DSA - Practical 3

1. **Present the program of dynamic arrays creation from last week.**
2. **Refer to the lecture slides about linked lists and work on the following:**

- Write a C program to implement the basic operations of Linked List data structure. Let the linked list items be of type "float". The structure of a node in the list and linked list could be:

```
typedef struct ListNode {
        float  data;
        struct ListNode * next;
} ListNode;
```

```
typedef struct LinkedList {
        ListNode * first;
        int  size;
} LinkedList;
```

At least write the implementation of the following functions:

```
LinkedList* createEmptyLinkedList () { … }
void   insertAtBeginning (LinkedList* list, float x) { … }
void   insertAt (LinkedList* list, int position, float x) { … }
float   getElementAt (LinkedList* list, int position) { … }
void   printAll (LinkedList* list) { … }
void   deleteElementAt (LinkedList* list, int position) { … }
void   clearAndFree (LinkedList* list) { … }
```

- Test the operations by creating a linked list in the main() function and apply different operations based on user's input.

```
void main () {
        LinkedList* list = createEmptyLinkedList ();
        insertAtBeginning (list, 3.3);   insertAtBeginning (list, 9.2);
        insertAtBeginning (list, 4.0);
        insertAt (list, 1, 15.6);
        printAll (list);
        …
        deleteElementAt (list, 2);
        …
        printAll (list);
        clearAndFree (list);
}
```

- The End -