App inventor components & blocks

Components

- Each component can have methods, events, and properties.

- Most properties can be changed by apps — these properties have blocks you can use to get and set the values.

- Some properties can't be changed by apps — these only have blocks you can use to get the values, not set them.

Components

- Basic components
- Media components
- Animation components
- Social components
- Sensor components
- Screen Arrangement components
- Other components

Event Handler

- App Inventor programs describe how the phone should respond to certain events: a button has been pressed, the phone is being shaked, the user is dragging her finger over a canvas, etc.

- This is specified by **event handler** blocks, which used the word *when*. E.g., when Button1.Click and when AccelerometerSensor1.Shaking in HelloPurr.

Event Handler

Event Handler

- When an event occurs on a phone, the corresponding event handler is said to **fire**, which means it is executed.

Command Expression

- When an event handler fires, it executes a sequence of commands in its **body**.

- A **command** is a block that specifies an action to be performed on the phone (e.g., playing sounds). Most command blocks are purple or blue in color.

Event Handler

```
call  Sound1.Play

call  Sound1.Vibrate    millisecs    number  500

set   Label1.BackgroundColor   to   color  Green

set   Label1.Text   to   text  CS117 rocks!
```
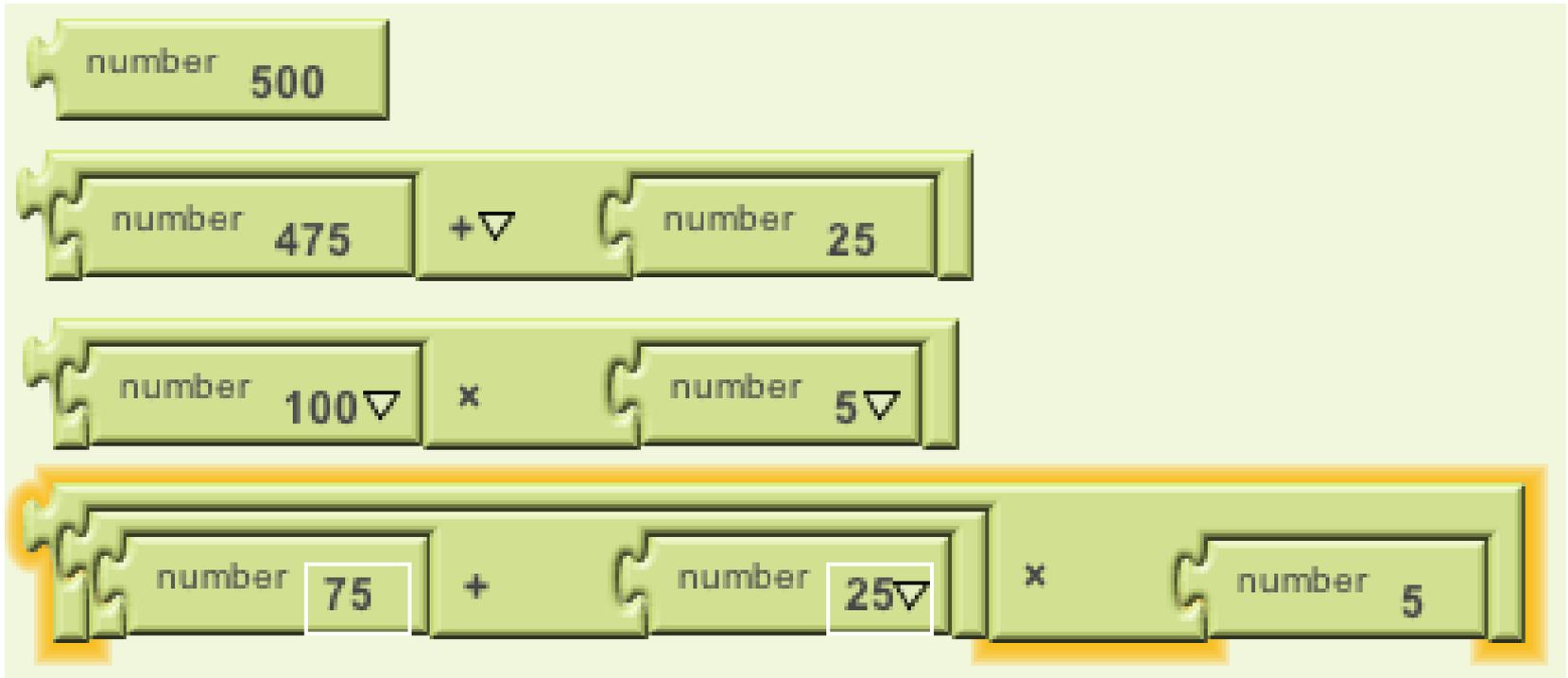
Command Expression

