**Making Decisions**

In Java there are two types of decisions you can make: one time decisions called conditionals and repetitive decisions called loops. The first thing to learn is the syntax of each.

|  |  |
| --- | --- |
| **Conditionals**:  if (condition) {  // do this }  or  if (condition) {  // do this } else {  // do that } | **Loop**:  while (condition) {  // repeat until condition is false } |

For example, what does the following code do:

|  |  |
| --- | --- |
| if (!Motor.A.isStopped()) {  Sound.playTone(440, 600);  Sound.pause(1000);  LCD.drawString(“Warning”, 1, 1); }  *This code will play one sound and the text “Warning” once but only if motor A happens to be running.* | while (!Motor.A.isStopped()) {  Sound.playTone(440, 600);  Sound.pause(1000);  LCD.drawString(“Warning”,1 ,1); }  *This code will play a sound and the text “Warning” repeatedly as long as motor A is running.* |

**Tasks A**

1. Write code that makes a sound if the touch sensor is pressed

TouchSensor touch = **new** TouchSensor(SensorPort.*S1*);

**if** (touch.isPressed())

{

// play a sound

Sound.*playTone*(440, 1000);

}

1. Write code that displays “BLACK” if a light sensor shows low intensity, otherwise display “WHITE”

LightSensor light = **new** LightSensor(SensorPort.*S1*);

**if** (light.readValue() < 50)

{

LCD.*drawString*("BLACK", 1, 1);

}

**else**

{

LCD.*drawString*("WHITE", 1, 1);

}

1. Write code that makes a sound as long as the touch sensor is pressed

TouchSensor touch = **new** TouchSensor(SensorPort.*S1*);

while (touch.isPressed())

{

Sound.playTone(440, 1000);

Sound.pause(1000);

}

1. Write code that shows the intensity of the light sensor as long as the touch sensor is not pressed

TouchSensor touch = **new** TouchSensor(SensorPort.*S1*);

LightSensor light = **new** LightSensor(SensorPort.*S2*);

**while** (!touch.isPressed())

{

LCD.*drawString*("Light: " + light.readValue(), 1, 1);

}

1. Write code that displays “BLACK” if the light intensity is low and “WHITE” if the light intensity is high, and continues to do so as long as the touch sensor is **not** pressed.

TouchSensor touch = **new** TouchSensor(SensorPort.*S1*);

LightSensor light = **new** LightSensor(SensorPort.*S2*);

**while** (!touch.isPressed())

{

**if** (light.readValue() < 50)

{

LCD.*drawString*("BLACK", 1, 1);

}

**else**

{

LCD.*drawString*("WHITE", 1, 1);

}

}

As this example shows, “if” and “while” statements can be nested inside eachother as many times as desired. You could also have while statement inside while loops, or if statements inside if statements, and so on. Notice the ! (i.e. not) in the test of the while loop.

1. Write a program that sounds a “C” for 1 second but repeats it 100 times

*We need to learn how to count first … we will pick that up after the exam*