

Android Studio
Java Conversion
GA FTC Kickoff 2015-2016

JP

Max

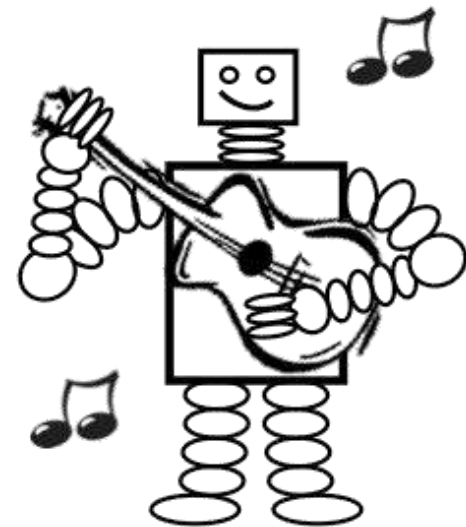
Kate

Jordan

William

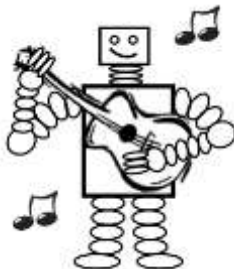
Rockin' Robots #5940

<http://rockinrobots.org>



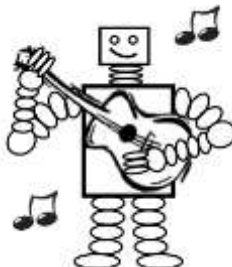
Agenda

- Preparation for working in Android Studio
- Clarifications on supported items
- Setting up an initial test connection
- Converting from Robot C
 - Example of our robot from last year
- Question & Answer



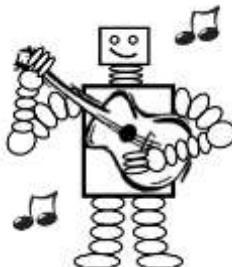
Setting Up

- Assume you have the project
 - FTC code on GitHub
 - https://github.com/ftctechnh/ftc_app
- Using the training doc
 - Under doc/tutorial
- Open the project in Android Studio
 - May prompt you to download API 19 (doc says 21)
 - Shows up under API Manager
 - The API coded needed for the 4.4 OS target



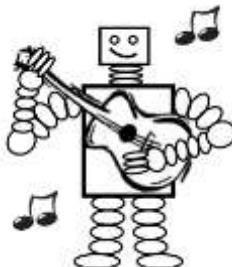
Clarifications

- Each port on the Legacy Module gets ONE device
 - CANNOT daisy-chain controllers on one port
 - One motor or servo controller per port
 - Or one sensor per port
 - You may need 2 Legacy Modules
- NXT motors are NOT supported
 - Servos have to be used instead



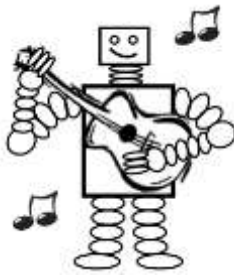
Initial Test

- Phones paired for Wi-Fi Direct
- Robot controller connected to hardware
 - Run robot restart
 - Setup robot controller hardware
- Driver station
 - Select Op Mode “NullOP”
 - VERY useful for connection diagnosis
 - No dependence on hardware configuration
- Driver display will show clock running



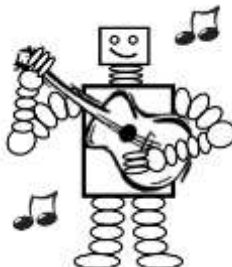
Customizing Your Solution

- Under FtcRobotController
 - -> Java
 - -> com.qualcomm.ftcrobotcontroller
 - -> opmodes
- FtcOpModeRegister
 - Registration of each usable robot program
 - Allows for test, autonomous, tele-op
 - Dynamic selection of programs to use
 - Multiple versions can be available at once
 - Be sure to keep NullOP for connectivity checks



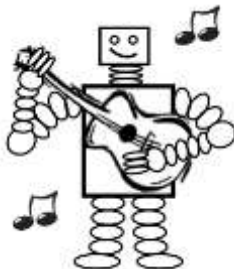
Build a New Op Mode

- Copy one of the sample files
 - Paste will allow you a chance to rename
 - Will change function name in the file
 - Will update all references
 - Need to ADD IT into the Op Mode register
- Now update the sample code
 - Insert functions for your specific robot

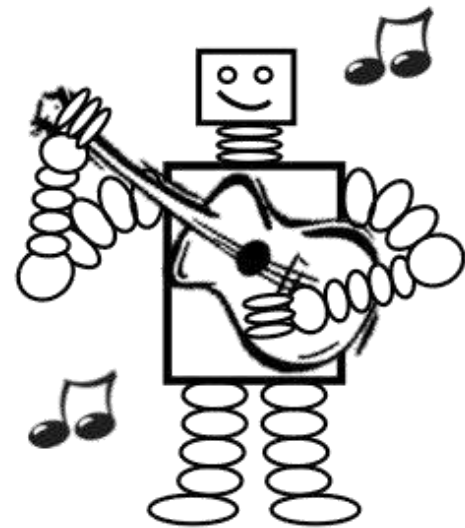


Example: DOM

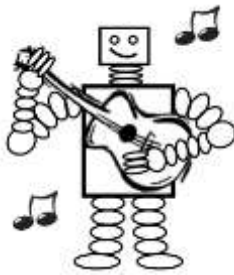
- DOM was our robot from last season
- Converted code from Robot C
 - #pragma to DcMotor and Servo
 - All power now type double and values under 1
 - NOTE: “stop” for CR servo is position ~0.55
 - #define to “final static <type>”
 - Use of boolean type
 - Object code model
 - Functions from variables
 - Debugging help with telemetry



Question & Answer

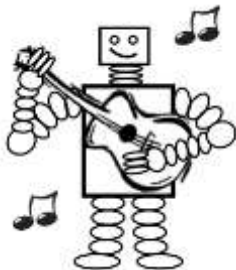


Following are Setup Slides



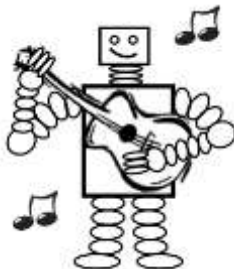
Initial Steps

- Downloading Android Studio & APIs
- Setting up a copy of the sample code
 - Create your own top level project name
- Preparing the phones (driver and robot)
 - Removing SIM
 - Developer mode (for robot at least)
 - Rename for Wi-Fi Direct



Robot Controller

- Download your version of sample code
 - First try with no changes
- Connect to your robot
 - Any configuration you have
- Configuration will not run
 - Diagnosing connection first
- Build and activate a configuration file
 - Manual entry of connected hardware



Making the Link

- Driver station (phone)
 - Install FTC Driver Station app from Play
 - OTG connection, USB hub, dual controllers
 - Pairing with robot controller
 - Activating controllers 1 & 2
 - Be sure “X” is set on the back of each
 - Activate with start + A or B

