**SSN COLLEGE OF ENGINEERING, KALAVAKKAM**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**UCS1602 - Compiler Design Programming**

**Assignment-4**

**Implementation of Recursive Descent Parser**

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**CODE:**

**ex\_04.c**

#include<stdio.h>

#include<string.h>

#include<ctype.h>

char productions[10][5];

int index = 0, size = 0, error = 0;

void Eprime();

void T();

void Tprime();

void F();

void E()

{

if(error == 0)

{

printf("T() ");

}

printf("E() ");

T();

Eprime();

}

void Eprime()

{

if(error == 0)

{

printf("T() ");

}

printf("E'() ");

if(strcmp(productions[index],"+") == 0)

{

index++;

T();

Eprime();

}

}

void T()

{

if(error == 0)

{

printf("T() ");

}

F();

Tprime();

}

void Tprime()

{

if(error == 0)

{

printf("T'() ");

}

if(strcmp(productions[index], "\*") == 0)

{

index++;

F();

Tprime();

}

}

void F()

{

if(error == 0)

{

printf("F() ");

}

if(strcmp(productions[index], "id") == 0)

{

index++;

}

else if(strcmp(productions[index], "(") == 0)

{

index++;

E();

if(strcmp(productions[index], ")") == 0)

{

index++;

}

else

{

error = 1;

printf("Error! ");

return;

}

}

else

{

error=1;

printf("Error! ");

return;

}

}

void main()

{

char inputstring[30];

char temp[30];

printf("Enter input string: ");

scanf("%[^\n]%\*c",inputstring);

strcpy(temp, inputstring);

char \*ptr = strtok(temp, " ");

while(ptr != NULL)

{

strcpy(productions[size++], ptr);

ptr = strtok(NULL, " ");

}

E();

if(size == index && error == 0)

{

printf("\n%s is accepted\n", inputstring);

}

else

{

printf("\n%s is rejected\n", inputstring);

}

}

**Sample Output:**

Enter input string: id + id \* id

T() E() T() F() T'() T() E'() T() F() T'() F() T'() T() E'()

id + id \* id is accepted

Enter input string: id + \* id

T() E() T() F() T'() T() E'() T() F() Error! E'()

id + \* id is rejected

Enter input string: ( id + id

T() E() T() F() T() E() T() F() T'() T() E'() T() F() T'() T() E'() Error! E'()

( id + id is rejected

**Learning Outcomes:**

This assignment helped me

1. To understand the concept of recursive descent parser.

2. To understand how a string is accpeted or rejected based on the rules.

3. To implement recursive descent parser.