Ex 4: Stack Implementation

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PROGRAM :

```
#include <stdio.h>
#include <stdlib.h>
struct Node
{
int Data;
struct Node *next;
}*top;
void popStack()
{
struct Node *temp, *var=top;
if(var==top)
{
top = top->next;
free(var);
}
else
printf("\nStack Empty");
}
void push(int value)
{
struct Node *temp;
temp=(struct Node *)malloc(sizeof(struct Node));
```

```
temp->Data=value;
if (top == NULL)
{
top=temp;
top->next=NULL;
}
else
{
temp->next=top;
top=temp;
}
}
void display()
{
struct Node *var=top;
if(var!=NULL)
{
printf("\nElements are as:\n");
while(var!=NULL)
{
printf("\t%d\n",var->Data);
var=var->next;
}
printf("\n");
}
else
printf("\nStack is Empty");
```

```
}
int main()
{
int i=0;
top=NULL;
clrscr();
printf(" \n1. Push to stack");
printf(" \n2. Pop from Stack");
printf(" \n3. Display data of Stack");
printf(" \n4. Exit\n");
while(1)
{
printf(" \nChoose Option: ");
scanf("%d",&i);
switch(i)
{
case 1:
{
int value;
printf("\nEnter a value to push into Stack: ");
scanf("%d",&value);
push(value);
break;
}
case 2:
{
popStack();
```

```
printf("\n The last element is popped");
break;
}
case 3:
{
display();
break;
}
case 4:
{
struct Node *temp;
while(top!=NULL)
{
temp = top->next;
free(top);
top=temp;
}
exit(0);
}
default:
{
printf("\nwrong choice for operation");
}}}}
```

OUTPUT:

```
aiml231501129@cselab:~$ gcc ex4.c
aiml231501129@cselab:~$ ./a.out

1. Push to stack
2. Pop from Stack
3. Display data of Stack
4. Exit

Choose Option: 1

Enter a value to push into Stack: 1

Choose Option: 1

Enter a value to push into Stack: 1

Choose Option:
4
aiml231501129@cselab:~$ gcc ex4.c
aiml231501129@cselab:~$ ./a.out

1. Push to stack
2. Pop from Stack
3. Display data of Stack
4. Exit

Choose Option: 1

Enter a value to push into Stack: 1

Choose Option: 1

Enter a value to push into Stack: 2

Choose Option: 1

Enter a value to push into Stack: 3

Choose Option: 1

Enter a value to push into Stack: 4

Choose Option: 1

Enter a value to push into Stack: 5

Choose Option: 2

 The last element is popped
Choose Option: 3

Elements are as:
        4
        3
        2
        1


Choose Option: 4
aiml231501129@cselab:~$
```