



ELECTRONICS DEPARTMENT

INTRODUCTION TO

OrCAD



By
MUSTAFA M. SHIPLE
October, 2007



Outline

- Definitions.
- OrCAD flow.
- OrCAD Capture.
 - ✓ Netlist file.
 - ✓ File management.
 - ✓ Testing procedure.
 - ✓ Extra gifts
- Graphics philosophy in OrCAD.
- You are R&D manager!!!



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Eyes on OrCAD

- The software is used mainly to create **electronic prints** for manufacturing of **printed circuit boards**

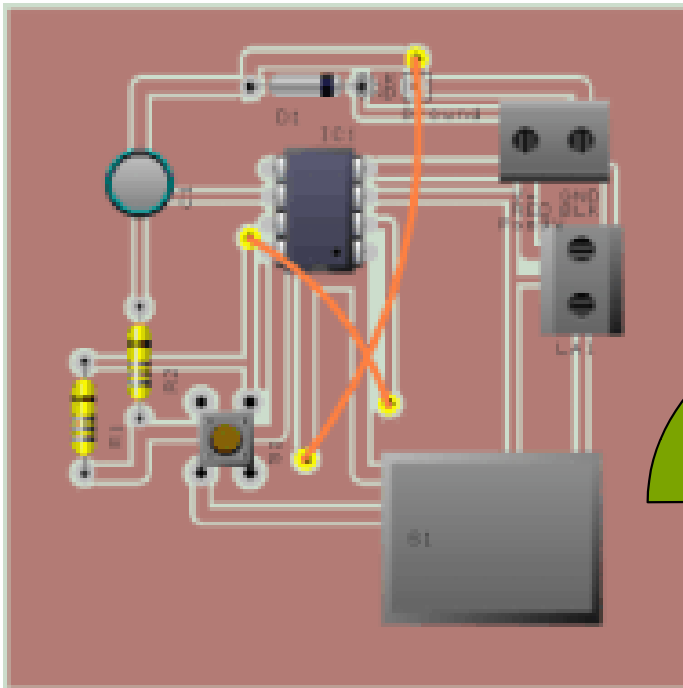


- OrCAD is a portmanteau, = **Oregon + CAD**

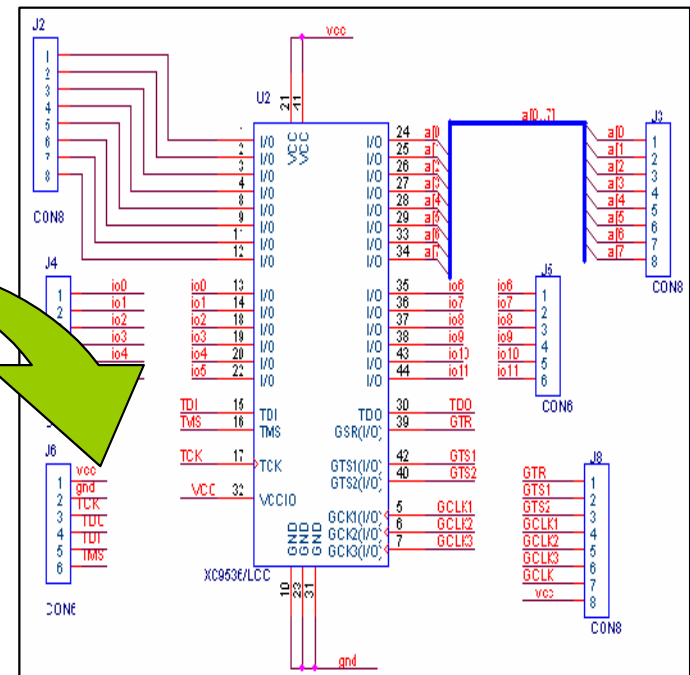
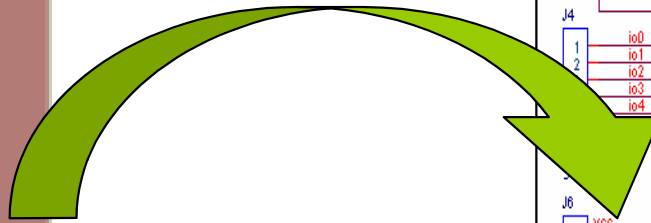
Computer **A**ided **D**esign



