uDuino

Low Cost Arduino Compatible AVR Development Board

Design Files: https://github.com/intajay/uDuino

Idea:-

Arduino boards are great for prototyping. However they get rather expensive when you have multiple concurrent projects or need lots of controller boards for a larger project.

So We decided to build a Simple and cheap version of Arduino Uno. This gets you much closer to the device, letting you better understand the platform. As a benefit, it's also a lot cheaper than a full board-bearing kit.

You can program it using arduino language (Arduino IDE) or direct with C (Atmel® Studio 7).
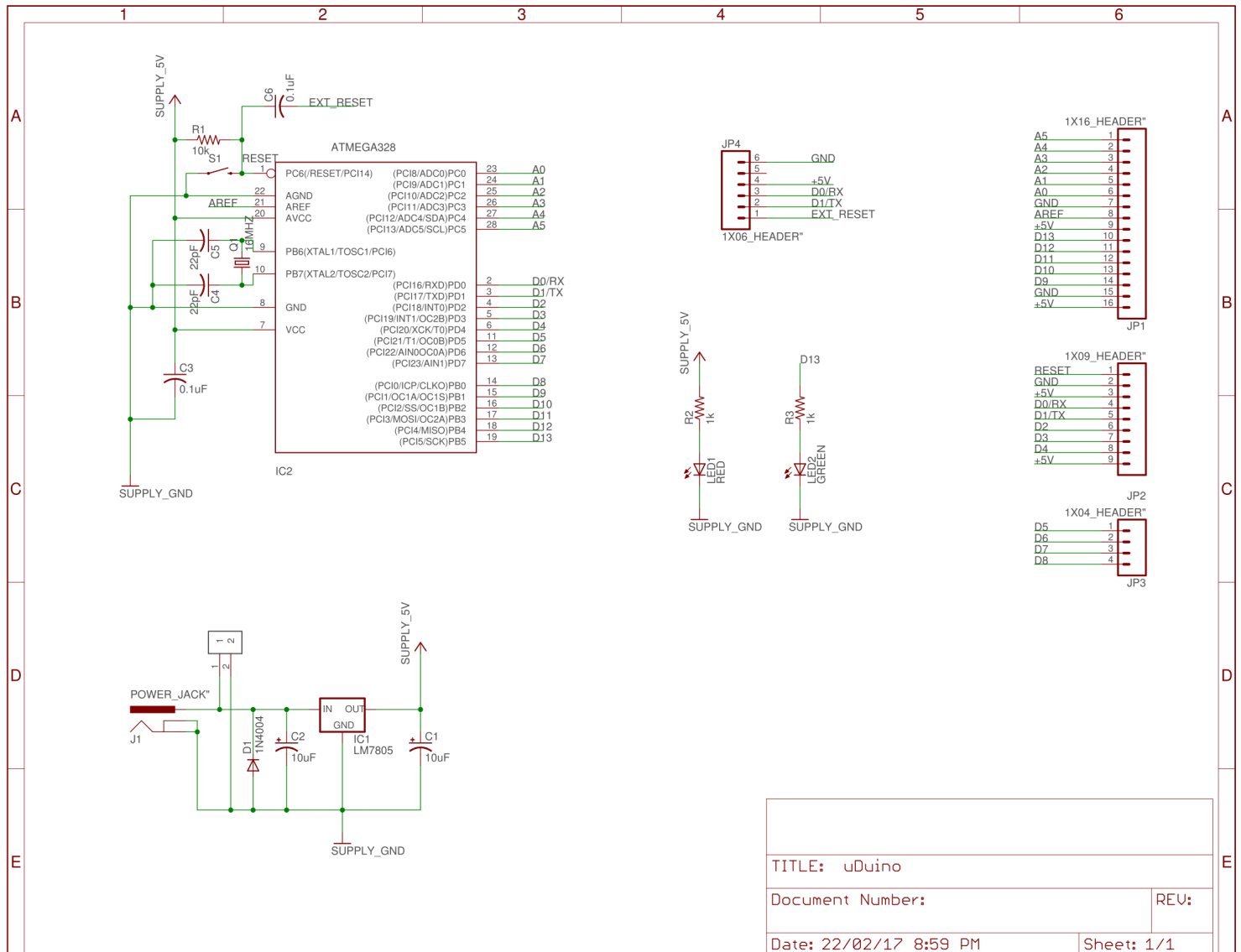
Components:-

