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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
```