Input and Output Parameters

The `solveQuadratic()` function needs to use both input and output parameters. The arguments **`a`**, **`b`**, and **`c`** are **input** in this function, while **`root1`** and **`root2`** are **output parameters**, allowing the function to **pass back** the two roots to **`main`**.

```
void solveQuadratic(double a, double b, double c,      // input
                    double& r1, double& r2)            // output
{
    if (a == 0) die("a is 0; Illegal");   // no discriminate

    double discriminate = b * b - 4 * 1 * c;
    if (discriminate < 0) die("No real roots");

    double sqrtDisc = sqrt(discriminate);
    r1 = (-b + sqrtDisc) / (2 * a);
    r2 = (-b - sqrtDisc) / (2 * a);
}
```

Fatal Errors

Whenever this code encounters a condition that makes further progress impossible, it calls a function **`die()`** which prints a message and then terminates the program.

```
void die(const string& msg, int code = -1)
{
    cerr << "FATAL ERROR: " << msg << endl;
    exit(code);
}
```

- The **`cerr`** standard stream is similar to **`cout`**, but is reserved for reporting errors.
- The **`exit()`** function terminates a program immediately, using the value of the parameter to report the program status.
- The default error code is set to **`-1`**. If you want to use different error codes for different errors, just pass the code when you call **`die()`** (preferably as a **`const`**).

This function could be useful in many programs, so you might put it in a utility library.

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