IF STATEMENTS

Simple Branching

Delroy A. Brinkerhoff
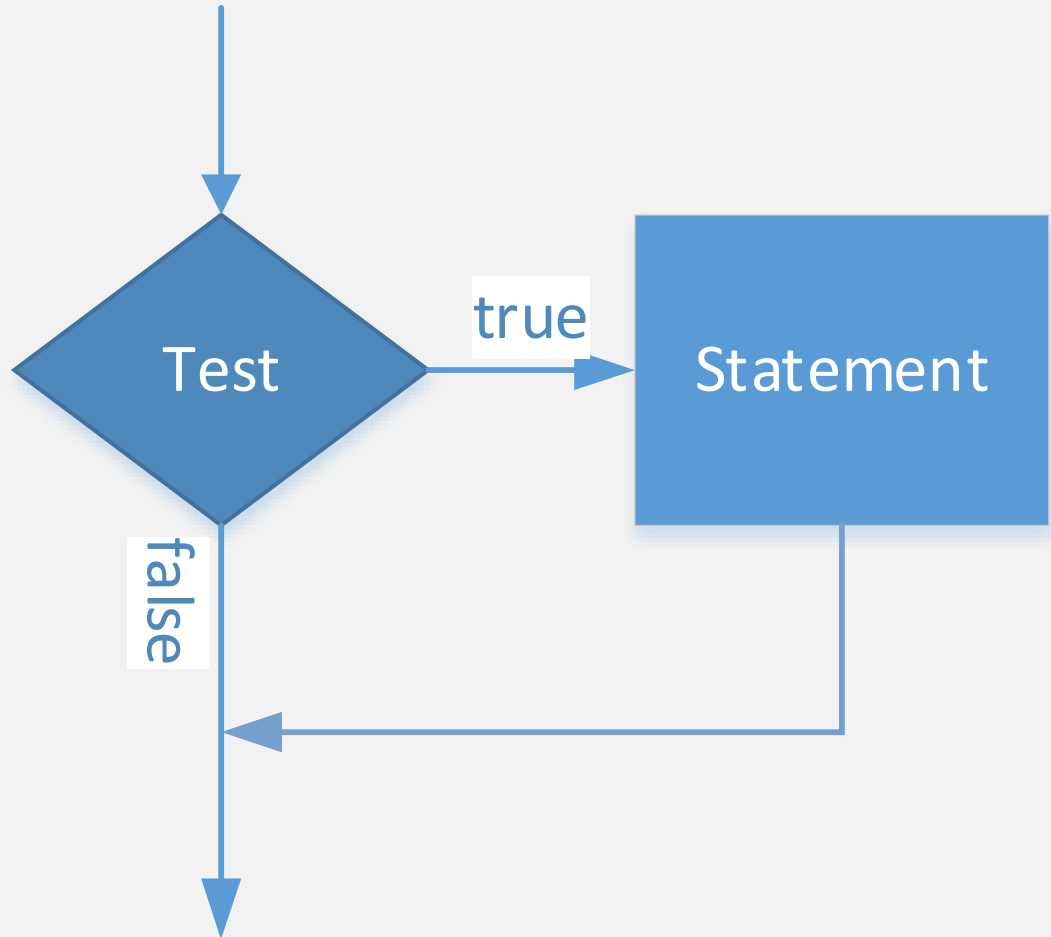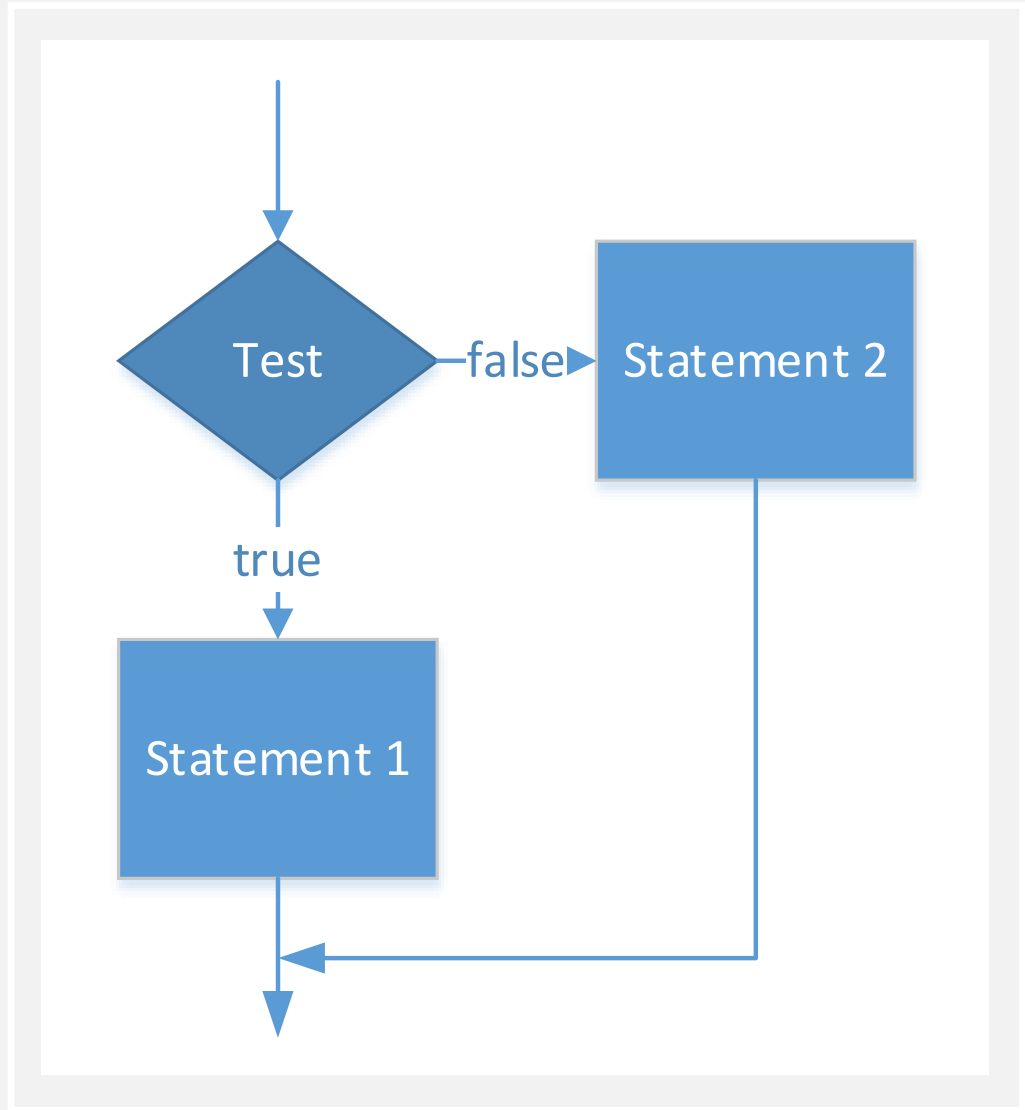
IF STATEMENT FLOW

```
if (test)

        statement;
```

If the test is true, do the statement.

If the statement is false, then do nothing.

IF-ELSE STATEMENT

If test is true, do statement 1.

If test is false, do statement 2.

```
if (test)
        statement1;
else
        statement2;
```

IF-ELSE VARIATIONS

```
if (Test)
    statement 1;
else
    statement 2;


if (Test)
{
    statement 1;
}
else
{
    statement 2;
}
```

```
if (Test)
{
    Statement 1;
        . . .
    Statement n;
}
else
{
    Statement 1;
        . . .
    Statement m;
}
```
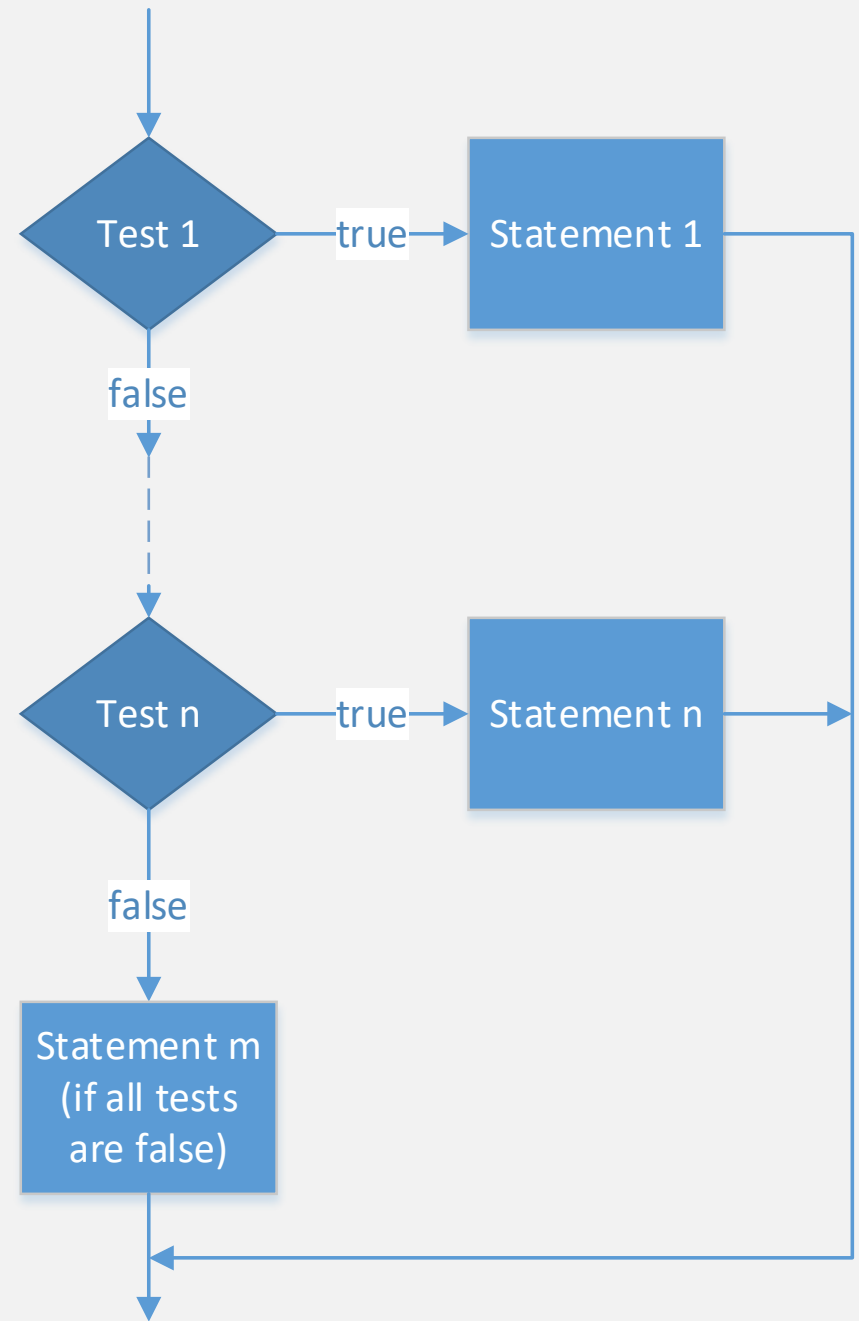
IF-ELSE LADDER

Effects a multi-way branch.

Really, just an if-else statement nested in the else branch of an if-else statement.

Evaluate tests top to bottom, do statement(s) associated with the first true test, then leave the ladder.

If no test is true and there is an else at the end (without a test), do the else, otherwise do nothing.

IF-ELSE LADDER

Syntax and Structure

```
if (Test 1)
{
    Statement 1;
    Statement 2;
        . . . .
    Statement j;
}
else if (Test 2)
{
    Statement 1;
    Statement 2;
        . . . .
    Statement k;
}
else if (Test n)
{
    Statement 1;
    Statement 2;
        . . . .
    Statement m;
}
else
{
    Statement 1;
    Statement 2;
        . . . .
    Statement n;
}
```

