Assignment 8: Arrays Part 1

Scope: Arrays, Defining Arrays, Array Examples,

True/False (12 points)

1. Array index 1 contains the first value of the array FALSE
2. An array can hold values of different data types FALSE
3. Negative indices count backward from the array end FALSE
4. The array size must be known at compile time TRUE
5. All array values must be specified at compile time FALSE
6. If there are fewer initializers than array elements, the remaining values are garbage data. TRUE

Short Answer – Text (8 points)

1. Describe in your own words: "arrays store data contiguously in memory"
   Arrays are stored as one element together with multiple spaces. As an analogy, a book has pages; arrays follow this same principle.
2. What are garbage values in the array and how can we handle it?
   When an array is first created but not yet initialized, the array is filled with random values that have no meaning to the programmer. These are called garbage values. To handle them, the array must be fully initialized so that every index has meaning.

Short Answer – Code (8 points)

1. Create the following integer array x without specifying the array size. You must use an initializer list. (5 points)

0	0	0	0

2. Create the following float array x by specifying the array size using a symbolic constant. You must use an initializer list. (5 points)

-3.0	-2.0	-1.0	0.0	1.0	2.0	3.0

Long Answer – Code (8 points)

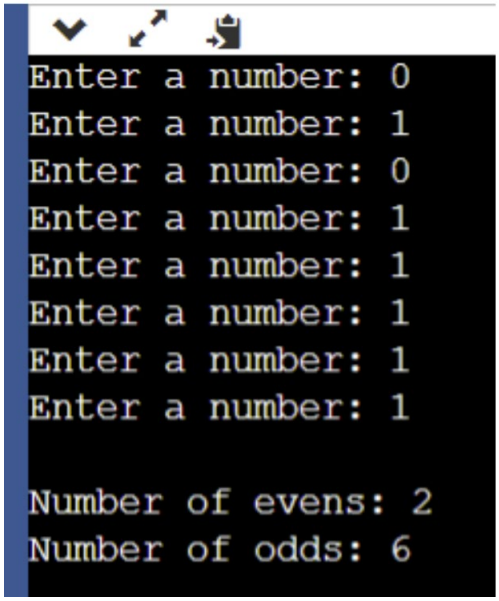
Create the following integer array EVEN and set the values using a for loop (no initializer list)

2	4	6	8	10	12

Programming (14 points)

Create a complete C program that will keep track of the number of times a user enters an even or odd number using an array of size 2. The loop will stop when either count is over 5. After the loop ends, print the counts.

- Use array index 0 to keep track of the current number of even numbers.
- Use array index 1 to keep track of the current number of odd numbers.



Code Output Screenshots:

```
> make -s
> ./main
Enter a number: 0
Enter a number: 1
Enter a number: 0
Enter a number: 1
Enter a number: 1
Enter a number: 1
Enter a number: 1
Enter a number: 1

Number of evens: 2
Number of odds: 6
>
```

```
> make -s
> ./main
Enter a number: 43
Enter a number: 678
Enter a number: 3
Enter a number: 2
Enter a number: 87
Enter a number: 88
Enter a number: 0
Enter a number: 4
Enter a number: 2

Number of evens: 6
Number of odds: 3
>
```

```
> make -s
> ./main
Enter a number: 7
Enter a number: 7
Enter a number: 7
Enter a number: 7
Enter a number: 77
Enter a number: 7

Number of evens: 0
Number of odds: 6
>
```