DCC-EX Build

I: Choose Hardware

A. Select a microcontroller...

Arduino Uno R3: $26, Amazon
ELEGOO Uno R3: $15, Amazon
Ardunio Mega 2560: $50, Amazon
ELEGOO Mega 2560: $23, Amazon

B. ...and a motor shield:

Arduino Rev3: $27, Amazon
KOOBOOK (Deek Robot): $15 Amazon
DCC-EX EX-MotorShield 8874: $44

II: Software Configuration and Installation

A. Download the installation program from the DCC-EX website: DCC-EX.com...

B. Click "Automated: **EX-Installer**"

C. Next, click **"Automated Installer"**

D. Choose where you want the file saved, We'll use the 'DOWNLOADS' directory.

NOTE: Make sure your computer has Java installed, and your hardware is connected!

E. The EX-Installer Welcome screen outlines the installation proceedure.
PLEASE READ IT!

F. Each screen that follows contains an explanation of what is happening. On the instllation screen, choose " **EX-Command Station**"

G. After the configuration is complete, the Installer will upload the code to your hardware.

III: System Test with JMRI

A. Open JMRI PanelPro

B. On first try you will probably get the "preferences" screen

C. In preferences select: DCC++ as the command station.

D. Also, select the "device"
In Linux this will probably be: "ttyACM0"
and save...

E. After PanelPro starts.
Select-->Tools->Servers->Start WiThrottle Sever.

F. Assuming WiFi is available, Notice "listening on: 192.168.1.3:12090". This is is the "URL" of the computer running JMRI and the "port". These will be needed by Android EngineDriver or Apple WiThrottle.

G. Open EngineDriver and enter the "URL" and "port"

H. Acquire a locomotive and hit the horn! Enjoy.

IV: Usefull DCC-EX commands

A. Command Syntax

```
+---- all commands start with "<"
|+------ command code
|| +---------+- 0 to 'n' parameters
vv vv vv vv     v--- all commands end with ">"
<C P1 P2 P3 ...  >
```

White-space is optional after the opening "<", but mandatory between parameters. No white-space before ">" is OK too. If in doubt include white-space for all parameters after the "Command" code.

B. Commands

See DCCEX Command Summary for a detailed list of all DCC-EX commands. Here are a few that you might need:

<1> all track power ON

<0> all track power OFF

<= A MAIN> set track A to DCC (default)

<= A DC [nnnn]> set track A to DC controlled by loco 'nnnn'

<= B PROG> make track B the progrmming track (default)