if Statements with Natural Language

An if Statement allows your robot to make a decision. When your robot reaches an if Statment in the program, it evaluates the condition contained between the parenthesis. If the condition is true, any commands between the braces are run. If the condition is false, those same commands are ignored.

Pseudocode of an if Statment:

```
if(condition)
{
   // true-commands
}
```

(condition)
Either **true** or **false**

(true) commands
Commands placed here will run if the (condition) is **true**.

Example program containing two if Statements:

```
task main()
{
 while(true)
 {
   if(SensorValue(bumper) == 0)
   {
    startMotor(port3, 63);
   }

   if(SensorValue(bumper) == 1)
   {
    stopMotor(port3);
   }
 }
}
```

(condition)
true if the sensor is **unpressed; false** otherwise

(true) commands
Commands here run if the (condition) is **true**.

(condition)
true if the sensor is **pressed; false** otherwise

(true) commands
Commands here run if the (condition) is **true**.

This program uses a Bumper Switch and two if Statements to control when the port3 motor moves. The first if Statement sets the motor to half power forward if the Bumper Switch has not been pressed, while the second turns the motor off if it has been pressed. Continually repeating these two behaviors within the while loop causes the motor to spin forward while the Bumper Switch is released, and to remain stopped for as long as it is pressed.

if-else Statements with Natural Language

The if-else Statement is an expansion of the basic if Statement. The "if" section still checks the condition and runs the appropriate commands when it evaluates to true, but using the "else" allows for specific code to be run only when the condition is false.

Pseudocode of an if-else Statment:

```
if(condition)
{
  // true-commands
}
else
{
  // false-commands
}
```

(condition)
Either **true** or **false**.

(true) commands
Commands placed here will run if the (condition) is **true**.

(false) commands
Commands placed here will run if the (condition) is **false**.

Example program containing an if-else Statement:

```
task main()
{
 while(true)
 {
   if(SensorValue(sonarSensor)>25)
   {
    startMotor(port3, 63);
   }

   else
   {
    stopMotor(port3);
   }
 }
}
```

(condition)
true if the sensor reads over 25; **false** otherwise

(true) commands
Commands here run if the (condition) is **true**.

(false) commands
Commands here run if the (condition) is **false**.

This if-else Statement tells the robot to run port3 at half power if the nearest object the Ultrasonic Rangefinder detects is more than 25 centimeters away. If the Ultrasonic Rangefinder detects an object closer than 25 centimeters, then the "else" portion of the code will be run and the motor on port3 will stop moving. The outer `while(true)` loop makes the if-else statement repeat forever.

Embedded if/if-else Statements
with Natural Language

Sometimes, especially with more complex tasks, your robot will have to make multiple consecutive decisions before performing a behavior. This can be accomplished by embedding, or placing, if Statments within other if Statements.

Pseudocode of an embedded if Statment:

```
if(condition)
{
  if(condition)
  {
    // true-commands
  }
  else
  {
    // false-commands
  }
}
```

(condition)
Either **true** or **false**

(true) commands
Commands placed here will run if the (condition) is **true**.

(false) commands
Commands placed here will run if the (condition) is **false**.