Exp. No. 14

Implement the concept of Shift reduce parsing in C Programming.

Program:

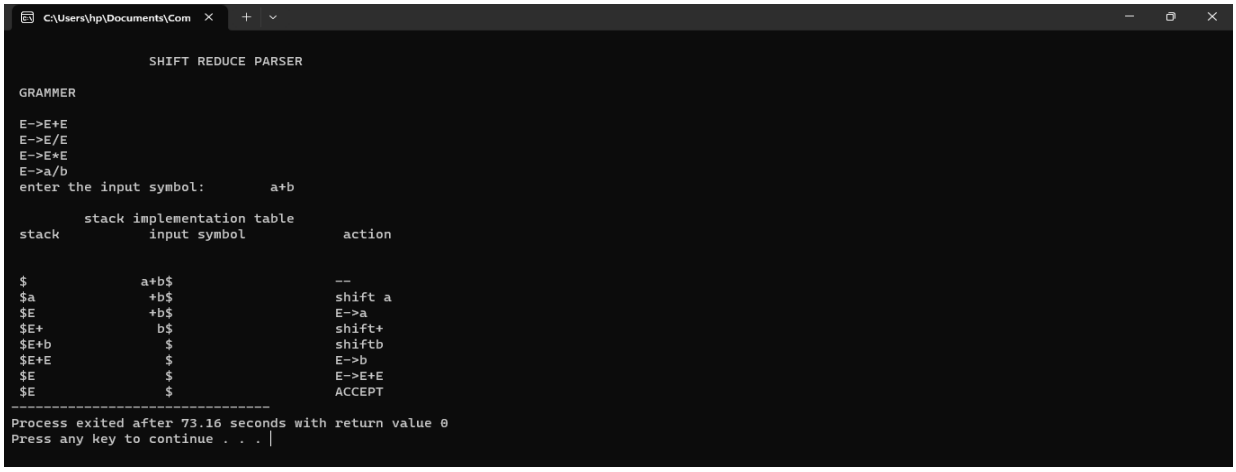
```
#include<stdio.h>
#include<stdlib.h>
#include<conio.h>
#include<string.h>
char ip_sym[15],stack[15]; int ip_ptr=0,st_ptr=0,len,i; char temp[2],temp2[2];
char act[15];
void check(); int main()
{
//clrscr();
printf("\n\t\t SHIFT REDUCE PARSER\n"); printf("\n GRAMMER\n");
printf("\n E->E+E\n E->E/E"); printf("\n E->E*E\n E->a/b"); printf("\n enter the
input symbol:\t"); gets(ip_sym);
printf("\n\t stack implementation table"); printf("\n stack \t\t input symbol\t\t
action");
printf("\n     \t\t     \t\t     \n");
printf("\n $\t\t%s$\t\t\t--",ip_sym); strcpy(act,"shift ");
temp[0]=ip_sym[ip_ptr]; temp[1]='\0';
strcat(act,temp); len=strlen(ip_sym); for(i=0;i<=len-1;i++)
{
stack[st_ptr]=ip_sym[ip_ptr];

stack[st_ptr+1]='\0'; ip_sym[ip_ptr]=' '; ip_ptr++;
printf("\n $%s\t\t%s$\t\t\t%s",stack,ip_sym,act); strcpy(act,"shift");
temp[0]=ip_sym[ip_ptr]; temp[1]='\0'; strcat(act,temp); check();
st_ptr++;
}
st_ptr++; check();
}
void check()
{
int flag=0; temp2[0]=stack[st_ptr]; temp2[1]='\0';
```

```
if((!strcmpi(temp2,"a"))||(!strcmpi(temp2,"b")))
{
stack[st_ptr]='E'; if(!strcmpi(temp2,"a"))
printf("\n $%s\t\t%s$\t\t\tE->a",stack,ip_sym); else
printf("\n $%s\t\t%s$\t\t\tE->b",stack,ip_sym); flag=1;
}
if((!strcmpi(temp2,"+"))||(strcmpi(temp2,"*"))||(!strcmpi(temp2,"/")))
{
flag=1;
}
if((!strcmpi(stack,"E+E"))||(!strcmpi(stack,"E\E"))||(!strcmpi(stack,"E*E")))
{
strcpy(stack,"E"); st_ptr=0; if(!strcmpi(stack,"E+E"))
printf("\n $%s\t\t%s$\t\t\tE->E+E",stack,ip_sym); else
if(!strcmpi(stack,"E\E"))
printf("\n $%s\t\t%s$\t\t\tE->E\E",stack,ip_sym); else
if(!strcmpi(stack,"E*E"))
printf("\n $%s\t\t%s$\t\t\tE->E*E",stack,ip_sym); else
printf("\n $%s\t\t%s$\t\t\tE->E+E",stack,ip_sym); flag=1;
}

if(!strcmpi(stack,"E")&&ip_ptr==len)
{
printf("\n $%s\t\t%s$\t\t\tACCEPT",stack,ip_sym); getch();
exit(0);
}
if(flag==0)
{
printf("\n%s\t\t\t%s\t\t reject",stack,ip_sym); exit(0);
}
return;
}
```

OUTPUT:


C:\Users\hp\Documents\Com
SHIFT REDUCE PARSER
GRAMMER
E->E+E
E->E/E
E->E*E
E->a/b
enter the input symbol: a+b
stack implementation table
stack input symbol action
$ a+b$ --
$a +b$ shift a
$E +b$ E->a
$E+ b$ shift+
$E+b $ shiftb
$E+E $ E->b
$E $ E->E+E
$E $ ACCEPT
Process exited after 73.16 seconds with return value 0
Press any key to continue . . .