ASSIGNMENT 3 – LINKED LIST

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C program to create a Singly Linked List and with the following operations

1. Create
2. Add at the beginning
3. Add at the end
4. Add at any intermediate location

Source Code:

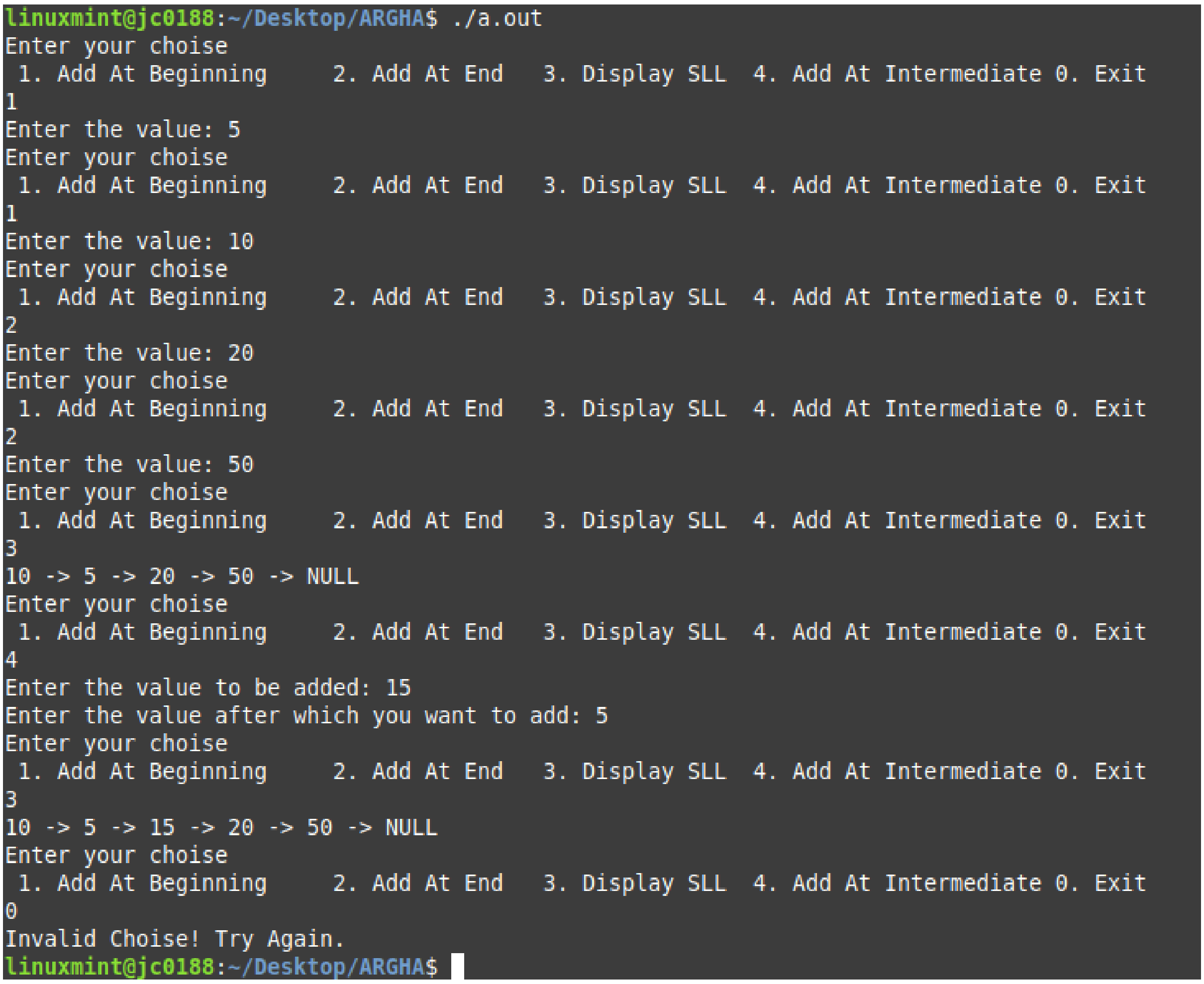
```
#include<stdio.h>

#include<stdlib.h>


struct Node {

	int data;

	struct Node *next;

};


struct Node* createSLL(int value) {

	struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));

	newNode->data = value;

	newNode->next = NULL;

	return newNode;

}


void addAtBeginning(struct Node **head, int value) {

	struct Node* newNode = createSLL(value);

	newNode->next = *head;

	*head = newNode;

}
```

```
void addAtEnd(struct Node **head, int value) {
        struct Node* newNode = createSLL(value);
        struct Node* curr = *head;
        while(curr->next != NULL) {
                curr = curr->next;
        }
        curr->next = newNode;
        newNode->next = NULL;
}

void addAtIntermediate(struct Node *prevNode, int value) {
        if(prevNode == NULL) {
                printf("Cannot add!! Previous node is NULL\n");
                return;
        }
        struct Node *newNode = createSLL(value);
        newNode->next = prevNode->next;
        prevNode->next = newNode;
}

void displaySLL(struct Node* head) {
        struct Node* curr = head;
        while(curr != NULL) {
                printf("%d -> ", curr->data);
                curr = curr->next;
        }
        printf("NULL\n");
}

int main() {
        struct Node* head = NULL;
```

```
    int choise, value, prevValue;
    do {
        printf("Enter your choise\n 1. Add At Beginning\t 2. Add At End\t 3. Display SLL\t 4. Add At Intermediate 0. Exit\n");
        scanf("%d", &choise);
        switch(choise) {
            case 1:
                printf("Enter the value: ");
                scanf("%d", &value);
                addAtBeginning(&head, value);
                break;
            case 2:
                printf("Enter the value: ");
                scanf("%d", &value);
                addAtEnd(&head, value);
                break;
            case 3:
                displaySLL(head);
                break;
            case 4:
                printf("Enter the value to be added: ");
                scanf("%d", &value);
                printf("Enter the value after which you want to add: ");
                scanf("%d",&prevValue);
                struct Node *curr = head;
                while(curr->data != prevValue) {
                    curr = curr->next;
                }
                struct Node *prevNode = curr;
                addAtIntermediate(prevNode, value);
                break;
```

```
                        default:
                                printf("Invalid Choise! Try Again.\n");
                                break;
                }
        } while (choise != 0);
}
```

Output:



```
linuxmint@jc0188:~/Desktop/ARGHA$ ./a.out
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
1
Enter the value: 5
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
1
Enter the value: 10
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
2
Enter the value: 20
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
2
Enter the value: 50
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
3
10 -> 5 -> 20 -> 50 -> NULL
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
4
Enter the value to be added: 15
Enter the value after which you want to add: 5
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
3
10 -> 5 -> 15 -> 20 -> 50 -> NULL
Enter your choise
 1. Add At Beginning     2. Add At End   3. Display SLL  4. Add At Intermediate 0. Exit
0
Invalid Choise! Try Again.
linuxmint@jc0188:~/Desktop/ARGHA$ 
```