Definitions I



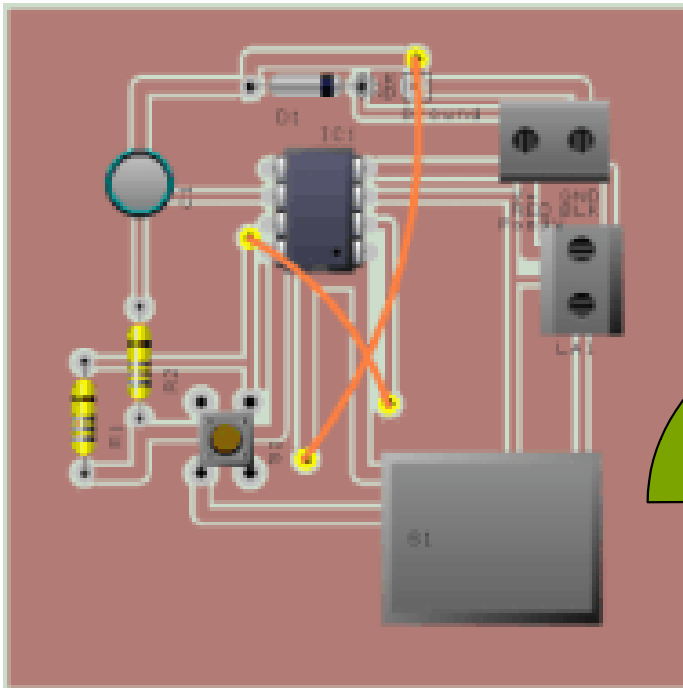
Electronic Board (PCB)



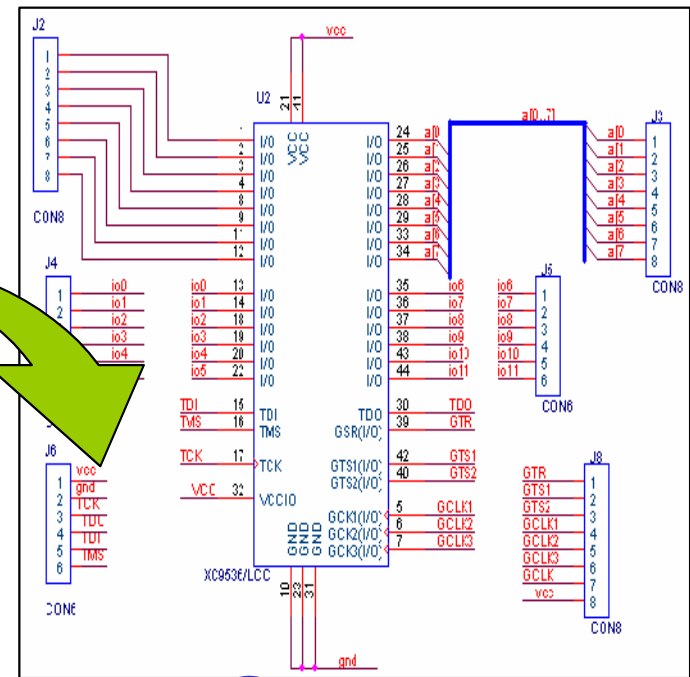
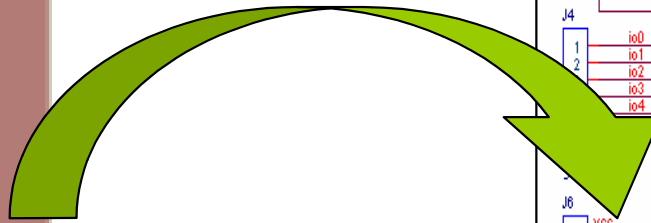
Schematic



