OWLBOARD JR

Assembly and programming

Kevin Pintong

The owlboard JR is based on the reference design and source code used in the 'DIY ChipKit board'. It is programmable

http://chipkit.net/diy-chipkit-board

Features:

- Uses 32-bit PIC microcontroller PIC32MX250F128B in SPDIP-28 package with preprogrammed bootloader.
- USB connector built into PCB for easy programmability (Detected as a stk500 programmer.
- Increased PCB thickness for USB connector (2.0mm)
- 19 GPIO pins

In order to build the OwlBoard Jr, you will be using soldering equipment, solder, and flux. Soldering equipment will be extremely hot. Solder and flux may contain hazardous substances such as lead.

It is advised that the participant:

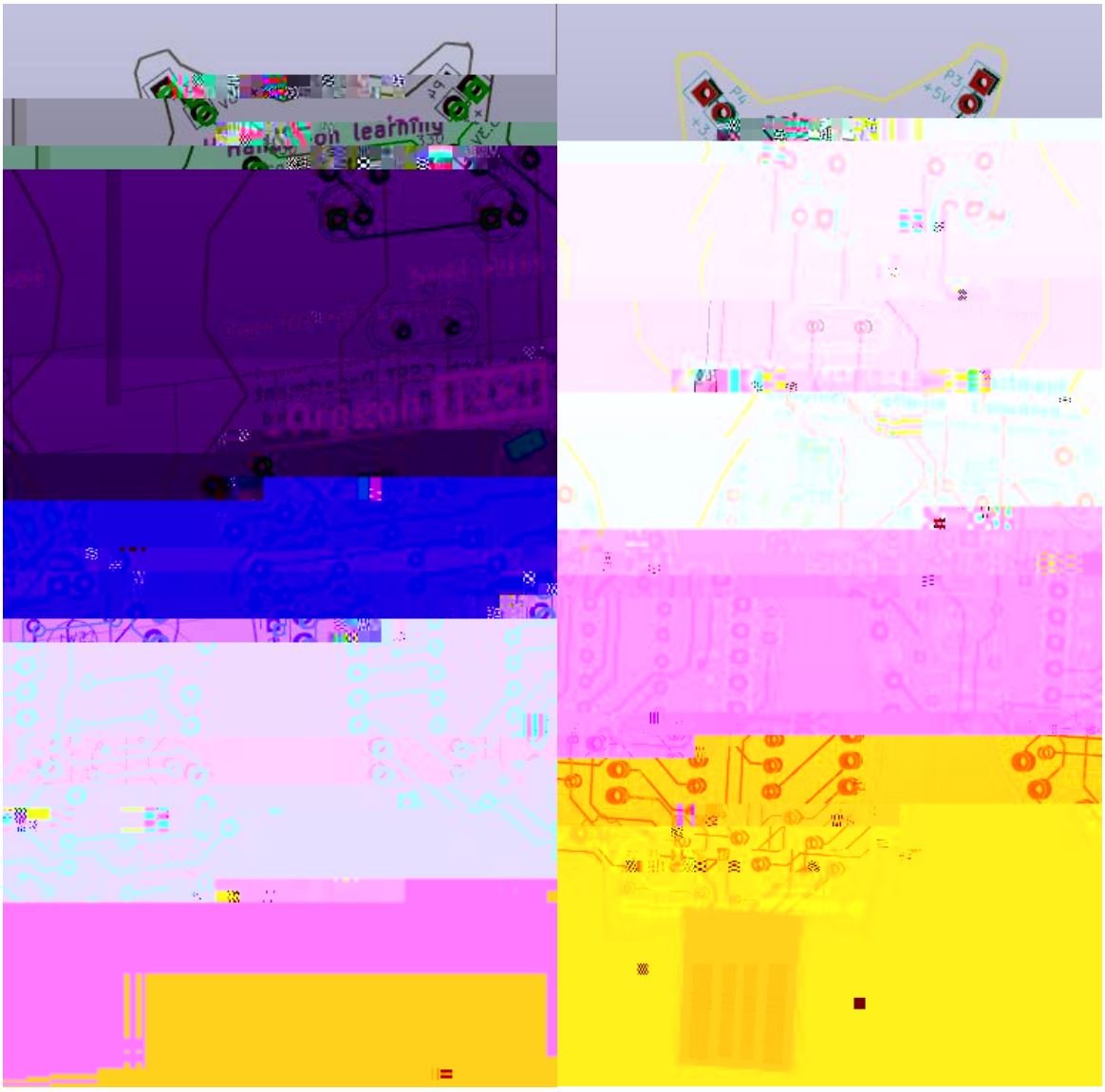
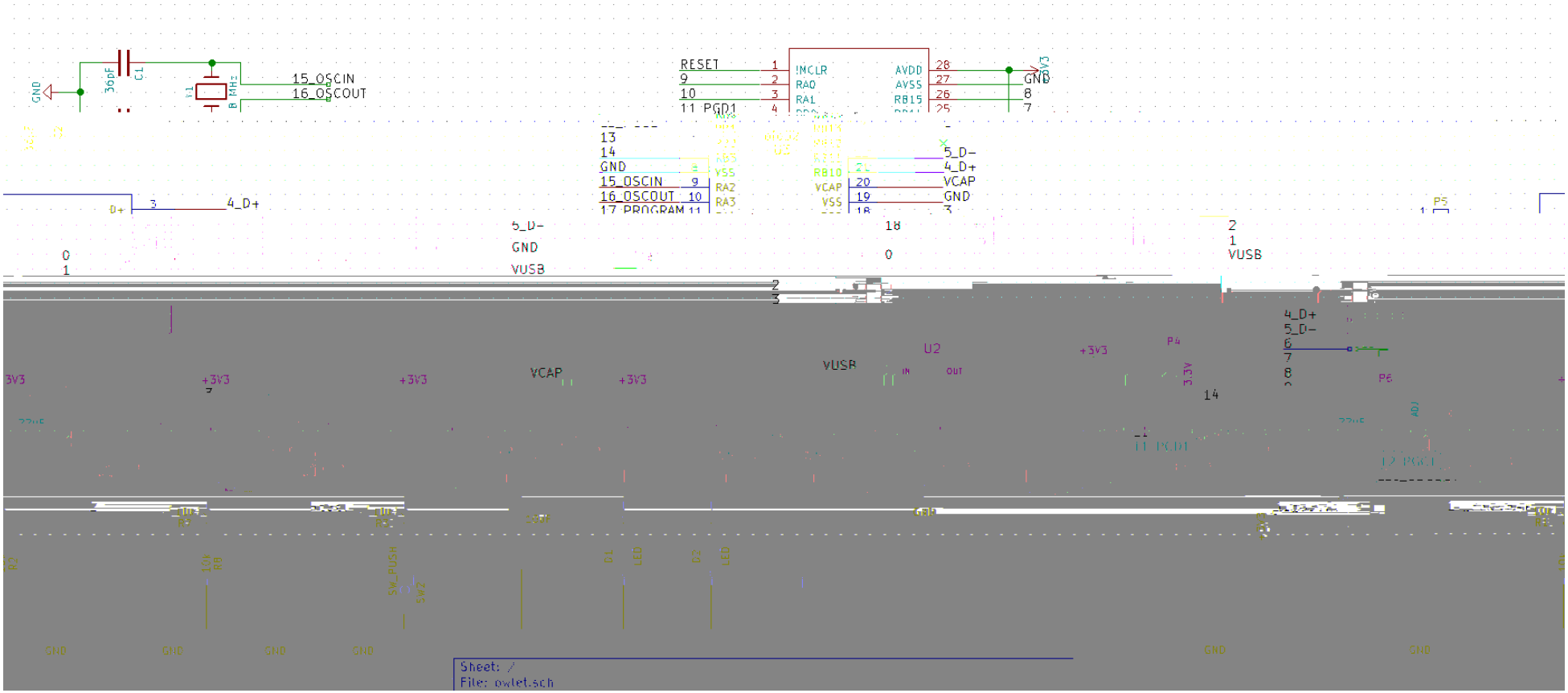


