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APL Assignment 2 - Pascal's Program:

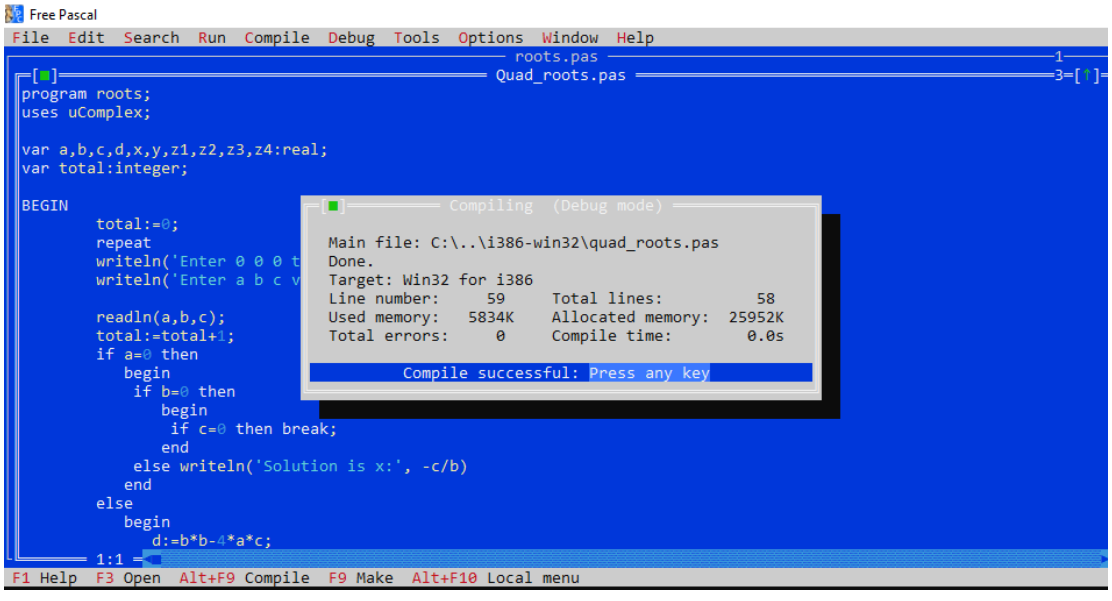
Code:

```
program roots;
uses uComplex;

var a,b,c,d,x,y,z1,z2,z3,z4:real;
var total:integer;

BEGIN
      total:=0;
      repeat
      writeln('Enter 0 0 0 to quit');
      writeln('Enter a b c values:');
      Readln(a,b,c);
      writeln('The a b c values are:', a, ' ', b,' ', c);
      total:=total+1;
      if a=0 then
        begin
         if b=0 then
            begin
             if c=0 then break;
            end
         else writeln('Solution is x:', -c/b)
        end
      else
        begin
          d:=b*b-4*a*c;

          if d>0 then
            begin
              x:=(-b+(sqrt(d)))/(2*a);
              y:=(-b-(sqrt(d)))/(2*a);
              writeln('Roots are real...');
              writeln('Root 1:', x);
              writeln('Root 2:', y);
            end
          else
```