Definitions I



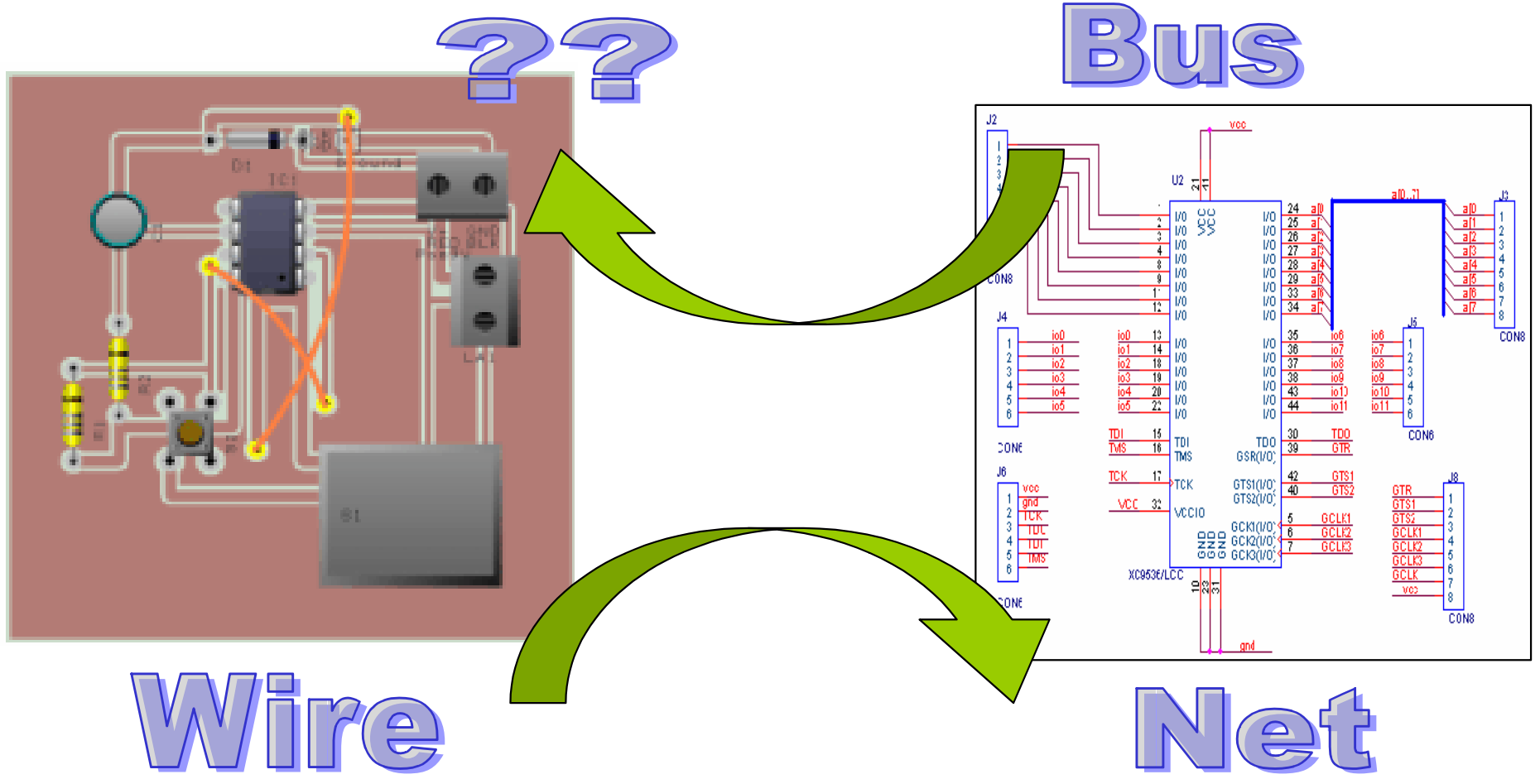
IC, Component



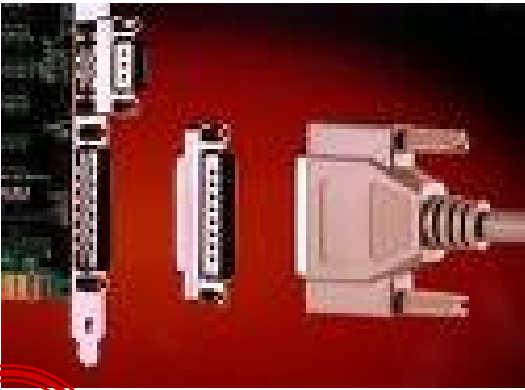
Symbol



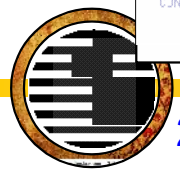
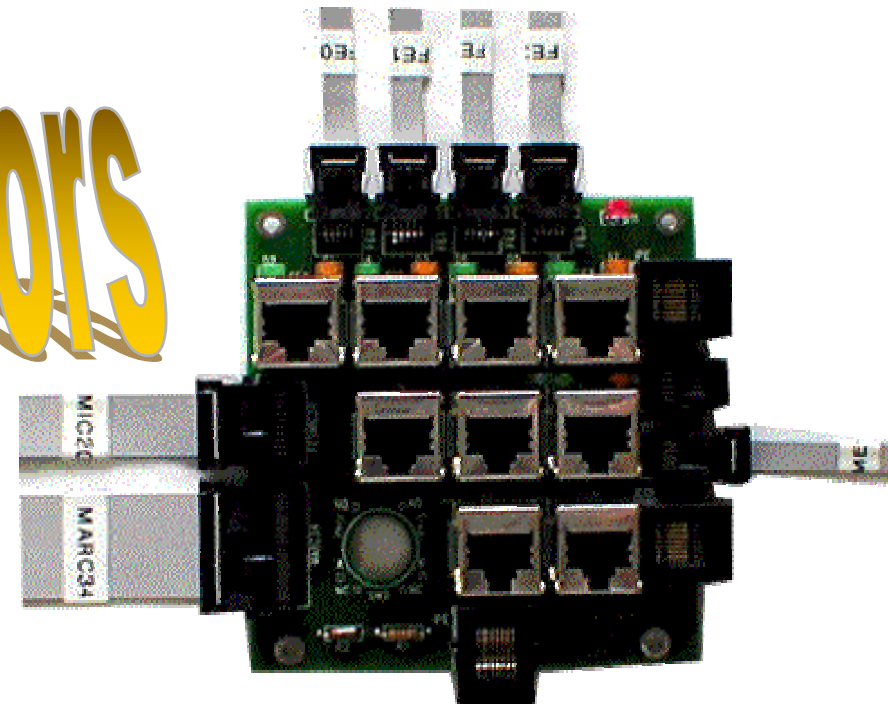
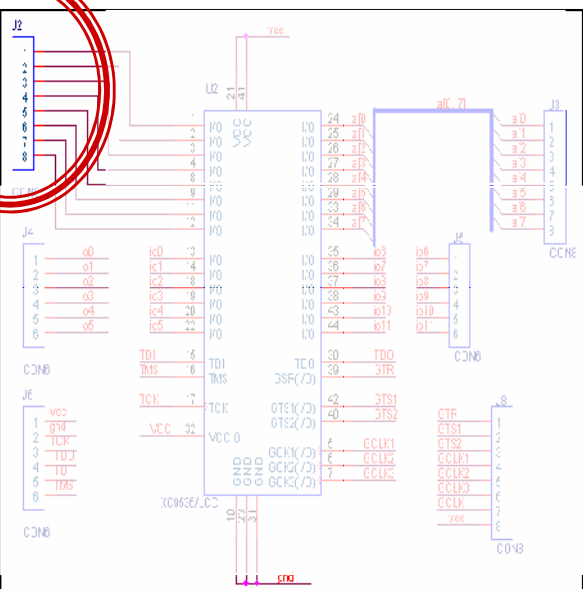
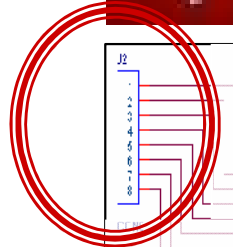
Definitions I



Connectors



Connectors



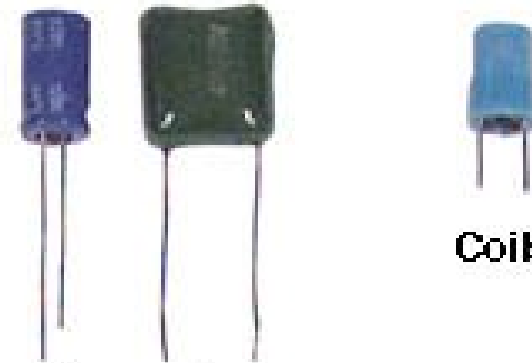
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Electronic Components



Resistors

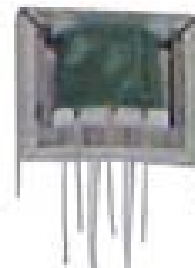


Capacitors

Coils



Semiconductors



Transformers



Others



Mechanical Components



