Conditional Control Structures

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The if Statement

- The if statement is a conditional control structure, also called a decision structure, which executes a set of statements when a condition is true. Conditional control structures are used to change program flow. The if statement takes the form:

  ```
  if(<condition){
      <statements>
  }
  ```

The if Statement

- The condition of an if statement is a boolean expression, which evaluates to either true or false. Relational operators can be used to form boolean expression.

    ==, <, <=, >, >=, !=

The if-else Statement

- The if statement can include an optional else clase that is executed when the if conditon evaluates to false. The if-else statement takes the following form:

```
if (<condition>){
    <statements>
} else {
     <statements>
}
```

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Nested Statements

- An if-else statement can contain another if-else or if statement. Statement placed within the same type of statememts are called nested.

The if-else if Statement

- The if-else if statement is used to decide among three or more actions and take the form:

```
if (<condition>){

    <statements>

} else if (<condition>){

    <statements>

} else {

    <statements>

}
```

The switch Statement

- The switch statement is a conditional control structure that uses the result of an expression to determine which statements to execute. The switch statement takes the form:

```
switch (<expression>){
    case x:
        <statements>
        break;
    …
    default:
        <statements>
}
```

Generating Random Number

- Generating a series of random numbers is one of those common tasks that crops up from time to time. In Java, it can be achieved simply by using the java.util.Random class.

Generating Random Number

- nextBoolean()
- nextDouble()
- nextFloat()
- nextInt()
- nextLong()

Compound Boolean Expressions

- Conditions with complex criteria are formed using the && and || operators.

- How a compound boolean expression evaluates with && and || operators can be shown with truth tables.

The Math Class

- Java includes the Math class in the java.lang package for performing math functions.

  abs

  pow

  sqrt

  floor

  ceil

  sin

  cos

  tan

  …