20BCS042 MOHD ADIL

PROGRAM 6.b:

```
#include <stdio.h>
#include <stdlib.h>
struct arr
{
   int a;
   struct arr *next;
};

struct arr *top = NULL;
int count = -1;

struct arr *push()
{
   struct arr *temp = (struct arr *)malloc(sizeof(struct arr));
   if (temp == NULL)
      printf("Heap Overflow\n");
   else
   {
      printf("Enter Element->");
      scanf("%d", &temp->a);
      temp->next = top;
      top = temp;
      count++;
      return top;
   }
}
void pop()
{
   struct arr *temp;
   if (top == NULL)
```

```
    {
        printf("Stack Underflow\n");
    }
    else
    {
        temp = top;
        top = top->next;
        temp->next = NULL;
        printf("Popped element->%d\n",temp->a);
        free(temp);
        count--;
    }
}
void display()
{
    struct arr* temp;
    if (count == -1)
    {
        printf("\nStack Underflow\n");
    }
    else
    {
        temp=top;
        printf("Elements are:");
        while (temp != NULL)
        {
            printf(" %d", (temp)->a);
            temp = temp->next;
        }
        printf("\n");
    }
}
int isEmpty()
```

```
{
   return top == NULL;
}
int peek()
{
   if (!isEmpty())
      return top->a;
}
int main()
{
   int choice;
   printf("\n1.Push element\n");
   printf("2.Pop element\n");
   printf("3.IsEmpty?\n");
   printf("4.Top or Peek element\n");
   printf("5.Total elements\n");
   printf("6.Display elements\n");
   printf("7.Exit\n");
   while (1)
   {
      printf("Enter the choice: ");
      scanf("%d", &choice);
      switch (choice)
      {
      case 1:
         push();
         break;
      case 2:
         pop();
         break;
      case 3:
         printf("%d\n", isEmpty());
         break;
```

```
        case 4:
            printf("Top element is -> %d\n",peek());
            break;
        case 5:
            printf("Total number of elements->%d\n", count + 1);
            break;
        case 6:
            display();
            break;
        case 7:
            printf("Exiting...");
            exit(0);
            break;
        }
    }
    return 0;
}
```

OUTPUT:

```
PS C:\Users\aadil\Desktop\CSE\dsalab> cd "c:\Users\aadil\Desktop\CSE\dsalab\" ; if ($?) { gcc program6b.c -o program6b }

1.Push element
2.Pop element
3.IsEmpty?
4.Top or Peek element
5.Total elements
6.Display elements
7.Exit
Enter the choice: 1
Enter Element->1
Enter the choice: 1
Enter Element->2
Enter the choice: 1
Enter Element->3
Enter the choice: 1
Enter Element->4
Enter the choice: 1
Enter Element->5
Enter the choice: 6
Elements are: 5 4 3 2 1
Enter the choice: 2
Popped element->5
Enter the choice: 6
Elements are: 4 3 2 1
Enter the choice: 3
0
Enter the choice: 4
Top element is -> 4
Enter the choice: 5
Total number of elements->4
Enter the choice: 6
Elements are: 4 3 2 1
Enter the choice: 7
Exiting...
PS C:\Users\aadil\Desktop\CSE\dsalab>
```