

Meggy Jr Simple and AVR

Last time

- Compiling and running MeggyJava examples as Java only

Today

- Cool MiniSVG examples
- Meggy Jr Simple library
- avr-gcc tool chain and provided Makefile
- ATmega328p chip
- avr assembly

Meggy Jr Simple Library

Key concepts

- LED screen
- Auxiliary LEDs
- Buttons
- Speaker

Example usage in exercise-MeggyJrSimple.cpp

Why multiple libraries?

- Meggy Jr Simple lies on top of Meggy Jr library
- We added some functionality to the Meggy Jr Simple library

avr-gcc tool chain

See

<http://www.cs.colostate.edu/~cs453/yr2011/MeggyJavaInfo/building-for-meggy.html>

ATmega328p

Terminology

- Atmel, a company
- AVR, 8-bit RISC instruction set architecture for a microcontroller
- ATmega328p, AT for Atmel, MegaAVR microcontroller, 32kb flash, 8-bit AVR, p=low power
- Arduino, programming environment for various boards with some AVR chips

Uses

- Very popular for hobbyists,
<http://hacknmod.com/hack/top-40-arduino-projects-of-the-web/>
- Industry: Whirlpool appliances, electric car charger, medical products, ...

Why Assembly?

For some embedded processors, still need to do some assembly programming.

Low-level concepts needed when implementing device drivers.

Hexdump debugging might be something you get to experience.

We want to see how the run-time stack works in gory detail!

AVR Instruction Set Architecture, or Assembly

What is an ISA?

Loads, Stores, and Registers

Pushes and Pops

Learning AVR with avr-gcc

Probable AVR instructions

Calling convention

Allocating space in the heap

Next Time

Tuesday

- Lexer and Parser generation tools

Assignments

- Quiz 2 due tonight at 10pm
- PA2 due Wednesday the 16th at 11:59pm