

1.WRITE A C PROGRAM TO REVERSE A STRING USING STACK

```
#include<stdio.h>
#include<string.h>
#include<stack>
using namespace std;
void reverse(char *a)
{
    int i;
    char res[10]={"\0"};
    stack<char>s;
    for(i=0;i<strlen(a);i++)
    {
        s.push(a[i]);
    }
    while(!s.empty())
    {
        strncat(res,&s.top(),1);
        s.pop();
    }
    printf("%s",res);
}
main()
{
    char a[10],res[10];
    printf("enter the string");
    scanf("%s",a);
    reverse(a);
}
```

2.WRITE A C PROGRAM FOR INFIX TO POSTFIX CONVERSION USING STACK

```
#include<stdio.h>
#include<stack>
#include<string.h>
using namespace std;
```

```

stack<char>s;
bool isoperator(char c)
{
    if(c=='+'||c=='-'||c=='*'||c=='/')
    {
        return true;
    }
    else
    {
        return false;
    }
}
int order(char a)
{
    if(a=='*'||a=='/')
    {
        return 2;
    }
    if(a=='+'||a=='-')
    {
        return 1;
    }
}
bool highorder(char a,char b)
{
    if(order(a)<=order(b))
    {
        return 1;
    }
    else
    {
        return 0;
    }
}
bool isnumeric(char c)
{
    if(c>='0' && c<='9')
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

```

```

}
}
bool isopening(char c)
{
if(c=='(')
{
return 1;
}
else
{
return 0;
}
}
bool isclosing(char c)
{
if(c==')')
{
return 1;
}
else
{
return 0;
}
}
char *infixtopostfix(char exp[])
{
int i;
char res[20]={"\0"};
for(i=0;i<strlen(exp);i++)
{
if(isoperator(exp[i]))
{
while(!s.empty() && highorder(exp[i],s.top()) && !isopening(s.top()))
{
strncat(res,&s.top(),1);
s.pop();
}
s.push(exp[i]);
}
else if(isnumeric(exp[i]))
{
strncat(res,&exp[i],1);
}
}
}

```

```

else if(isopening(exp[i]))
{
s.push(exp[i]);
}
else if(isclosing(exp[i]))
{
while(!s.empty() && !isopening(s.top()))
{
strncat(res,&s.top(),1);
s.pop();
}
s.pop();
}
while(!s.empty())
{
strncat(res,&s.top(),1);
s.pop();
}
return res;
}
main()
{
char exp[20],r[20];
printf("enter the expression");
scanf("%s",exp);
strcpy(r,infixtopostfix(exp));
printf("%s",r);
}

```

3.WRITE A C PROGRAM TO IMPLEMENT QUEUE USING TWO STACKS

```

#include<stdio.h>
#include<stack>
using namespace std;
stack<int>s1;
stack<int>s2;
main()
{
int i,n,e;
printf("enter the no of elements");
scanf("%d",&n);

```

```

for(i=0;i<n;i++)
{
printf("enter the element");
scanf("%d",&e);
s1.push(e);
}
printf("removing the bottom element:\n");
while(!s1.empty())
{
s2.push(s1.top());
s1.pop();
}
s2.pop();
while(!s2.empty())
{
s1.push(s2.top());
s2.pop();
}
printf("after removing the front element:\n");
while(!s1.empty())
{
printf("%d",s1.top());
s1.pop();
}
}

```

4.WRITE A C PROGRAM FOR INSERTION AND DELETION OF BST

```

#include<stdio.h>
#include<stdlib.h>
struct node{
int data;
struct node *leftlink;
struct node *rightlink;
}*root=NULL;
struct node* insert(struct node* root,int e)
{
if(root==NULL)
{

```

```

root=(struct node*)malloc(sizeof(struct node));
root->data=e;
root->leftlink=root->rightlink=NULL;
return root;
}
else if((root->data>e)
{
root->leftlink=insert(root->leftlink,e);
}
else if((root->data<e)
{
root->rightlink=insert(root->rightlink,e);
}
return root;
}
int minimum(struct node* root)
{
if(root->leftlink==NULL)
{
return root->data;
}
else
{
return minimum(root->leftlink);
}
}
struct node* remove(struct node* root,int e)
{
if(root==NULL)
{
return root;
}
else if((root->data>e)
{
root->leftlink=remove(root->leftlink,e);
}
else if((root->data<e)
{
root->rightlink=remove(root->rightlink,e);
}
else
{
if((root->leftlink==NULL && root->rightlink==NULL)

```

```

{
delete root;
return NULL;
}
else if(root->leftlink==NULL)
{
root=root->rightlink;
}
else if(root->rightlink==NULL)
{
root=root->leftlink;
}
else
{
int key=minimum(root->rightlink);
root->data=key;
root->rightlink=remove(root->rightlink,key);
}
}
return root;
}
void inorder(struct node *root)
{
if(root==NULL)
{
return;
}
inorder(root->leftlink);
printf("%d",root->data);
inorder(root->rightlink);
}
main()
{
int n,i,e;
printf("enter no of elements");
scanf("%d",&n);
for(i=0;i<n;i++)
{
printf("enter the element");
scanf("%d",&e);
root=insert(root,e);
}
inorder(root);

```

```
printf("\n");  
printf("enter the element to to remove");  
scanf("%d",&e);  
root=remove(root,e);  
inorder(root);  
}
```