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Write a Lex program to validate the following C program syntax.

1. Arrays

2. Control structures(looping statements)

4. Keywords

CODE:

1,2,4:

```
%{
#include<stdio.h>
%}
dtype (int|char|float)
alp [a-zA-Z]
num [0-9]
%%
{dtype}(\ )({alp}+{num}*)+(\[{num}*\])+(;) {printf("ARRAY");}
(for)(\(.*;.*;.*\)) {printf("FOR loop ");}
(while)(.*) {printf("WHILE loop -");}
(break)[;] {printf("BREAK SYNTAX ");}
(continue)[;] {printf("CONTINUE SYNTAX");}
.* {printf("Invalid syntax");}
%%
int yywrap(){
return 1;
}
int yyerror(){
return 1;
}
int main(){
```

yylex();

return 0;

}

OUTPUT:

```
F:\Flex Windows>lex q5.l

F:\Flex Windows>gcc lex.yy.c

F:\Flex Windows>a.exe
continue;
CONTINUE SYNTAX
for(i=0;i<n;i++)
FOR loop
while(i<n)
WHILE loop -
int a[1];
ARRAY
int a1[4];
ARRAY
break;
BREAK SYNTAX
```

3. Any 3 built-in functions

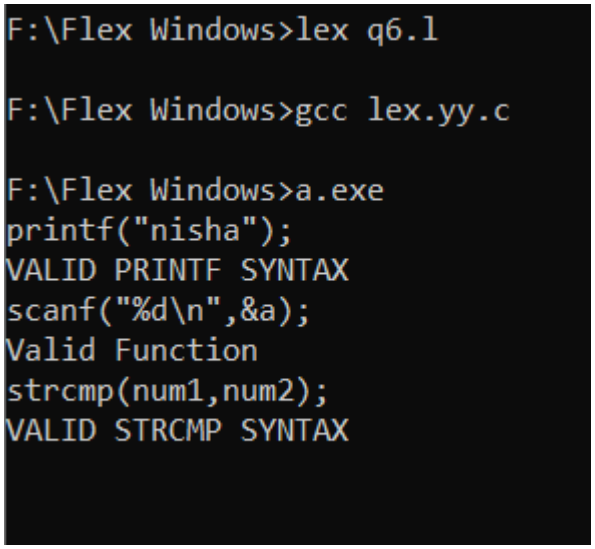
CODE:

```
%{
char* checkspecifier(char*);
%}
sp (%d|%c|%f)
special [+|*|_|\ |-|?|\%|/]
alp [a-zA-Z]
num [0-9]
var ([a-zA-Z]+[0-9]*)+
inp \&([a-zA-Z]+[0-9]*)+
%%
(strcmp)(\({var}\,{var}\))[;] {printf("VALID STRCMP SYNTAX");}
```

```
(strcmp)(\({var}\,\"({alp}*{num}*{special}*)*\"\))[;] {printf("VALID STRCMP SYNTAX");}

(scanf)(\(\"(.*{sp}.*)+\"(\,{inp})+)\)[;] {printf("%s",checkspecifier(yytext));}

(printf)(\(\"({alp}*{num}*{special}*)*\"(\,{var})*\))[;] {printf("VALID PRINTF SYNTAX");}

.* {printf("Incorrect syntax");}

%%

char* checkspecifier(char *a){

int i=0;

int countspecifier=0;

int equispecifier=0;

while(a[i]!='\0'){

if(a[i]=='\"'){

i++;

while(a[i]!='\"'){

if(a[i]=='%'&&(a[i+1]=='d'||a[i+1]=='f'||a[i+1]=='c')){

countspecifier+=1;

}

i++;

}

}

while(a[i]==','){

equispecifier+=1;

i++;

while(a[i]!=',' && a[i]!=')') i++;

}

i++;

}

if(equispecifier==countspecifier){

return "Valid Function";

}
```

```
return "Missing specifier/variable";
}
int yywrap(){
return 0;
}
int yyerror(){
return 0;
}
int main()
{
yylex();
return 0;
}
```

OUTPUT:



RESULT:

Thus the program has executed successfully.