Aim: Scanner phase implementation of assigned project in "C" language.

Project no.: 5

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Following is a valid sentence in a layman friendly "comparison " program. Generate its appropriate language description and compiler-

- Valid sentences in language :
  1. Which is bigger number 7 or 2?
  2. From 7 and 2 which is larger ?
  3. Is 7 bigger than 2?
  4. Is 2 smaller than 4?
  5. Which is smaller between 4 and 9?
  6. Which is smaller number 4 or 2?

C code:

```
#include<stdio.h>
#include<string.h>
int main()
{
  printf("\n");
  FILE *file1;
  char Digit='a';
  int state='A',flag=0,count=0;
  file1=fopen("Program.txt","r");
  char keyword[16][20]={"Which" , "which" , "Is" , "is" , "From" , "from"
,"number" , "or" , "and" , "between" , "than" , "bigger" , "greater" , "larger"
, "smaller" , "less"};
  while((Digit=getc(file1))!=EOF)
  {
    if(flag==0)
    {
      if(state=='A')
      {
        if(Digit>=48 && Digit<=57)//ascii value for digit 0=>48 && 9=>57
```

```
    {state='B';}
  else
  {flag=1;}
}
else if(state=='B')
{
  if(Digit>=48 && Digit<=57)
  {state='B';}
  else if(Digit=='.')
  {state='C';}
  else if(Digit=='E')
  {state='E';}
  else
  {flag=1;}
}
else if(state=='C')
{
  if(Digit>=48&&Digit<=57)
  {state='D';}
  else
  {flag=1;}
}
else if(state=='D')
{
  if(Digit>=48&&Digit<=57)
  {state='D';}
  else if(Digit=='E')
  {state='E';}
  else
  {flag=1;}
}
else if(state=='E')
{
  if(Digit=='+'||Digit=='-')
  {state='F';}
  else if(Digit>=48&&Digit<=57)
  {state='G';}
  else
  {flag=1;}
  }
else if(state=='F')
{
  if(Digit>=48&&Digit<=57)
```

```
    {state='G';}
    else
    {flag=1;}
  }
  else if(state=='G')
  {
    if(Digit>=48&&Digit<=57)
    {state='G';}
    else{flag=1;}
  }
  if((state=='G'||state=='D') && Digit==' ')
  {
    printf("Float \n");
    count++;
    state='A';
  }
  else if(state=='B' && Digit==' ')
  {
    printf("Integer\n");
    count++;
    state='A';
  }
  else
  { }
}
if(flag==1)
{
  char n[15]={'\0'};
  while(Digit!=' '&&Digit!=EOF&&Digit!='\n')
  {
    if(Digit=='?')
    {printf("'?' IS PUNCTUATION\n\nNEW LINE\n\n");count++;}
    strncat(n,&Digit,1);
    Digit=getc(file1);
  }
  for(int i=0;i<17;i++)
  {
    if(strcmp(n,keyword[i])==0)
    {
      printf("'%s' IS A KEYWORD\n",n);
      count++;
      flag=0;
      break;
```

```
      }
    }
    if(flag==1)
    flag=0;
  }
 }
printf("Total no. of Tokens : %d",count);
printf("\n\n");
fclose(file1);
return 0;
}
```

Program.txt file:

Program.txt

```
1   Which is bigger 7 or 2 ?
2   Is 7 bigger than 2 ?
3   From 7 and 2 which is bigger ?
4   which is smaller between 7 and 2 ?
```

Output Screenshots:

```
> ./main

'Which' IS A KEYWORD
'is' IS A KEYWORD
'bigger' IS A KEYWORD
Integer
'or' IS A KEYWORD
Integer
'?' IS PUNCTUATION

NEW LINE

'Is' IS A KEYWORD
Integer
'bigger' IS A KEYWORD
'than' IS A KEYWORD
Integer
'?' IS PUNCTUATION

NEW LINE

'From' IS A KEYWORD
Integer
'and' IS A KEYWORD
Integer
'which' IS A KEYWORD
'is' IS A KEYWORD
'bigger' IS A KEYWORD
'?' IS PUNCTUATION

NEW LINE
```

```
NEW LINE

'which' IS A KEYWORD
'is' IS A KEYWORD
'smaller' IS A KEYWORD
'between' IS A KEYWORD
Integer
'and' IS A KEYWORD
Integer
'?' IS PUNCTUATION

NEW LINE

Total no. of Tokens : 29

```

Program.txt file:

Program.txt ×

```
1   Is 2.88 less than 82.0 ?
```

Output Screenshots:

```
./main

'Is' IS A KEYWORD
Float
'less' IS A KEYWORD
'than' IS A KEYWORD
Float
'?' IS PUNCTUATION

NEW LINE

Total no. of Tokens : 6
```