1. Atmega328 AVR Microcontroller
2. 16 MHZ clock crystal
3. 2 x 22 pF capacitors
4. 7805 Voltage regulator
5. 2 x 10 uF capacitor
6. Resistors
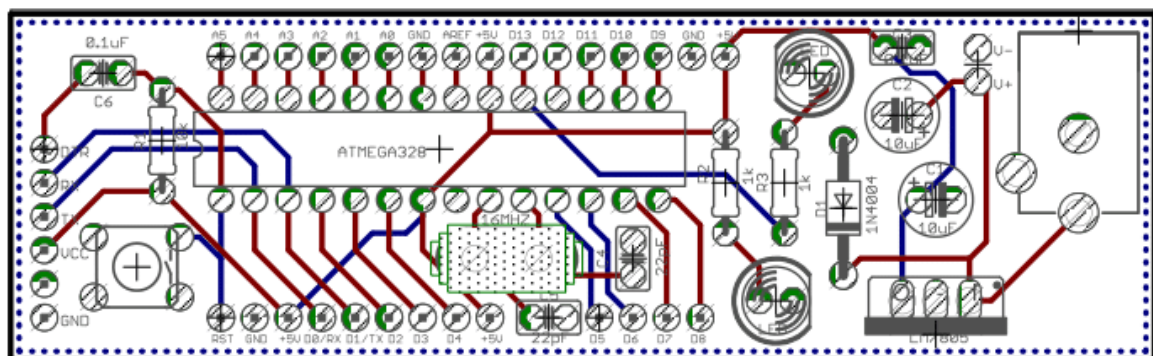7. FTDI Programmer

