

Massachusetts Institute of Technology
Department of Electrical Engineering and Computer Science

6.111 - Introductory Digital Systems Laboratory

Project Resources

Project resources are allocated on a per student basis. This means that a two-person project has twice the resources that an individual project has, etc. You have already been issued a kit and a quantity of ICs. The following items are available on an individual sign-out basis. Note that the quantities listed must suffice for the entire class.

| Quantity | Item |
|----------|---|
| 200 | Proto-boards which do not have switches, lights, or power supplies. Suitable 5 volt power supplies are mounted on the lab benches. Each proto-board will hold about one-half the number of ICs that can be mounted on your kit. |
| 100 | 50 pin 3M ribbon cables for kit to kit connections |

The following items may have to be shared. Cables for the TVs, and VT100s must be signed out and returned daily.

Several VT100 Video Display Terminals with RS 232 cable

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|----|---------------------------------------|
| 15 | Monochrome TV Monitors with BNC cable |
| 15 | Color TV Monitors with cable |
| 25 | Speakers (with built in amplifier) |
| 15 | Microphones |
| 2 | Television Cameras with sync inputs |
| 2 | Digital shaft encoders |
| 6 | Stepper Motors |

The following items may be signed out from the instrument room. Data sheets are available from the instrument room.

| | | |
|-------|------------|---|
| 30 | AD775 | Flash A to D Converter |
| 50 | LM386 | Low Power Audio Amplifier |
| 50 | | 10 Mhz Crystal Oscillator |
| 50 | MC6847 | Video Display Generator |
| 50 | | 3.575945 MHz Crystal |
| 50 | | 2K Pot |
| 50 | AY 1015D | UART |
| 50 | | LED Assembly |
| 150 | | HEX LED |
| 40 | AM25S557 | High Speed 8 x 8 Multiplier |
| 20 | AM25S558 | High Speed 8 x 8 Multiplier |
| 50 | AM29C509DC | High Speed 12 x 12 Multiplier Accumulator |
| 50 | 6850 | Asynchronous Communications Interface Adapter |
| 10 | 6N138 | Opto-isolater plus 1N914 diode |
| 10 | | 5-pin DIN cables (female cable to wires) |
| small | Misc. | Crystal Oscillator |
| Many | 28F256A | FLASH Memory |
| 100 | Am28F010 | 131,072 x 8-Bit CMOS Flash Memory |
| 100 | Am28F020 | 262,144 x 8-Bit CMOS Flash Memory |
| 100 | Am28F512 | 65,536 x 8-Bit CMOS Flash Memory |
| 100 | 6116-3 | 2K by 8 SRAM |
| 200 | 6264-15 | 8K by 8 SRAM |
| 50 | 62256-12 | 32K by 8 SRAM |
| 200 | 22V10 PAL | |
| 400 | 16V8 PAL | |
| 400 | 20V8 PAL | |

| | | |
|--------|----------------|--|
| 25 | MAXIM 233 | RS 232 level converter |
| 25 | Am29C517APC | 16 bit multiplier |
| 25 | 54ACT/74ACT715 | Programmable Video Sync Generator |
| 25 | GS4981 | Monolithic Video Sync Separator |
| 25 | CD22204 | Harris 5V Low Power Subscriber DTMF Receiver |
| 25 | AD8402/3 | Dual/Quad Digital Pot |
| in kit | CY7C374i | CPLD |
| in kit | FLEX10K | Altera gate array board |
| 8 | P9931 | small speaker/microphone |

The following items are in cabinets in the digital lab. Please let the staff know if the stock of parts is low. Data sheets are available from the instrument room.

| | | |
|-------|-------------|--|
| 50 | 741 | Op Amp |
| 25 | LF357 | Op Amp |
| 25 | LM311 | Comparator |
| 50 | AM26LS32 | Line Receiver (Comparator) |
| 50 | AD558JN | D to A Converter |
| 100 | AD670JN | A to D Converter |
| 50 | 898-1-R5.1K | (or 898-1-R4.7K) resistor pack |
| small | | misc. resistors and capacitors- in another cabinet |
| 100 | 74LS00 | Quad 2-input NAND gate |
| 75 | 74LS02 | Quad 2-input NOR gate |
| 75 | 74LS03 | Quad 2-input NOR open collector gate |
| 160 | 74LS04 | Hex inverter |
| 100 | 74LS08 | Quad 2-input AND gate |
| 120 | 74LS10 | Triple 3-input NAND gate |
| 50 | 74LS14 | Hex Schmitt Trigger INVERTER |
| 50 | 74LS20 | Dual 4-input AND gate |

50 74LS30 8-input NAND gate
50 74LS32 quad 2-input OR gate
50 74LS37 quad 2-input NAND buffer
50 74S38 quad 2-input NAND open collector gate
25 74LS42 BCD to Decimal decoder
100 74LS47 BCD to 7-segment decoder driver
150 74LS74 dual D flip flop
150 74LS85 4-bit comparator
50 74LS86 quad 2-input XOR gate
50 74LS107 dual JK flip flop with clear
50 74LS112 dual JK flip flop with preset and clear
50 74LS123 dual retriggerable monostable
75 74LS126 quad tri-state non-inverting buffer
50 74LS133 13-input NAND gate
75 74LS138 3 to 8 decoder
75 74LS139 dual 2 to 4 decoder
50 74150 16 to 1 multiplexor
150 74LS151 8 to 1 multiplexor
100 74LS153 dual 4 to 1 multiplexor
150 74LS157 quad 2 to 1 multiplexor
300 74LS161 binary 4-bit counter with direct clear
500 74LS163 binary 4-bit counter with synchronous clear
100 74LS169 4-bit up/down counter
100 74LS175 quad D edge triggered FF with clear, Q, /Q
50 74LS181 4-bit ALU
25 74LS193 binary dual clock up/down counter with clear
100 74LS194 4-bit bidirectional shift register
300 74LS244 Octal tri-state non-inverting buffer
100 74LS245 Octal tri-state bidirectional bus buffer
200 74LS257 quad 2 to 1 tri-state multiplexor

100 74LS259 8-bit addressable latch (positive output decoder)
150 74LS273 Octal D edge triggered flip flop with clear
100 74LS283 4-bit adder
100 74LS367 Hex tri-state non-inverting buffer
100 74LS368 Hex tri-state inverting buffer
75 74LS373 Octal D tri-state latch
100 74LS374 Octal D edge triggered tri-state flip flop
200 74LS377 Octal D edge triggered flip flop with enable
100 74LS393 dual 4-bit binary counter
100 74LS399 quad 2-input multiplexors with storage
25 74LS670 4 by 4 register file
60 1408 DAC