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COURSE NAME: DATA STRUCTURES FOR MODERN COMPUTING SYSTEMS

COURSE CODE: CSA0302

Experiment 13: Stack using Linked List

CODE:

```
#include <stdio.h>
#include <stdlib.h>

struct Node {
   int data;
   struct Node* next;
};

struct Node* top = NULL;

void push() {
   int value;
   struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
   if(!newNode) {
      printf("Stack Overflow\n");
      return;
   }
   printf("Enter value to push: ");
   scanf("%d", &value);
   newNode->data = value;
   newNode->next = top;
   top = newNode;
   printf("Value pushed successfully\n");
}
```

```
void pop() {
    if(top == NULL) {
        printf("Stack Underflow\n");
        return;
    }
    struct Node* temp = top;
    printf("Popped element: %d\n", top->data);
    top = top->next;
    free(temp);
}

void display() {
    struct Node* temp = top;
    if(temp == NULL) {
        printf("Stack is empty\n");
        return;
    }
    printf("Stack elements:\n");
    while(temp != NULL) {
        printf("%d\n", temp->data);
        temp = temp->next;
    }
}

int main() {
    int choice;
    while(1) {
        printf("\n--- Stack Menu ---\n");
        printf("1. Push\n2. Pop\n3. Display\n4. Exit\n");
        printf("Enter your choice: ");
```

```
        scanf("%d", &choice);
        switch(choice) {
            case 1: push(); break;
            case 2: pop(); break;
            case 3: display(); break;
            case 4: exit(0);
            default: printf("Invalid choice\n");
        }
    }
}
```

OUTPUT:

```
--- Stack Menu ---
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 1
Enter value to push: 50
Value pushed successfully

--- Stack Menu ---
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 3
Stack elements:
50

--- Stack Menu ---
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 2
Popped element: 50

--- Stack Menu ---
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 4
```