Write a recursive function which selection sorts the given array. Print all the values in the sorted array.