- Some commands require one or more **input values** (also known as **parameters** or **arguments**) to completely specify their action.

- The need for input values is shown by sockets on the right edge of the command.

- These sockets can be filled with **expressions** which are blocks that denote a value.

- Expression blocks have **leftward-pointing plugs** that transmit the value to the socket. Larger expressions can be built out of simpler ones by horizontal composition
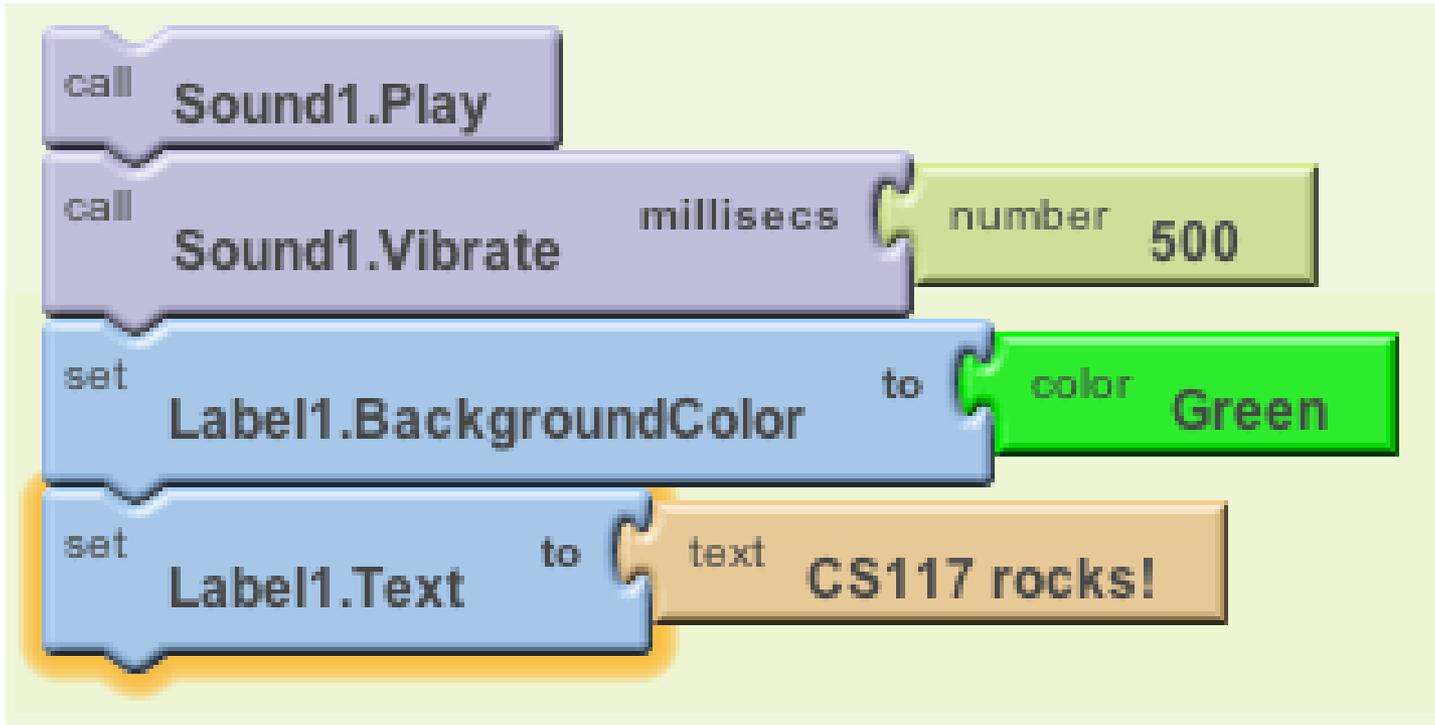
Command Expression

