NATIONAL P.G. COLLEGE

STACK IMPLEMENTATION IN C

AND IT'S APPLICATIONS

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STACK

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
#define MAX 10
void display();
int pop(void);
void push(int);
int stack[MAX],top = -1;
struct node {
           int data;
           struct node *link;
           }*topd;
void palindrome() {
 char s[MAX];
 int i,flag = 0;
 printf("ENTER A STRING : ");
 fflush(stdin);
 gets(s);
 for(i = 0 ; s[i] != '\0' ; i++) {
     push(s[i]);
     }
 for(i = 0 ; i < strlen(s)  ; i++) {
     if(s[i] != pop()) {
      flag = 1;
      break;
      }
     }
     if(flag == 0) {
      printf("STRING IS PALINDROME");
      }
      else {
           printf("STRING ISN'T PALINDROME");
```

```
            }
}

void stringrev() {
 char s[MAX];
 int i;
 printf("ENTER A STRING : ");
 fflush(stdin);
 gets(s);
 for(i = 0 ; s[i] != '\0' ; i++) {
      push(s[i]);
      }
 printf("REVERSED STRING : ");
 while(top > -1) {
      printf("%c",pop());
      }
}
void pushd(int data) {
struct node *temp;
temp = malloc(sizeof (struct node));
temp->data = data;
temp->link = topd;
topd = temp;
}
void popd() {
 struct node *temp;
 if(topd == NULL){
      printf("STACK UNDERFLOW!");
      return;
      }
      printf("%d DELETED",topd->data);
      temp = topd;
      topd  = topd->link;
      free(temp);
}
```

```
void displayd()  {
      struct node *temp;
      if(topd == NULL) {
       printf("STACK IS EMPTY!");
       return;
       }
      temp = topd;
      printf("STACK : ");
      while(temp!=NULL) {
       printf("%d ",temp->data);
       temp = temp->link;
      }
}
void push(int data) {
if(top == MAX-1) {
 printf("STACK OVERFLOW!");
 }
 else  {
       stack[++top] = data;
       }
 }
int pop() {
      return stack[top--];
 }
      void display() {
      int i;
      if(top == -1) {
      printf("STACK IS EMPTY") ;
      return;
      }
      for(i = top ; i >= 0 ; i--) {
       printf("%d ",stack[i]);
       }
      }
void main() {
```

```
int ch,data,ch1;
while(1) {
clrscr();
printf("1.STATIC IMPLEMENTATION\n");
printf("2.DYNAMIC IMPLEMENTATION\n");
printf("3.APPLICATION\n");
printf("4.EXIT\n");
printf("ENTER YOUR CHOICE : ");
scanf("%d",&ch);
switch(ch) {
case 1 : {
          while(1) {
          clrscr();
          printf("1.PUSH\n");
          printf("2.POP\n");
          printf("3.DISPLAY\n");
          printf("4.EXIT\n");
          printf("ENTER YOUR CHOICE : ");
          scanf("%d",&ch1);
          switch(ch1) {
          case 1 : printf("ENTER DATA TO BE PUSHED : ");
          scanf("%d",&data);
          push(data);
          break;
          case 2 : if(top > -1) {
                                printf("%d DELETED!",pop());
                                } else {
                                     printf("STACK UNDERFLOW!");
                                     }
                                break;
          case 3 : display();
          break;
          case 4 : exit(0);
          break;
          default : printf("WRONG CHOICE!");
```

```
            }
            getch();
            }
      }
 case 2 : {
            while(1) {
            clrscr();
            printf("1.PUSH\n");
            printf("2.POP\n");
            printf("3.DISPLAY\n");
            printf("4.EXIT\n");
            printf("ENTER YOUR CHOICE : ");
            scanf("%d",&ch1);
            switch(ch1) {
            case 1 : printf("ENTER DATA TO BE PUSHED : ");
            scanf("%d",&data);
            pushd(data);
            break;
            case 2 : popd();
            break;
            case 3 : displayd();
            break;
            case 4 : exit(0);
            break;
            default : printf("WRONG CHOICE!");
            }
      getch();
            }
      }
case 3 : while(1) {
      clrscr();
      printf("1. STRING REVERSE\n");
      printf("2. PALINDROME\n");
      printf("3. EXIT\n");
      printf("ENTER YOUR CHOICE : :");
```

```
        scanf("%d",&ch1);
        switch(ch1) {
             case 1 : stringrev();
                    break;
             case 2 : palindrome();
                    break;
             case 3 : exit(0);
             default : printf("WRONG CHOICE!");
             }
        getch();
        }
        break;
case 4 : exit(0);
default : printf("WRONG CHOICE !");
      }
getch();
 }
}
```

OUTPUT

MAIN MENU

```
1.STATIC IMPLEMENTATION
2.DYNAMIC IMPLEMENTATION
3.APPLICATION
4.EXIT
ENTER YOUR CHOICE : _
```

```
1.PUSH
2.POP
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE : 1
ENTER DATA TO BE PUSHED : 34
```

```
1.PUSH
2.POP
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE :2
78 DELETED!
```

```
1.PUSH
2.POP
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE :3
90 324 879 34 435 34
```

```
1. STRING REVERSE
2. PALINDROME
3. EXIT
ENTER YOUR CHOICE : :1
ENTER A STRING : CHIRAG
REVERSED STRING : GARIHC
```

```
1. STRING REVERSE
2. PALINDROME
3. EXIT
ENTER YOUR CHOICE : :2
ENTER A STRING : MALAYALAM
STRING IS PALINDROME
```

```
1. STRING REVERSE
2. PALINDROME
3. EXIT
ENTER YOUR CHOICE : :2
ENTER A STRING : CHIRAG
STRING ISN'T PALINDROME
```