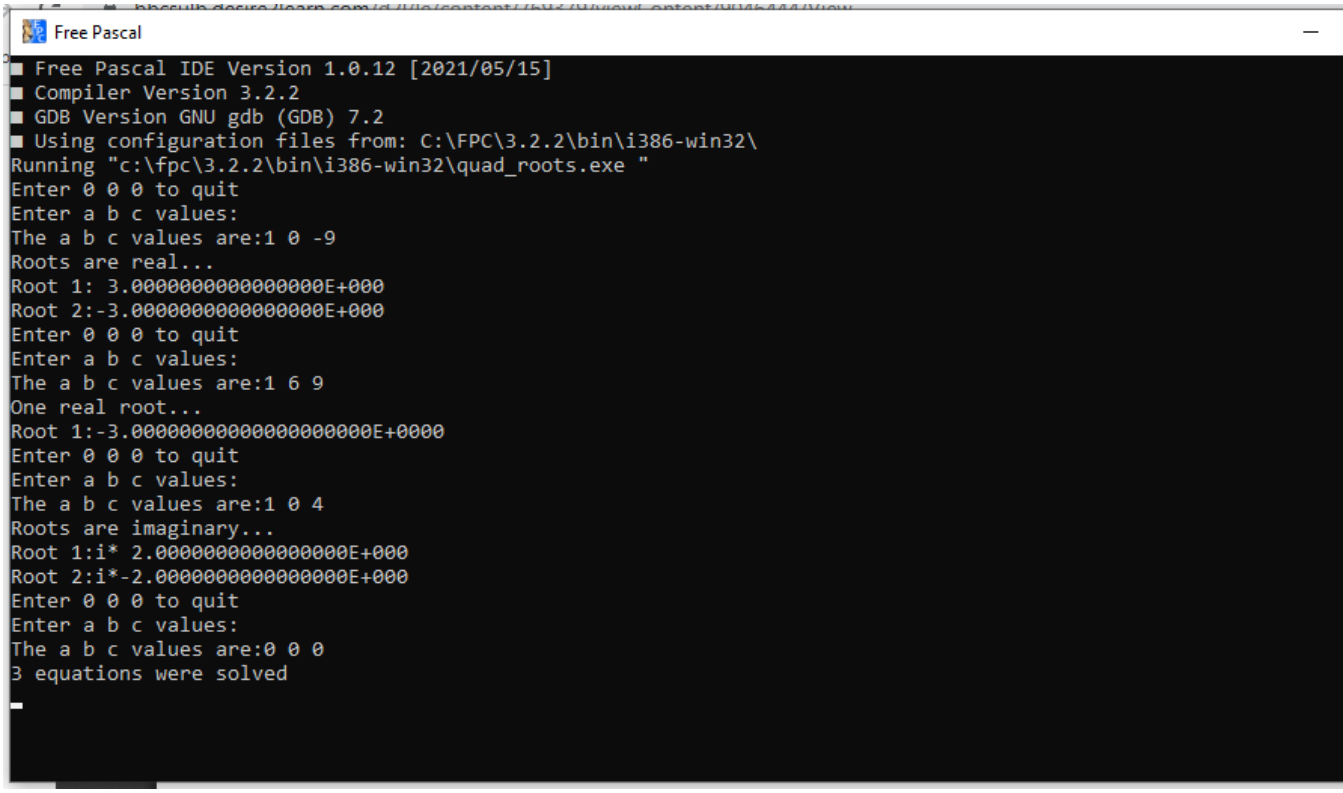
```
            begin
              if d=0 then
              begin
               writeln('One real root...');
               writeln('Root 1:', -b/(2*a));
              end
              else
                begin
                  z1:=(-b)/(2*a);
                  z2:=sqrt(-d)/(2*a);
                  z3:= z1+z2;
                  z4:= z1-z2;
                  writeln('Roots are imaginary...');
                  writeln('Root 1:','i*',z3);
                  writeln('Root 2:','i*',z4);
                end;
            end;
      end;
    until a+b+c=0;
    writeln(total-1, ' equations were solved');
    readln;

END.
```