Command Expression

- Commands are shaped so that they naturally compose vertically into a **command stack**, which is just one big command built out of smaller ones. Here's a stack with four commands:

Command Expression

Control Flow

- When an event handler fires, you can imagine that it creates a karaoke-like **control dot** that flows through the command stack in its body.

- The control dot moves from the top of the stack to the bottom, and when it reaches a command, that command is **executed**

Control Flow

- The order of the commands, or the **control flow** is important when you make an app. You need to make sure which action should come first.
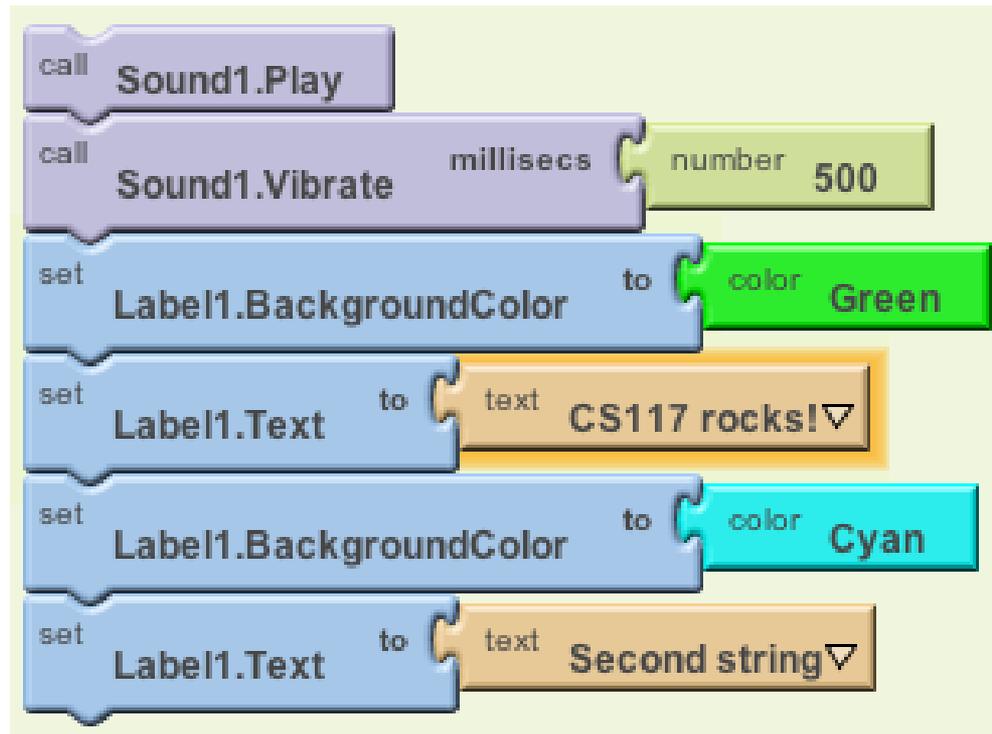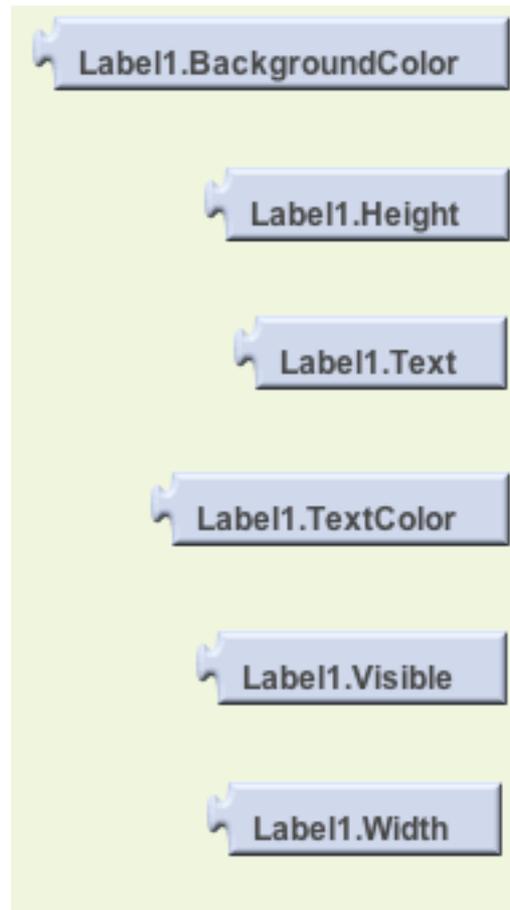
Manipulating component state

