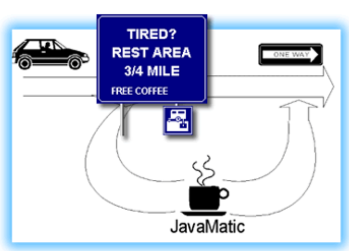
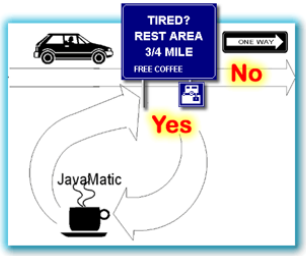
Introducing Loops

An old CS joke. Why did the Computer Science student starve to death in the shower? He was following the instructions on the bottle of shampoo. To really "get" the joke, you have to learn about **iteration**, a Computer Science term that means **repeating** a set of actions. Iteration is also called **repetition** or **looping**. The statements that are used in iteration are called **loops**. Let's start by comparing iteration to the `if` statement.

Both iteration and selection are **flow-of-control** statements; they control **which** code is executed inside your program.

- Like the `if` statement, iteration is based upon evaluating a *Boolean*—`true`/`false`—condition, and then performing a set of actions if the test is `true`, and skipping them if it is `false`.
- Both loops and `if` statements have a **condition part**, (the test), and a **body part**, (the actions that are taken).





Selection works like the illustration on the left. Driving down a highway, you come to a rest stop pull off. When you leave, you rejoin the highway further down the road. Once you rejoin the highway, **you have no opportunity to go back**, and revisit the rest stop again. Those who bypass the turnoff, skip the rest stop altogether.

A loop looks similar, **but it not the same**. The illustration on the right shows that there is still a test, but, after you've had your break, the exit road "**loops back**" (hence the name), and you rejoin the highway where you initially left it. If you like, you can choose to enter the rest stop once again, even though the highway is one-way. In this sense, a loop works a little like a cloverleaf interchange.