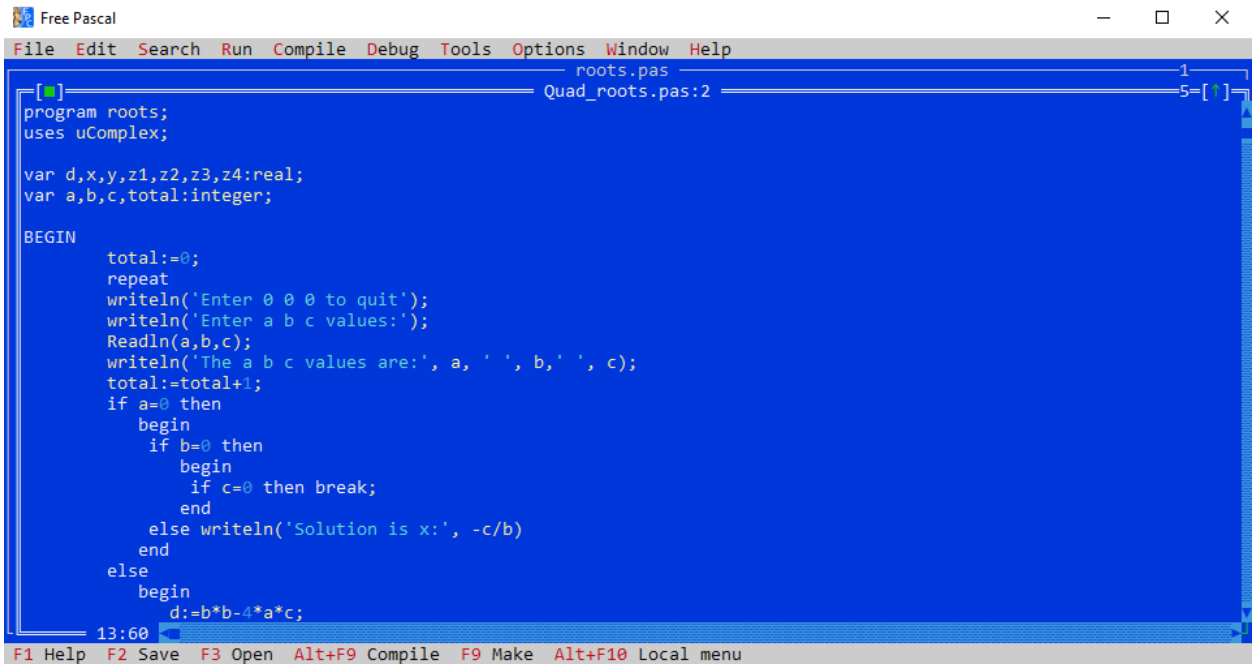
Output:

