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:

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