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Subject: Compiler Design

Experiment 4

1) Program to recognize the grammar A^nB^n

ALGORITHM :
1. Start the program.
2. Write the code for parser. l in the declaration port.
3. Write the code for the ‘y’ parser.
4. Also write the code for different arithmetical operations.
6. Execute and verify it.
7. Stop the program.

Code:

Yacc Code:

```
%{
   #include<stdio.h>
   #include<stdlib.h>
%}

%token A B NL
%%
stmt: S NL  { printf("valid string\n");
              exit(0); }
;
S: A S B |
;
```

```
%%

int yyerror(char *msg)
 {
  printf("invalid string\n");
  exit(0);
 }

main()
 {
  printf("enter the string\n");
  yyparse();
 }
```

Lex code:

```
%{
  #include "y.tab.h"
%}

%%
[aA] {return A;}
[bB] {return B;}
\n {return NL;}
.  {return yytext[0];}
%%

int yywrap() {}
```

OUTPUT:

```
spandan@spandan-VirtualBox: ~
spandan@spandan-VirtualBox:~$ cc lex.yy.c y.tab.c
y.tab.c: In function ‘yyparse’:
y.tab.c:1017:16: warning: implicit declaration of function ‘yylex’ [-Wimplicit-f
unction-declaration]
 1017 |       yychar = yylex ();
      |                ^~~~~
y.tab.c:1159:7: warning: implicit declaration of function ‘yyerror’; did you mea
n ‘yyerrok’? [-Wimplicit-function-declaration]
 1159 |       yyerror (YY_("syntax error"));
      |       ^~~~~~~
      |       yyerrok
yacc2.y: At top level:
yacc2.y:21:1: warning: return type defaults to ‘int’ [-Wimplicit-int]
   21 | main()
      | ^~~~
spandan@spandan-VirtualBox:~$ ./a.out
enter the string
AAABBB
valid string
spandan@spandan-VirtualBox:~$ gedit yacc2.l
spandan@spandan-VirtualBox:~$ gedit yacc2.y
^C
spandan@spandan-VirtualBox:~$ gedit lex.l
```

2) Program to recognize to AB^n

ALGORITHM :
1. Start the program.
2. Write the code for parser. l in the declaration port.
3. Write the code for the ‘y’ parser.
4. Also write the code for different arithmetical operations.
6. Execute and verify it.
7. Stop the program.

CODE:

LEX CODE:

```
%{

#include "y.tab.h"

%}

%%

[aA] { return A;}

[bB] {return B;}

\n {return N;}
. {return yytext[0];}

%%

int yywrap()
```

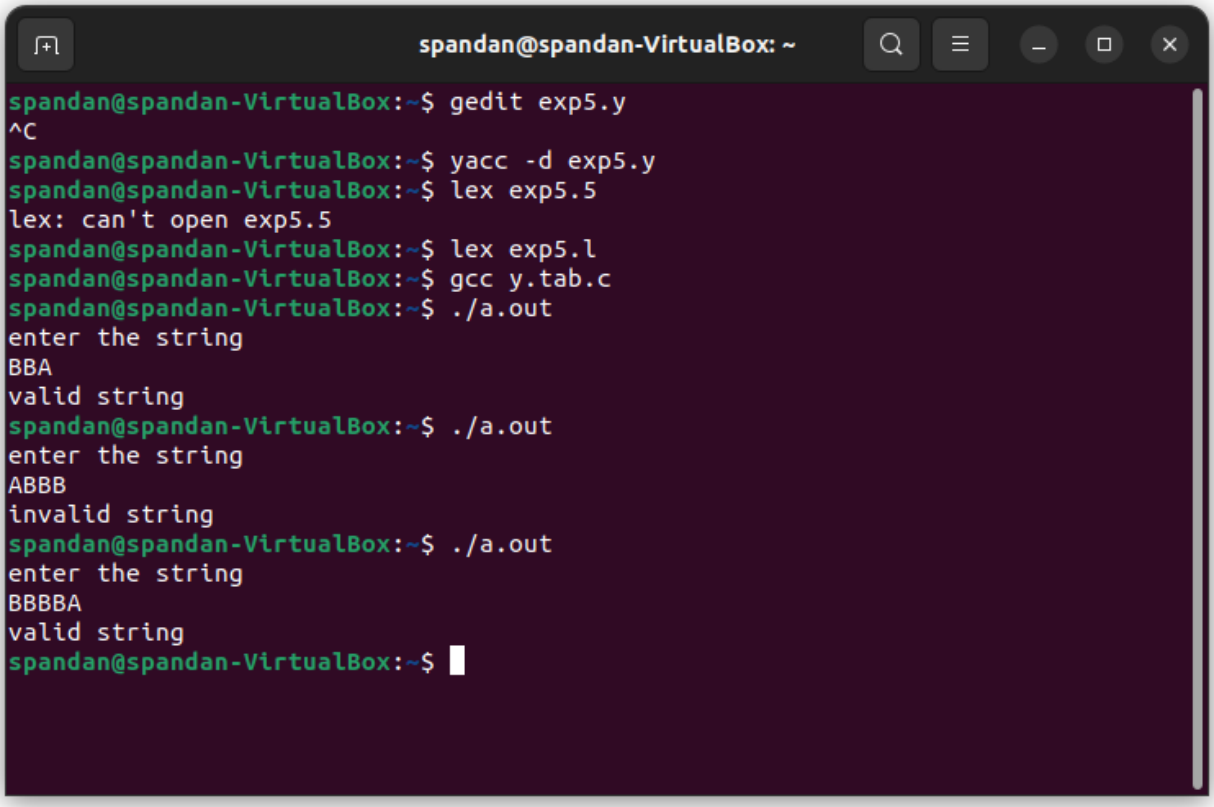
```
{

return 1;

}
```

YACC CODE:

```
%{
/* Definition section */
#include <stdio.h>
#include <stdlib.h>
#include "lex.yy.c"
int yywrap();
int yylex();
int yyerror(char *msg);
%}

%token A B N

/* Rule Section */
%%
S:  B S A N  { printf("valid string\n"); exit(0); }
;
S:B S A|

;
%%
int yyerror(char *msg)
{
```

```
printf("invalid string\n");
exit(0);
}

int main(){
printf("enter the string\n");
yyparse();
}
```

OUTPUT:



3)Program to recognize the Grammar A^nB

ALGORITHM :

1. Start the program.
2. Write the code for parser. l in the declaration port.
3. Write the code for the ‘y’ parser.
4. Also write the code for different arithmetical operations.
6. Execute and verify it.
7. Stop the program.

CODE:

Yacc code

```
%{
/* Definition section */
#include <stdio.h>
#include <stdlib.h>
#include "lex.yy.c"
int yywrap();
int yylex();
int yyerror(char *msg);
%}

%token A B N


%%
S: A S B N { printf("valid string\n"); exit(0); }
;
```

```
S:A S B|

;
%%
int yyerror(char *msg)
{
printf("invalid string\n");
exit(0);
}

int main(){
printf("enter the string\n");
yyparse();
}
```

LEX CODE:

```
%{

#include "y.tab.h"

%}

%%

[aA] { return A;}

[bB] {return B;}

\n {return N;}
. {return yytext[0];}

%%
```

```
int yywrap()

{

return 1;

}
```

OUTPUT: