Chapter 6: making decisions

Boolean expressions can be used to make decisions in your programs.

Java programs can make decisions in a few ways: with an expression, or with one of several statements.

The ternary operator is an unusual 3-valued operator.

\[ \text{exp} \ ? \ \text{exp} \ ? \ \text{exp} \]

- if \( \text{exp} \) is true
- if \( \text{exp} \) is false

The ternary operator is also called the "conditional operator" and the "selection operator."
The if statement executes a statement if its condition is true

```java
if (exp) stmts;
if exp is true
```

What is a statement?

A statement is either

- a single line of Java code terminated by a semicolon, or
- a sequence of statements enclosed in curly braces

```java
x++;
System.out.println("foo");
{
    int y = 4;
    System.out.println(y);
}
```

```java
{
    foo();
    System.out.println($);
}
```

The if statement executes a statement if its condition is true

```java
if (exp) stmts;
if exp is true
```
The if statement executes a statement if its condition is true

```
if (exp)
stmt
else
stmtAlt
```

The if statement executes a block of code if its condition is true

```
if (exp1)
stmt1
else if (exp2)
stmt2
else if (exp3)
stmt3
else
stmtAlt
```

Switch is useful when you need to execute one (or more) of several statements depending on the value of an expression

```
switch (exp) {
    case v1: stmt1;
    case v2: stmt2;
    case v3: stmt3;
    default: stmtAlt;
}
```

If `exp` has value `v`, then the switch statement will start executing at `stmt`. (And so on.

Where does execution stop?
Think of **switch** statements as jumping into the middle of a block of code.

(You can escape with `break`.)

Self-check

Translate the following code into equivalent code that uses an `if` statement:

```java
switch (x % 2) {
    case 0:  System.out.println("E");
    case 1:  System.out.println("O");
    default: System.out.println("D");
}
```

Review: **switch**

- Are there any restrictions on the type of the expression?
- Choices in `switch` statements aren't mutually exclusive; why not?
- What is the term for the behavior that enables `switch` statements to execute more than one statement?

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