Date: Monday Nisan 1, 2019

In this lab assignment you are going to implement a dynamic array.

Dynamic Array Structure:

- Pointer Array: It stores integer values. Whenever it is fully filled, its size grows by 5.
- Limit: Dynamic size of array. It is initially 5. It grows by 5 each time it is fully filled, as well.
- End Index (EI): The index value that points to the end of the array (the filled sequence). It is initially 0.

Part1: ***void init (Dyn arr *arr)***

This function initializes the dynamic array. You must use calloc().

Example Screen Output:

```
Array: [0, 0, 0, 0, 0] Limit: 5 EI: 0
```

Part2: ***void insert (Dyn arr *arr, int insertion index, int input value)***

This function inserts input value (greater than 0) to the index (between 0 and limit) on dynamic array. There are several cases for insert.

Example Screen Output (Array has an empty space, insertion index is empty):

```
Array: [1, 2, 3, 4, 0] Limit: 5 EI: 3
User Input Value: 9
User Insertion Index: 4
Array: [1, 2, 3, 4, 9] Limit: 5 EI: 4
```

Example Screen Output (Array is filled, insertion index is equal to limit):

```
Array: [1, 2, 3, 4, 9] Limit: 5 EI: 4
User Input Value: 8
User Insertion Index: 5
Array: [1, 2, 3, 4, 9, 8, 0, 0, 0, 0] Limit: 10 EI: 5
```

Example Screen Output (Array has empty space, insertion index is not empty):

```
Array: [1, 2, 3, 0, 0] Limit: 5 EI: 2
User Input Value: 9
User Insertion Index: 2
Array: [1, 2, 9, 3, 0] Limit: 5 EI: 3
```

Example Screen Output (Array is filled, insertion index is not empty):

```
Array: [1, 2, 3, 9, 8] Limit: 5 EI: 4
User Input Value: 7
User Insertion Index: 3
Array: [1, 2, 3, 7, 9, 8, 0, 0, 0, 0] Limit: 10 EI: 5
```

Part3: *void delete (Dyn arr *arr, int deletion index)*

This function deletes the value at specified index. If user types -1 as input value, value at the specified index must be deleted. If the specified index is the end of array, value at the index becomes 0. Else if the specified index is before the EI, values after the index is shifted left.

Example Screen Output (Deletion index is the same as EI):

```
Array: [1, 2, 3, 4, 0] Limit: 5 EI: 3
User Input Value: -1
User Input Index: 3
Array: [1, 2, 3, 0, 0] Limit: 5 EI: 2
```

Example Screen Output (Deletion index is less than EI):

```
Array: [1, 2, 3, 4, 9] Limit: 5 EI: 4
User Input Value: -1
User Input Index: 3
Array: [1, 2, 0, 9, 0] Limit: 5 EI: 3
```