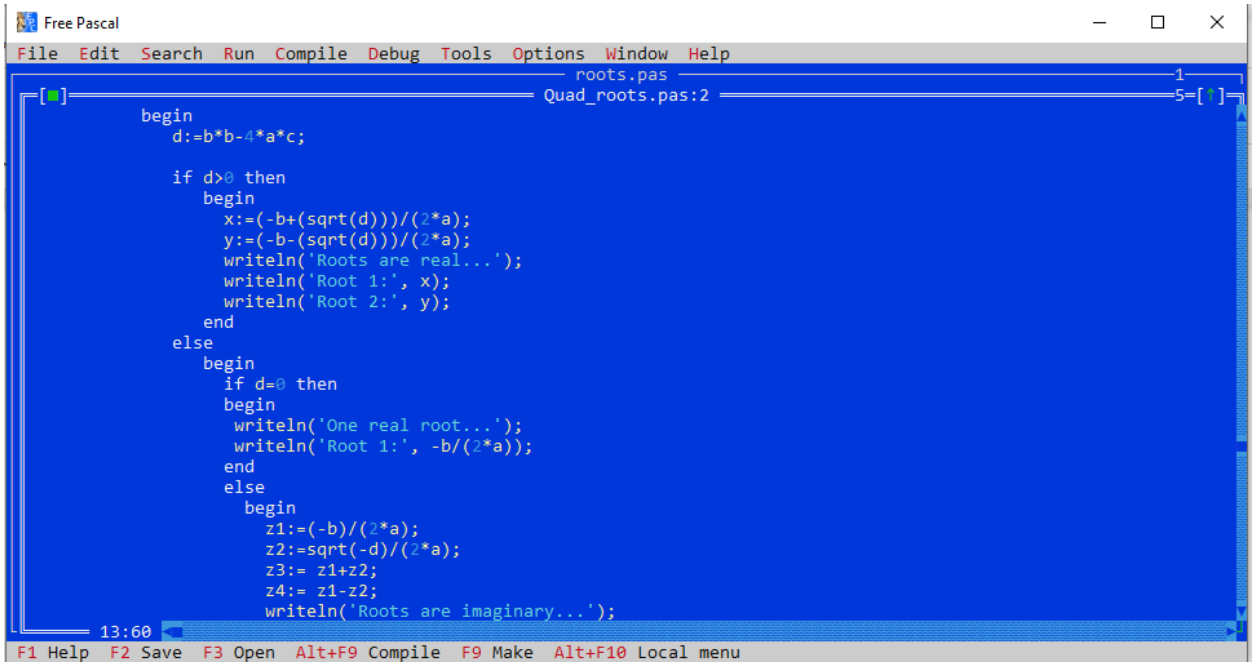
1. **Compiled Successfully**

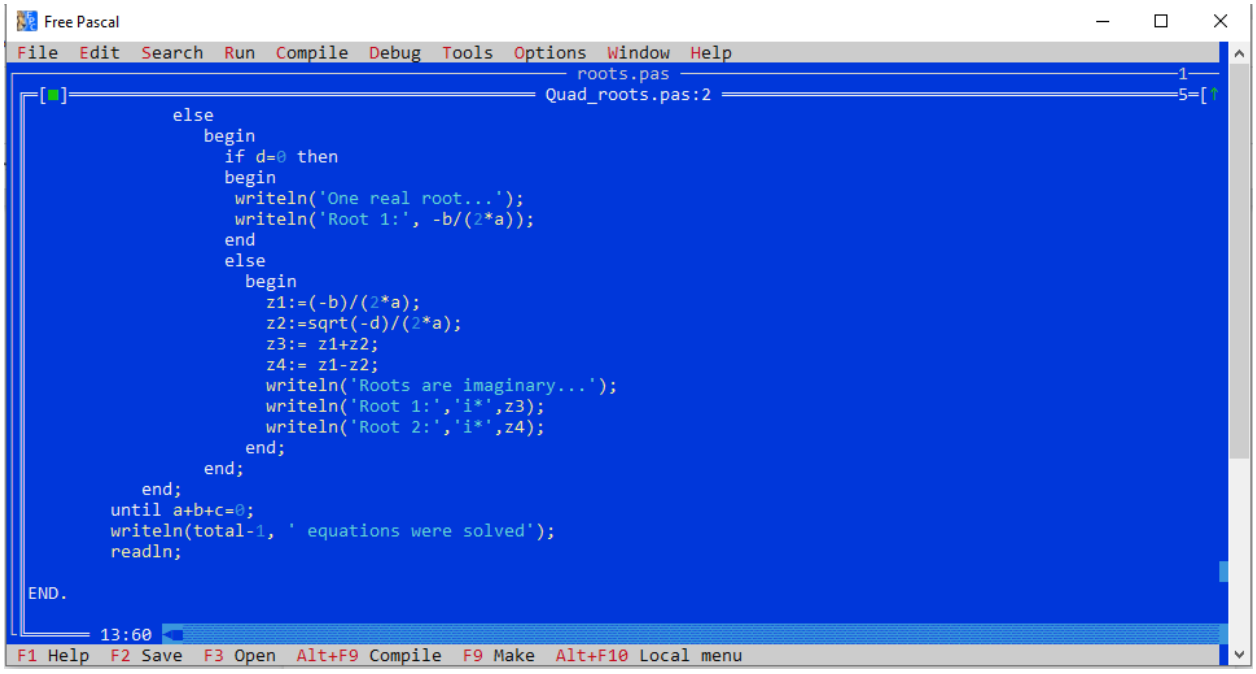


2. Run Successfully






Free Pascal
File Edit Search Run Compile Debug Tools Options Window Help
roots.pas
Quad_roots.pas:2
begin
d:=b*b-4*a*c;
if d>0 then
begin
x:=(-b+(sqrt(d)))/(2*a);
y:=(-b-(sqrt(d)))/(2*a);
writeln('Roots are real...');
writeln('Root 1:', x);
writeln('Root 2:', y);
end
else
begin
if d=0 then
begin
writeln('One real root...');
writeln('Root 1:', -b/(2*a));
end
else
begin
z1:=(-b)/(2*a);
z2:=sqrt(-d)/(2*a);
z3:= z1+z2;
z4:= z1-z2;
writeln('Roots are imaginary...');
13:60
F1 Help F2 Save F3 Open Alt+F9 Compile F9 Make Alt+F10 Local menu


Free Pascal
File Edit Search Run Compile Debug Tools Options Window Help
roots.pas
Quad_roots.pas:2
else
begin
if d=0 then
begin
writeln('One real root...');
writeln('Root 1:', -b/(2*a));
end
else
begin
z1:=(-b)/(2*a);
z2:=sqrt(-d)/(2*a);
z3:= z1+z2;
z4:= z1-z2;
writeln('Roots are imaginary...');
writeln('Root 1:','i*',z3);
writeln('Root 2:','i*',z4);
end;
end;
end;
until a+b+c=0;
writeln(total-1, ' equations were solved');
readln;
END.
13:60
F1 Help F2 Save F3 Open Alt+F9 Compile F9 Make Alt+F10 Local menu