

{1992 ACM Mid-Central Regional Programming Contest
Sample Solution to Problem #2 - Spy Search}

CONST MAX=80;

TYPE Line=String[80];
Grid=ARRAY[1..MAX] of Line;
BLine=ARRAY[1..80] of Boolean;
BGrid=ARRAY[1..MAX] of BLine;

FUNCTION Upper(S:string):string;
VAR i:integer;
BEGIN
 for i:=1 to length(S) do S[i]:=UpCase(S[i]);
 Upper:=S;
END;

VAR G:Grid;
 Used,WUsed:BGrid;

FUNCTION Message:string;
VAR S:string;
 i,j:integer;
BEGIN
 S:='';
 for i:=1 to MAX do
 for j:=1 to length(G[i]) do
 if not Used[i,j] then
 if G[i,j]='Z' then S:=S+' ' else S:=S+G[i,j];
 Message:=S;
END;

PROCEDURE FindLetter(Word:string; At,X,Y:integer);
VAR i,j:integer;
BEGIN
 if At>length(Word) then
 for i:=1 to MAX do
 for j:=1 to 80 do
 Used[i,j]:=Used[i,j] or WUsed[i,j]
 else
 for i:=-1 to 1 do
 for j:=-1 to 1 do
 if (Y+j>=1) and (Y+j<=MAX) and (X+i>=1) and (X+i<=80) then
 if X+i<=length(G[Y+j]) then
 if (G[Y+j,X+i]=Word[At]) and not WUsed[Y+j,X+i] then
 BEGIN
 WUsed[Y+j,X+i]:=true;
 FindLetter(Word,At+1,X+i,Y+j);
 WUsed[Y+j,X+i]:=false;
 END;
END;

PROCEDURE FindWord(Word:string);
VAR i,j:integer;
BEGIN
 for i:=1 to MAX do
 for j:=1 to 80 do
 WUsed[i,j]:=false;
 for i:=1 to MAX do
 for j:=1 to 80 do

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if G[i,j]=Word[1] then
  BEGIN
    WUsed[i,j]:=true;
    FindLetter(Word,2,j,i);
    WUsed[i,j]:=false;
  END;
END;

VAR i,j,Lines,Words:integer;
    Word:string;
    ifile,ofile: text;
BEGIN
  assign(ifile,'spy.in');
  reset (ifile);
  assign(ofile,'spy.out');
  rewrite(ofile);
  repeat
    for i:=1 to MAX do G[i]:='';
    for i:=1 to MAX do
      for j:=1 to 80 do
        Used[i,j]:=false;
      readln(ifile,Lines);
      if Lines>0 then
        BEGIN
          for i:=1 to Lines do
            BEGIN
              readln(ifile,G[i]); G[i]:=Upper(G[i]);
            END;
          readln(ifile,Words);
          for i:=1 to Words do
            BEGIN
              readln(ifile,Word); Word:=Upper(Word);
              if Word<>' ' then FindWord(Word);
            END;
          END;
        END;
      writeln(ofile,Message);
    until (Lines=0);
    close(ifile);
    close(ofile);
  END.

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