



## Parser Project

SQL: CREATE statement, DROP statement

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## Yacc File (project.y File)

//yacc file

%{

#include <stdio.h>

#include <stdlib.h>

int yyerror();

int yylex();

%}

%token ID NUM CREATE TABLE DROP VARCHAR INT CHAR  
FLOAT

%%

S : ST1 ';' {

printf("QUERY ACCEPTED");

exit(0);

}

;

ST1 : CREATE TABLE ID '(' rows ')'

| DROP TABLE ID

;

rows : ID INT ',' rows

| ID VARCHAR '(' NUM ')' ',' rows

| ID INT

```
| ID VARCHAR '(' NUM ')'  
| ID CHAR ',' rows  
| ID CHAR  
| ID FLOAT ',' rows  
| ID FLOAT  
;  
%%
```

```
int main()  
{  
    printf("Enter the query: ");  
    yyparse();  
    return 0;  
}
```

```
int yywrap() {  
    return 1;  
}
```

```
int yyerror (const char *str) {  
    fprintf(stderr, "error: %s\n", str);  
    exit(1);  
}
```

## Lex File(project.l File)

```
%{  
#include <stdio.h>  
#include "y.tab.h"
```

```
%}
```

```
alpha [A-Za-z]
```

```
digit [0-9]
```

```
%%
```

```
[ \t\n]
```

```
(create | CREATE)
```

```
Int
```

```
Float
```

```
char
```

```
(table | TABLE)
```

```
varchar
```

```
drop
```

```
{digit}+
```

```
({alpha} | {digit})+
```

```
.
```

```
%
```

```
;
```

```
return CREATE;
```

```
return INT;
```

```
return FLOAT;
```

```
return CHAR;
```

```
return TABLE;
```

```
return VARCHAR;
```

```
return DROP;
```

```
return NUM;
```

```
return ID;
```

```
return yytext[0];
```

## **Grammar Capabilities :-**

**Assumptions:** - create and drop statements only works for tables.

The above implemented parser has the following capabilities i.e., it can allow the below mentioned SQL features:

- Accepts valid create statements(table) with multi datatypes attributes.
- Accepts valid drop statements(table).
- It can parse standard datatypes like varchar, char, int, float.
- Accepts statements only either in all lowercase or uppercase.

## **Grammar Limitations**

The above implemented parser has the following limitations i.e. it cannot allow the below mentioned C++ features:

- The parser implemented above only has standard(mostly used) data types implemented.
- the parser cannot parse any other valid sql statement except the above mentioned create and drop statements.

- Create and drop statements are working only for table not for database.

## Output:-

Accepted statements

a) Create statement

Command Prompt

```
C:\Users\SUNNY THAKUR\Desktop\project>bison -yd project.y
C:\Users\SUNNY THAKUR\Desktop\project>gcc lex.yy.c y.tab.c
C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: CREATE TABLE EMP(name varchar, id int);
error: syntax error

C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: CREATE TABLE EMP(name varchar(255), id int);
QUERY ACCEPTED
C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: create table emp(id int, sal float)
;
QUERY ACCEPTED
C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: create table emp(id int, gender char, sal float);
QUERY ACCEPTED
```

b) drop statement

```
C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: drop table emp;
QUERY ACCEPTED
C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: Drop table emp;
error: syntax error
```

## Rejected statements

```
C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: Create table emp(id int, gender char, sal float);
error: syntax error

C:\Users\SUNNY THAKUR\Desktop\project>a.exe
Enter the query: Create table emp(id int, gender char, sal float, dob date);
error: syntax error
```

## **References: -**

[https://www.w3schools.com/sql/sql\\_drop\\_db.asp](https://www.w3schools.com/sql/sql_drop_db.asp)

<https://stackoverflow.com/questions/2706839/unrecognized-rule-in-lex>

<https://www.javatpoint.com/yacc>

<https://www.youtube.com/channel/UC4Hu9iacw5pC2kwjWxiq4CQ>