RA1811028010049
SHUSHRUT KUMAR
CSE-CC J2
COMPILER DESIGN

LAB EXP 7 SHIFT REDUCE PARSING

AIM : To implement Shift Reduce Parser in C++.

ALGORITHM :

1. Start the program.
2. Initialize the required variables.
3. Enter the input symbol.
4. Perform the following:

    for top-of-stack symbol, s, and next input symbol, a

    Shift x: (x is a STATE number)

    Push a, then x on the top of the stack

    Advance ip to point to the next input symbol.

    Reduce y: (y is a PRODUCTION number)

    Assume that the production is of the form A→ß

    Pop 2 * |ß| symbols of the stack.

    At this point the top of the stack should be a state number, say s'.

    Push A, then goto of T[s',A] (a state number) on the top of the stack.

    Output the production A→ß.

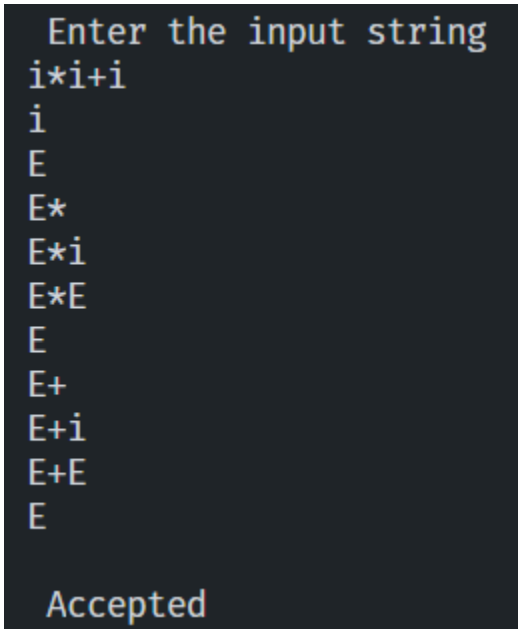
5. Print if string is accepted or not.
6. Stop the program.

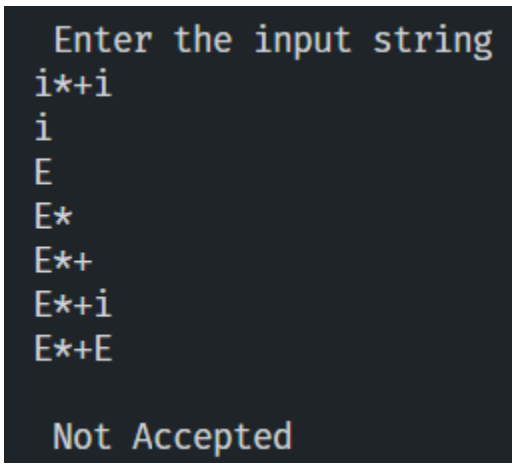
CODE :

```
#include <bits/stdc++.h>
using namespace std;
struct prodn
{
	char p1[10];
	char p2[10];
};
void main()
{
	char input[20],stack[50],temp[50],ch[2],*t1,*t2,*t;
	int i,j,s1,s2,s,count=0;
	struct prodn p[10];
	FILE *fp=fopen("sr_input.txt","r");
	stack[0]='\0';
	printf("\n Enter the input string\n");
	scanf("%s",&input);
	while(!feof(fp))
	{
		fscanf(fp,"%s\n",temp);
		t1=strtok(temp,"->");
		t2=strtok(NULL,"->");
		strcpy(p[count].p1,t1);
		strcpy(p[count].p2,t2);
		count++;
	}
	i=0;
	while(1) {
		if(i<strlen(input))
		{
			ch[0]=input[i];
```

```
                ch[1]='\0';
                i++;
                strcat(stack,ch);
                printf("%s\n",stack);
            }
            for(j=0;j<count;j++)
            {
                t=strstr(stack,p[j].p2);
                if(t!=NULL)
                {
                    s1=strlen(stack);
                    s2=strlen(t);
                    s=s1-s2;
                    stack[s]='\0';
                    strcat(stack,p[j].p1);
                    printf("%s\n",stack);
                    j=-1;
                }
            }
            if(strcmp(stack,"E")==0&&i==strlen(input))
            {
                printf("\n Accepted");
                break;
            }
            if(i==strlen(input))
            {
                printf("\n Not Accepted");
                break;
            }
        }
}
```

OUTPUT:





RESULT : The C++ implementation of Shift Reduce Parser was compiled, executed and verified successfully.