

Digital Electronics
Part III – Practical Labs

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Hardware Labs

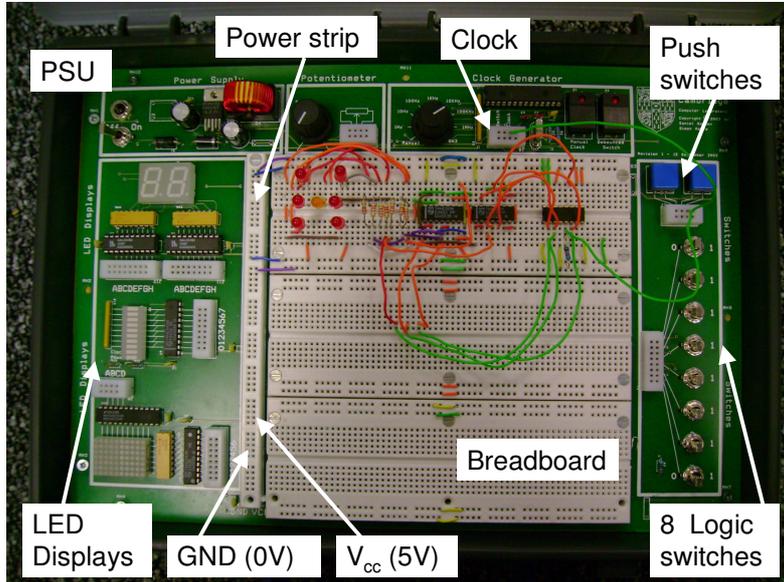
Introduction

- In the hardware lab you will:
 - Construct logic circuits on breadboards and test them
 - Design logic circuits and implement them using
 - Logic gates (SSI) and counter chips (MSI) logic
 - Memory devices (VLSI)
 - Programmable array logic (PAL) type devices – specifically Generic array logic (GAL)

Introduction

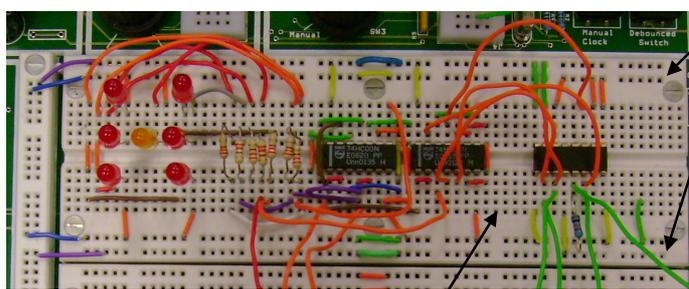
- In the labs you will make use of the self-contained Prototyping Box
- Contains:
 - Breadboard to build the circuits on
 - A power supply (PSU) – 5V
 - Clock signal (square wave) generator
 - Switches
 - Conventional push switches
 - Ones giving logic outputs for input to circuits
 - LEDs and displays for showing outputs

Prototyping Box



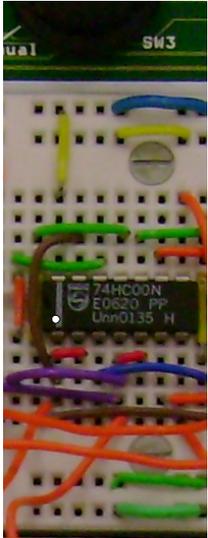
Breadboard

Horizontal strips used to distribute V_{cc} (5V) and GND (0V)



Vertical five hole strips used to connect up components

DIL Package



14-pin Dual in Line (DIL) package.
 74HC00 device contains 4, 2-input NAND Gates where:

- 74 identifies the series
- HC identifies the technology
- 00 identifies the function

Pin numbering – White dot indicates pin 1. Numbering increments as we move in an anticlockwise direction around the package

For 14(16) pin packages, pin 7(8) is usually GND (0V) and pin 14(16) V_{CC} (5V). However, there are exceptions!

Wiring

