Choose a Line of Text as Our First Test

The program then **waits for input with scanf**.

What input should we give?

Let's **just choose something** concrete.

Say **"0 0 0"** (and then **<Enter>** to start).

What are the values of variables **a**, **b**, and **c**?

0, 0, and 0

What does **scanf** return? **3**

What happens next? **Skip the "then" block!**

41

Continue Analyzing Until the End

With input **"0 0 0"** our program next
◦ prints the equation to be solved, and
◦ calculates the discriminant **D**.

What is the value of D? 0

(Remember that **a**, **b**, and **c** are all 0.)

So **which of the three if-else blocks is executed** (first, second, or third)? **second**

And what is x1? 0 / 0 → NaN

42

Was that a Bug?

I think so.

The equation is not quadratic when **a** is 0.

The person who wrote the code
perhaps didn't think of that case.

And neither did I when I edited the code
to present to you.

Bugs can be subtle, and testing can be hard!

We won't fix the bug.

43

Remember: We Want Full Code Coverage

Let's try again with input **"1 0 0"**.

The same parts of the code execute.

And x1 is? 0

So the **single root is at 0**, and
the **program ends successfully**.

Our equation was $F(x) = x^2 (+0x + 0)$, so
plugging in $x = 0$ does produce $F(x) = 0$.

But our test does not execute all code!

44

11