Figure 1 Front & back 3D view


15_OSCIN
16_OSCOUT
RESET
PGD1
5_D-
4_D+
VCAP
GND
VUSB
Sheet: /
File: owlet.sch

0

Table 1 Bill of Materials for OwlBoard Jr

Bill of Materials (BOM) for Owlboard Jr				
Line Item	Description	Footprint	Reference	Quantity
1	Button	through hole	SW1,SW2,SW3	3
2	Resistor 10k	through hole	R1,R2,R3,R4,R7,R8	6
3	Resistor 330	through hole	R5, R6	2
4	3mm or 5mm LED	through hole	D1,D2	2

Figure 2 OwlBoard Jr front and rear PCB

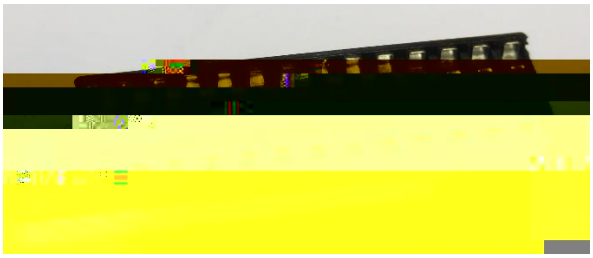


Figure 3 DIP 28 socket for microprocessor

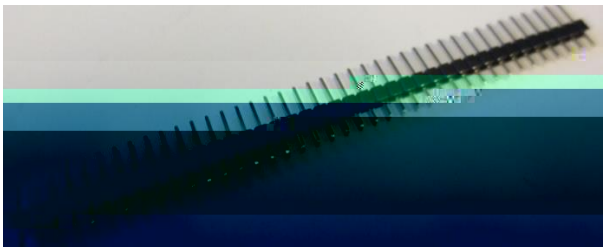


Figure 4 Breakaway 0.1" male headers

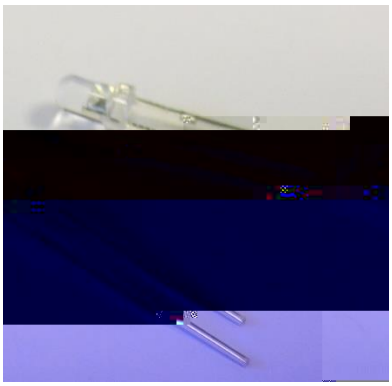


Figure 5 3mm LEDs

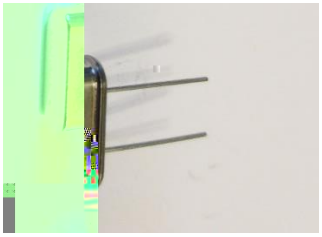


Figure 6 8 MHz crystal oscillator

Figure 7 push button

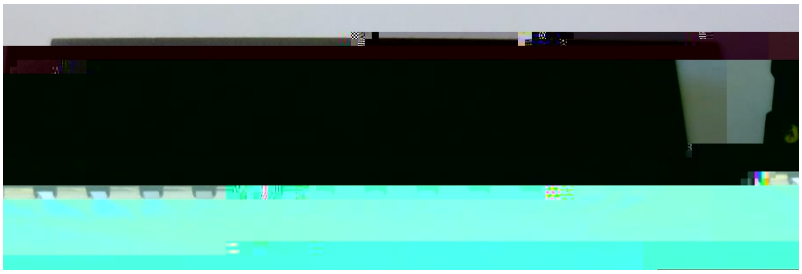


Figure 8 PIC32 MX250F128B in DIP-28 package

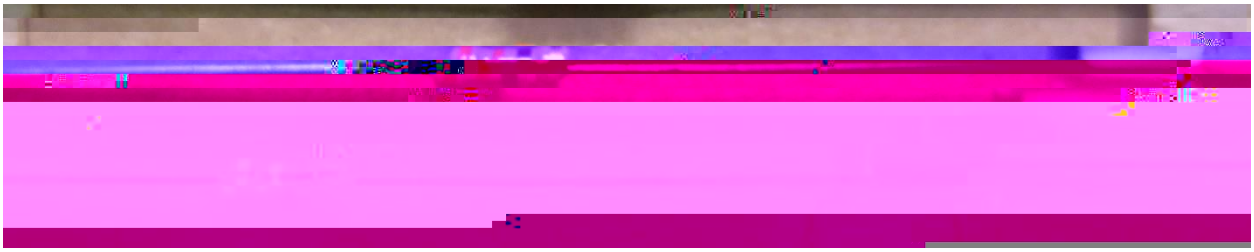


Figure 9 330 Ohm resistor

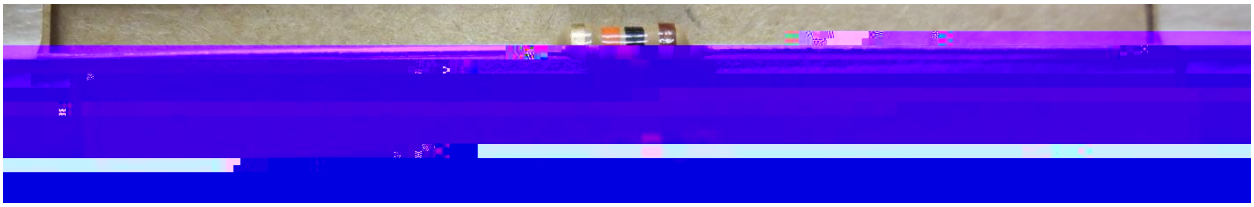


Figure 10 10k ohm resistor

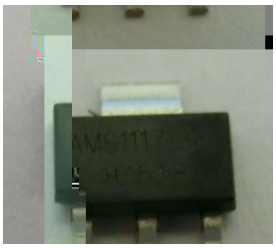


Figure 11 AMS1117 3.3V linear regulator

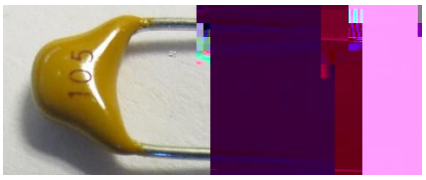


Figure 12 1uF tantalum capacitor

Figure 13 10uF tantalum capacitor

Resistors, capacitors, connectors, sockets on this design are non-polarized. You may insert them in any direction.

