**Problems**

Q1)

Code:

#include <stdio.h>

int top=-1;

int size;

void push(char stack[size],char value);

int pop(char stack[size]);

int peek(char stack[size]);

void traverse(char stack[size]);

int main()

{

printf("\nenter the maximum size of the stack");

scanf("%d",&size);

char stack[size];

char value;

int choice;

char c,d;

char ch='y';

do{

printf("\nMain Menu");

printf("\n1.Push");

printf("\n2.Pop");

printf("\n3.Peek");

printf("\n4.Traverse");

printf("\nEnter your choice");

scanf("%d",&choice);

switch(choice)

{

case 1:printf("enter the value to be entered");

scanf("%s",&value);

push(stack,value);

traverse(stack);

break;

case 2:d=pop(stack);

printf("\nthe element deleted from the stack is %c",d);

traverse(stack);

break;

case 3:c=peek(stack);

printf("\nthe current element entered in the stack is %c",c);

break;

case 4:traverse(stack);

break;

default:printf("\nInvalid Entry");

}

printf("\ndo you want to continue");

scanf("%s",&ch);

}while(ch=='y' || ch=='Y');

return 0;

}

void push(char stack[size],char value)

{

if(top==size-1)

{

printf("\nthe stack is overflowing");

}

else{

top=top+1;

stack[top]=value;

}

}

int pop(char stack[size])

{

if(top==-1)

{

printf("\nthe stack is underflow");

return '\0';

}

else

{

char temp;

temp=stack[top];

top--;

return temp;

}

}

int peek(char stack[size])

{

if(top==-1)

{

printf("\nthe stack is underflow");

return '\0';

}

else

{

return stack[top];

}

}

void traverse(char stack[size])

{

if(top==-1)

{

printf("\nthe stack is underflow");

}

else

{

printf("\nthe elements present in the stack are:");

printf("\n");

int i;

for(int i=top;i>=0;i--)

{

printf("%c ",stack[i]);

}

printf("\n");

}

}

Output:

enter the maximum size of the stack5

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

Enter your choice1

enter the value to be entereda

the elements present in the stack are:

a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

Enter your choice1

enter the value to be enteredf

the elements present in the stack are:

f a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

Enter your choice2

the element deleted from the stack is f

the elements present in the stack are:

a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

Enter your choice1

enter the value to be enteredd

the elements present in the stack are:

d a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

Enter your choice3

the current element entered in the stack is d

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

Enter your choice4

the elements present in the stack are:

d a

do you want to continuen

**...Program finished with exit code 0**

**Press ENTER to exit console.**

Q2)

Code:

#include <stdio.h>

int top=-1;

int size;

void push(char stack[size],char value);

int pop(char stack[size]);

int peek(char stack[size]);

void traverse(char stack[size]);

void reverse(char stack[size]);

int main()

{

printf("\nenter the maximum size of the stack");

scanf("%d",&size);

char stack[size];

char value;

int choice;

char c,d;

char ch='y';

do{

printf("\nMain Menu");

printf("\n1.Push");

printf("\n2.Pop");

printf("\n3.Peek");

printf("\n4.Traverse");

printf("\n5.Reverse");

printf("\nEnter your choice");

scanf("%d",&choice);

switch(choice)

{

case 1:printf("enter the value to be entered");

scanf("%s",&value);

push(stack,value);

traverse(stack);

break;

case 2:d=pop(stack);

printf("\nthe element deleted from the stack is %c",d);

traverse(stack);

break;

case 3:c=peek(stack);

printf("\nthe current element entered in the stack is %c",c);

break;

case 4:traverse(stack);

break;

case 5:reverse(stack);

traverse(stack);

break;

default:printf("\nInvalid Entry");

}

printf("\ndo you want to continue");

scanf("%s",&ch);

}while(ch=='y' || ch=='Y');

return 0;

}

void push(char stack[size],char value)

{

if(top==size-1)

{

printf("\nthe stack is overflowing");

}

else{

top=top+1;

stack[top]=value;

}

}

int pop(char stack[size])

{

if(top==-1)

{

printf("\nthe stack is underflow");

return '\0';

}

else

{

char temp;

temp=stack[top];

top--;

return temp;

}

}

int peek(char stack[size])

{

if(top==-1)

{

printf("\nthe stack is underflow");

return '\0';

}

else

{

return stack[top];

}

}

void traverse(char stack[size])

{

if(top==-1)

{

printf("\nthe stack is underflow");

}

else

{

printf("\nthe elements present in the stack are:");

printf("\n");

int i;

for(i=top;i>=0;i--)

{

printf("%c ",stack[i]);

}

printf("\n");

}

}

void reverse(char stack[size])

{

int i,j;

char temp;

if(top==-1)

{

printf("\n the reverse operation could not be performed");

}

else

{

for(i=0,j=top;i<j;i++,j--)

{

temp=stack[i];

stack[i]=stack[j];

stack[j]=temp;

}

//printf("%d",top);

}

}

Output:

enter the maximum size of the stack5

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice1

enter the value to be entereda

the elements present in the stack are:

a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice1

enter the value to be enterede

the elements present in the stack are:

e a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice1

enter the value to be enteredy

the elements present in the stack are:

y e a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice5

the elements present in the stack are:

a e y

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice3

the current element entered in the stack is a

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice2

the element deleted from the stack is a

the elements present in the stack are:

e y

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice5

the elements present in the stack are:

y e

do you want to continuey

Main Menu

1.Push

2.Pop

3.Peek

4.Traverse

5.Reverse

Enter your choice3

the current element entered in the stack is y

do you want to continuen

**...Program finished with exit code 0**

**Press ENTER to exit console.**