- Every component is characterized by various **properties**. What are some properties of a **Label** component?

- The current values of these properties describe the state of the component. You can specify the initial state of a component in the Properties pane of the Designer window.

- App Inventor programs can get and set most component properties via blocks. E.g., here are blocks for manipulating the state of **Label1**.
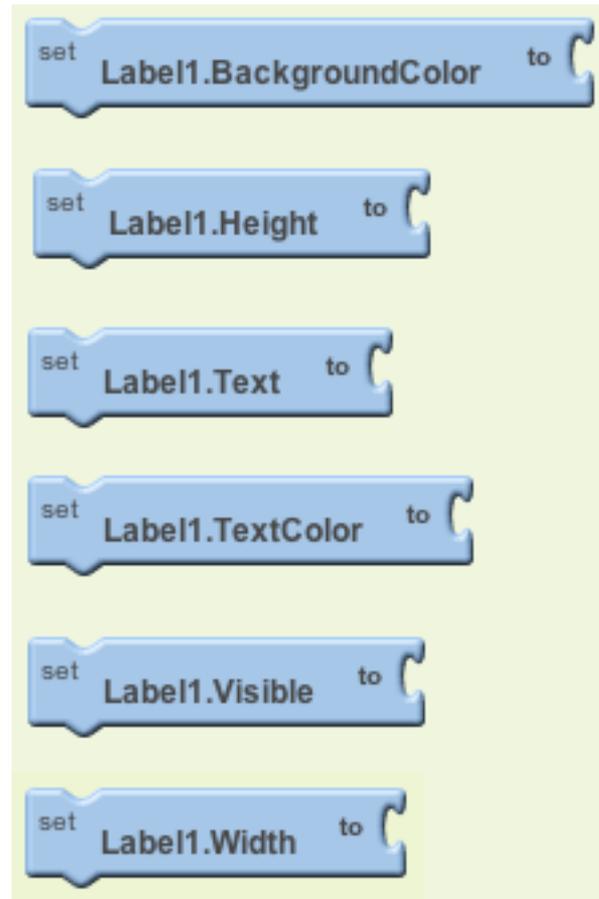
Getter Block

- **Getter Blocks:**

Setter Block

- **Setter Blocks:**

set Label1.BackgroundColor to

set Label1.Height to

set Label1.Text to

set Label1.TextColor to

set Label1.Visible to

set Label1.Width to

Manipulating component state

- Getter blocks are expressions that 'get' or contain the current value of the property. Setter blocks are commands that change the value associated with the property.

App Inventor Language Blocks

- Built-in blocks are available regardless of which components are in your project

- each component in your project has its own set of blocks specific to its <u>own events, methods, and properties</u>. This is an overview of all of the Built-In Blocks available in the Blocks Editor.

App Inventor Language Blocks

- Control blocks
- Logic blocks
- Math blocks
- Text blocks
- Lists blocks
- Colors blocks
- Variables blocks
- Procedures blocks

Built-in
- Control
- Logic
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