EXAMPLES

```
if (line33 < line34)
    line37 = line36 - line35;




if (income >= 1400 || interest > 750)
{
    must_file++;
    deductions = 1;
    adjusted_income = line37;
}
```
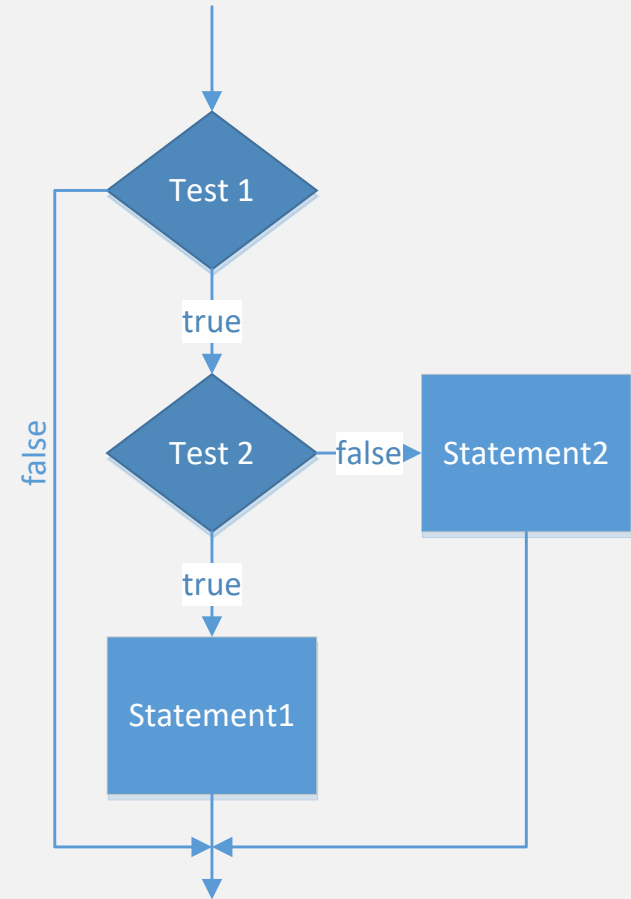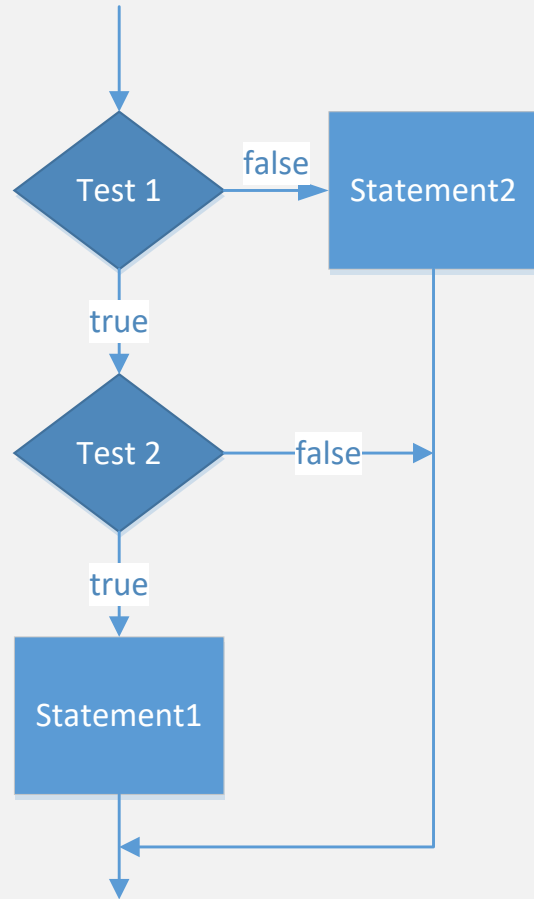
```
if (score >= 95)
    cout << "Grade: A\n";
else if (score >= 90 && score < 95)
    cout << "Grade: A-\n";
else if (score >= 85 && score < 90)
    cout << "Grade: B+\n";
else if (score >= 80 && score < 85)
    cout << "Grade: B\n";
else if (score >= 75 && score < 80)
    cout << "Grade: B-\n";
else (score < 75)
    cout << "Grade: E\n";
```

THE DANGLING ELSE PROBLEM

```
if (test 1)
    if (test 2)
        statement 1;
else
    statement 2;
```

FIXING THE DANGLING ELSE PROBLEM

```
if (test 1)
    if (test 2)
        statement 1;
    else
        statement 2;
```

```
if (test 1)
{
    if (test 2)
        statement 1;
}
else
    statement 2;
```