PIC32 microprocessor must be oriented as shown in Figure 17 Fully assembled Owlboard Jr. The yellow dot must be oriented towards D1.

Buttons will only fit in one direction. Do not attempt to force0 0 1 36 70k rds D1.

Figure 17 Fully assembled Owlboard Jr.

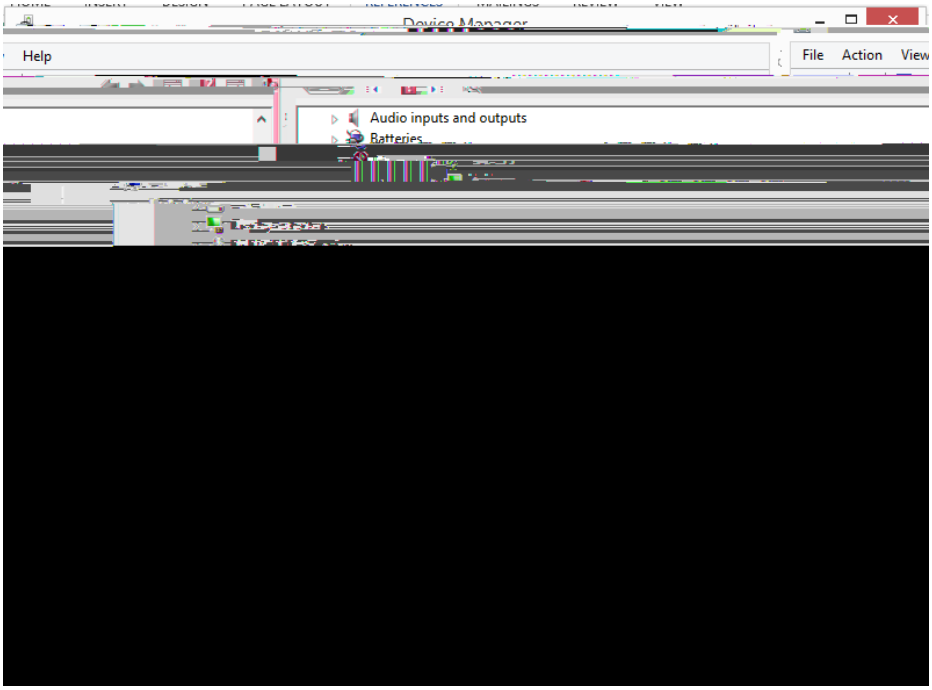


Figure 18 Device Manager Stk500v2

1. Plug your board into the computer while holding down the button marked ‘SW’. Let go after the board is inserted. The SW button is the program button. On this revision of the board, the program button and ‘SW’ buttons were swapped.
2. The right LED should rapidly start blinking indicating that it is in bootloader mode.
3. When you wish to reprogram the board, hold the ‘SW’ button down before inserting.
4. If you do not hold the button down, your code will run on the board.

Navigate to the extracted folder and launch MPIDE.

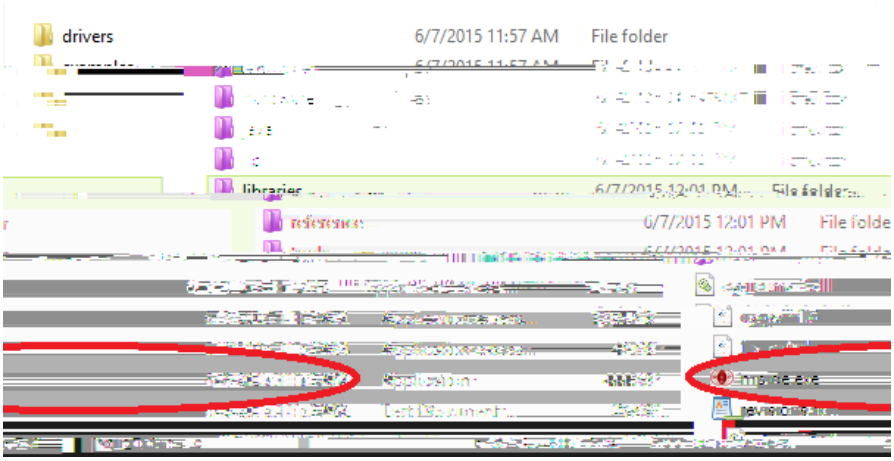


Figure 19 Launch MPIDE

Verify that the DP32 board is selected. This board most closely matches the owlBoard Jr.

