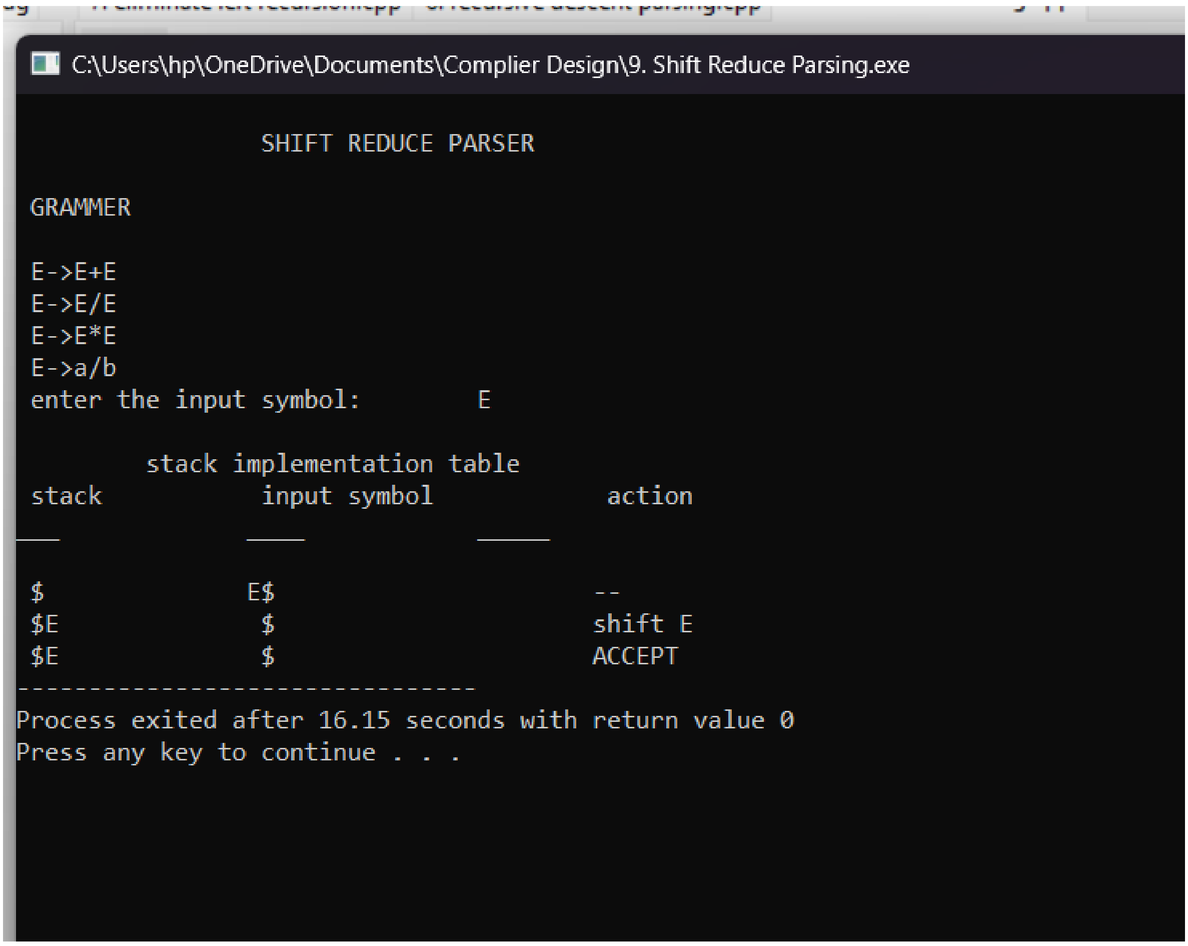
9. Shift Reduce Parsing

```
#include<stdio.h>
#include<stdlib.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()
{
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);

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\OneDrive\Documents\Complier Design\9. Shift Reduce Parsing.exe

```
                SHIFT REDUCE PARSER

 GRAMMER

 E->E+E
 E->E/E
 E->E*E
 E->a/b
 enter the input symbol:        E

         stack implementation table
 stack           input symbol           action
___             ____            _____

 $              E$                      --
 $E              $                      shift E
 $E              $                      ACCEPT
--------------------------------
Process exited after 16.15 seconds with return value 0
Press any key to continue . . .
```