Software used:-

1. Eagle CAD

2. KiCAD
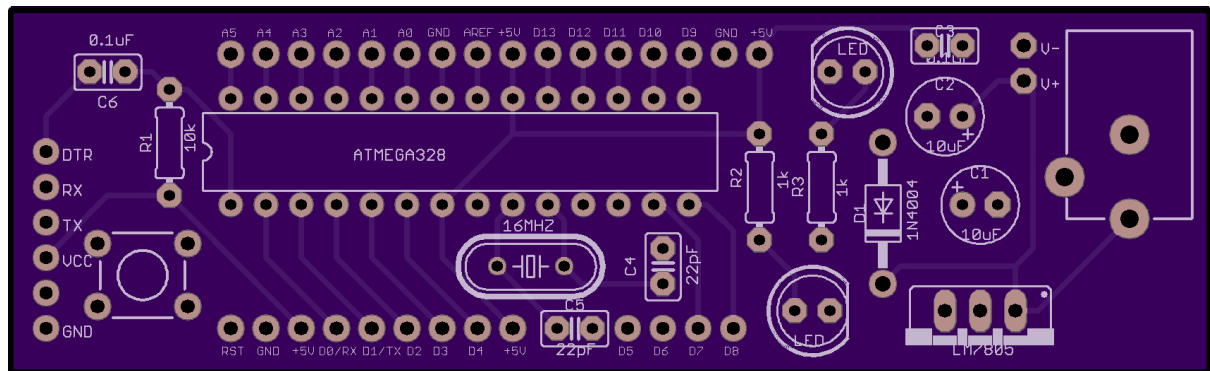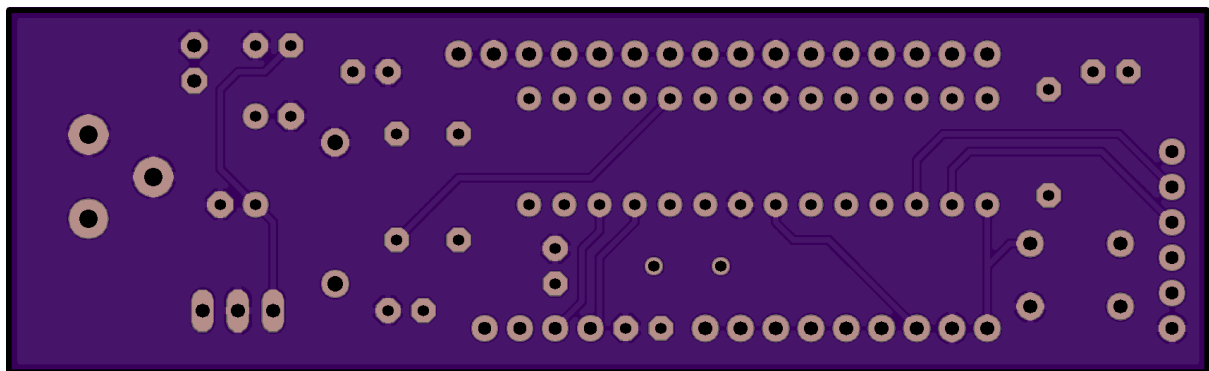
3. Atmel® Studio 7

Demo Video: https://youtu.be/P27suOuvgY4

Schematics:

	1	2	3	4	5	6

SUPPLY_5V

C6
0.1uF

EXT_RESET

R1
10k

S1

RESET

1X16_HEADER"

A5   1
A4   2
A3   3
A2   4
A1   5
A0   6
GND   7
AREF 8
+5V   9
D13   10
D12   11
D11   12
D10   13
D9   14
GND   15
+5V   16

JP1

ATMEGA328

PC6(/RESET/PCI14)
AGND
AREF
AVCC

(PCI8/ADC0)PC0   23   A0
(PCI9/ADC1)PC1   24   A1
(PCI10/ADC2)PC2   25   A2
(PCI11/ADC3)PC3   26   A3
(PCI12/ADC4/SDA)PC4 27 A4
(PCI13/ADC5/SCL)PC5 28 A5

22
21
20

PB6(XTAL1/TOSC1/PCI6)   9
PB7(XTAL2/TOSC2/PCI7)   10

16MHZ
Q1

22pF C5

22pF C4

GND   8
VCC   7

C3
0.1uF

(PCI16/RXD)PD0   2   D0/RX
(PCI17/TXD)PD1   3   D1/TX
(PCI18/INT0)PD2   4   D2
(PCI19/INT1/OC2B)PD3 5 D3
(PCI20/XCK/T0)PD4 6   D4
(PCI21/T1/OC0B)PD5 11   D5
(PCI22/AIN0OC0A)PD6 12 D6
(PCI23/AIN1)PD7   13   D7

(PCI0/ICP/CLKO)PB0 14   D8
(PCI1/OC1A/OC1S)PB1 15 D9
(PCI2/SS/OC1B)PB2 16   D10
(PCI3/MOSI/OC2A)PB3 17 D11
(PCI4/MISO)PB4   18   D12
(PCI5/SCK)PB5   19   D13

IC2

SUPPLY_GND

JP4
6   GND
5
4   +5V
3   D0/RX
2   D1/TX
1   EXT_RESET

1X06_HEADER"

SUPPLY_5V

R2
1k

LED1
RED

SUPPLY_GND

D13

R3
1k

LED2
GREEN

SUPPLY_GND

1X09_HEADER"

RESET 1
GND   2
+5V   3
D0/RX 4
D1/TX 5
D2   6
D3   7
D4   8
+5V   9

JP2

1X04_HEADER"

D5   1
D6   2
D7   3
D8   4

JP3

POWER_JACK"

J1

D1
1N4004

C2
10uF

IC1
LM7805

IN   OUT
GND

SUPPLY_5V

C1
10uF

SUPPLY_GND

TITLE: uDuino

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Layout:

Top Layer:

Bottom Layer:

Actual Board: