

GOA COLLEGE OF ENGINEERING

“Bhausahab Bandodkar Technical Education Complex”

Experiment No: 8

Semantic Analyzer

Aim: Write a YACC program to implement semantic analyzer.

Theory:

Semantic Analysis is the third phase of Compiler. Semantic Analysis makes sure that declarations and statements of program are semantically correct. It is a collection of procedures which is called by parser as and when required by grammar. Both syntax tree of previous phase and symbol table are used to check the consistency of the given code. Type checking is an important part of semantic analysis where compiler makes sure that each operator has matching operands.

Lex Program:

```
%{
#include "y.tab.h"
void yyerror(char*);
}%

alpha [a-zA-Z_]
digit [0-9]

%%
{digit}+ { yylval = strtol(yytext, NULL, 10); return NUM; }
[+,-,\n] { return *yytext; }
[ \t] { ; }
. { yyerror("invalid character"); exit(0); }
%%

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

Yacc Program:

```
%{
#include<stdlib.h>
#include<stdio.h>
int yylex(void);
void yyerror(char*);
}%

%token NUM

%%
program:
```

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```
program STATEMENT
|
;
STATEMENT:
E '\n' { printf(" Value of Expression is = %d \n", $1); }
;
E :
E '+' E { $$=$1 + $3; }
| E '-' E { $$=$1 - $3; }
| NUM { $$=$1; }
;
%%

void yyerror(char* s)
{
fprintf(stderr,"%s",s);
}
int main()
{
yyparse();
return 0;
}
```

Conclusion:

The yacc program to implement semantic analyzer has been successfully executed.