

**Practical 2**  
**Compiler Construction**  
2CS701

**Mistry Unnat**  
20BCE515



Department of Computer Science and Engineering  
Institute of Technology  
Nirma University  
Ahmedabad

**Aim :**

**To implement a Recursive Descent Parser Algorithm for the grammar.**

**Production Rules :**

$S \rightarrow aSa \mid T$

$T \rightarrow bT \mid \epsilon$

**Grammar :**

Null strings or strings containing any number of 'b' or strings starting and ending with 'a' and having any number of 'b' between them.

**C code :**

```
#include <stdio.h>
#include <string.h>

char input[100];
int i = 0;

int T()
{
    if (input[i] == 'b')
    {
        i++;
        if (T())
            return 1;
        else
            return 0;
    }
    else
        return 1;
}

int S()
{
    if (input[i] == 'a')
    {
        i++;
        if (S())
        {
```

```
        if (input[i] == 'a')
        {
            i++;
            return 1;
        }
        else
            return 0;
    }
    else
        return 0;
}
else if (T())
{
    return 1;
}
else
    return 0;
}

void main()
{
    printf("Enter the string to be checked : ");
    gets(input);
    if (S())
    {
        if (input[i] == '\0')
            printf("String is accepted\n");
        else
            printf("String is not accepted\n");
    }
    else
        printf("String is not accepted\n");
}
```

**Output :**

```
PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> gcc .\cc_prac2.c
PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> ./a.exe
Enter the string to be checked :
String is accepted

PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> ./a.exe
Enter the string to be checked : b
String is accepted

PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> ./a.exe
Enter the string to be checked : aba
String is accepted

PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> ./a.exe
Enter the string to be checked : abbbbbbba
String is accepted

PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> ./a.exe
Enter the string to be checked : abbb
String is not accepted

PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> ./a.exe
Enter the string to be checked : a
String is not accepted

PS C:\Users\unnat\OneDrive\Desktop\7\CC\Implement> █
```

**Conclusion :**

From this practical, we learnt about Recursive Descent Parser Algorithm.