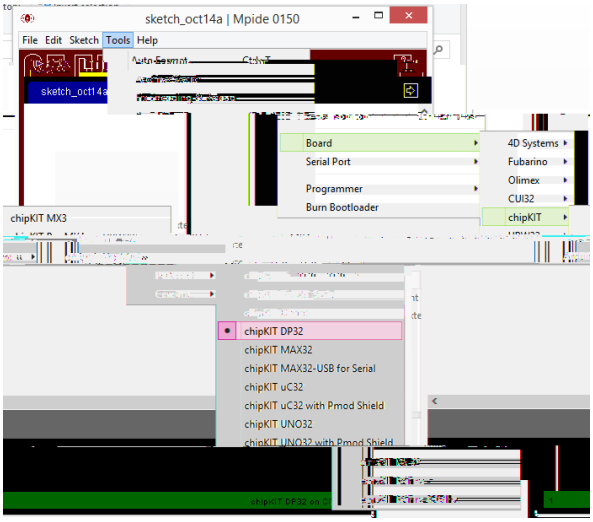
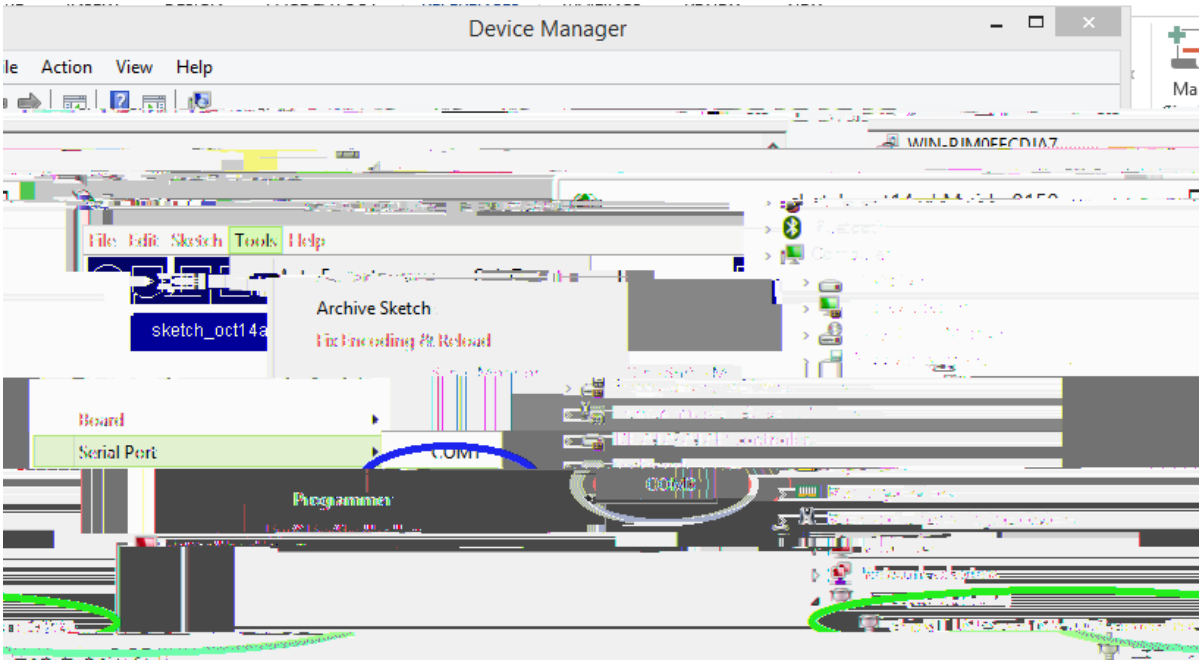


Figure 20 Verify DP32 is selected

Verify that the correct COM port is selected.



Open the Blink Example.

Figure 21

Modify the delay to change the btodify th0.416 RG -0.003 Tc[21)]TJETQ0.00000912 0 612 792 reW*nW*nW*nW*nW*nW*nW*nW*nW

This is a preliminary draft copy.

Please send updates, comments, and suggestions to:kevin.pintong@oit.edu

Thank you for participating in the Oregon Tech owlBoard Jr. outreach project.

This project is sponsored by Microchip and the Oregon Tech Committee on College Teaching.