Previously, runtime error messages generated by the app on a device appeared in a pop-up window in the blocks editor that provided little information about the offending block(s).

My improved errors-on-blocks feature puts an error message directly on the block responsible for the runtime error. Knowing the source of the error saves the programmer valuable time. Once the error is fixed, the message is removed.

Users can see a running total of how many times an error has occurred. With Johanna’s implementation, errors that fire rapidly resulted in the device crashing due to the additional block information being sent to the editor. This major issue was resolved.

App Inventor also has a live-development feature that allows the user to test an app while building it in the blocks editor on a web browser. The blocks editor converts the blocks into code that can be executed on an Android device. When the device receives the code, it runs it and sends information about the execution back to the editor. This information needs to be formatted in a manner meaningful to the programmer, which is where my work comes in.

The visual design of App Inventor does help users assemble applications, but it does not help users understand the runtime behavior of their program or troubleshoot programs that do not work. By expanding on work done by Johanna Okerlund ‘14, I have implemented several features that will help users in these two areas. I have enhanced her (1) errors on blocks and (2) Watch features, as well as improved the (3) displayed notation for App Inventor values. All of these features will assist the user in understanding how programs work and in identifying, locating, and fixing errors.

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Sample program in the Blocks Editor

App Inventor’s existing Do It feature shows the value of a block in a bubble connected to the block. Johanna Okerlund added Watch feature that prints in a bubble all the values of a block during program execution. Before, Do It and Watch, as well as Comments all used the same bubble. I improved this interface by giving each function its own bubble and adding buttons specific to each bubble.

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