

Lesson 1: Introduction to Event-Driven Programming



Adapted from code.org curriculum

Objectives: You will be able too...



- ❧ Use Design Mode to user interface (UI) elements to a screen
- ❧ Create a simple even-driven program by creating user-interface elements with unique IDs and attaching event handlers to them
- ❧ Recognize debugging and responding to error messages as an important step in developing a program
- ❧ Debug simple issues related to event-driven programming

Getting Started



- ✎ Get out a piece of paper or your journal
- ✎ Draw a rectangle representing the screen of a mobile device
- ✎ Take one minute to sketch out what a screen in your favorite app looks like
- ✎ Now, make a quick list of everything on that screen that you can interact with as a user
- ✎ Finally, write down one action-and-reaction of the app: one thing you do, and how the app responds

Possible “Events”



- ☞ clicking a button
 - ☞ swiping a screen
 - ☞ dragging your finger
 - ☞ tilting a phone
 - ☞ pressing a key, etc.
- ☞ Note: Modern apps are interactive because they can respond to this and other forms of user input (i.e., human-generated events)

Today...



- ❧ We may not understand all the technical details yet, but it seems clear that most applications we use respond to events of some kind.
- ❧ Whether we're clicking a button or pressing a key, the computer is sensing events that we generate in order to determine how the application should run.
- ❧ Today, we're going to start exploring how event-driven programming makes this possible.

Activity



- ☞ Today we will be in Code Studio
- ☞ We will focus on:
 - ☞ The Run-Test-Debug cycle as part of programming; as you get better you learn to write a small amount of code, verify that it works and then move on

Common Types of Errors:



- ❧ **Syntax Errors** are the kinds of problems that show errors in the console.
 - ❧ In the grand scheme of things syntax errors are easy problems to solve because the computer is telling you it can't understand something, you just have to find out what it is.
- ❧ **Logic Errors** can be much harder to solve because the computer doesn't report anything wrong at all.
 - ❧ The program just doesn't do what you think it should or want it to. Tracking down these kinds of errors is much harder, and requires some practice to get used to it.

Wrap-up: Share chaser games



- ☞ Today we were actually introduced to two tools that will help us build increasingly complex applications.
- ☞ Design Mode, and hopefully it was quickly apparent how powerful this tool is for creating visually appealing and intuitive user interfaces without cluttering up your code.
- ☞ `onEvent` which is the general command for all event-handling in App Lab.

Vocabulary:



- ☞ Callback function - a function specified as part of an event listener; it is written by the programmer but called by the system as the result of an event trigger.
- ☞ Event - An action that causes something to happen.
- ☞ Event-driven program - a program designed to run blocks of code or functions in response to specified events (e.g. a mouse click)

Vocabulary:



- ❧ Event handling - an overarching term for the coding tasks involved in making a program respond to events by triggering functions.
- ❧ Event listener - a command that can be set up to trigger a function when a particular type of event occurs on a particular UI element.
- ❧ UI Elements - on-screen objects, like buttons, images, text boxes, pull down menus, screens and so on.
- ❧ User Interface - The visual elements of an program through which a user controls or communications the application. Often abbreviated UI.