Washers, nuts and screws



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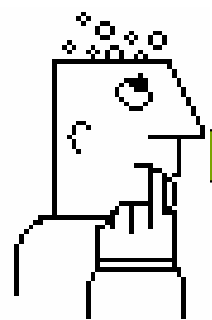
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OrCAD flow



Circuit Design with OrCAD Capture

Simulation using OrCAD PSpice

Board Design with OrCAD Layout

Generating Output files OrCAD Layout

Editing the machine format with GerbTool



FAB



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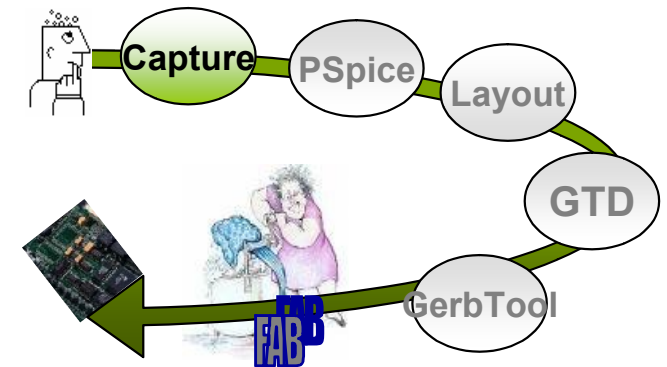
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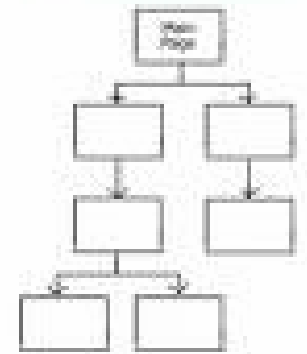
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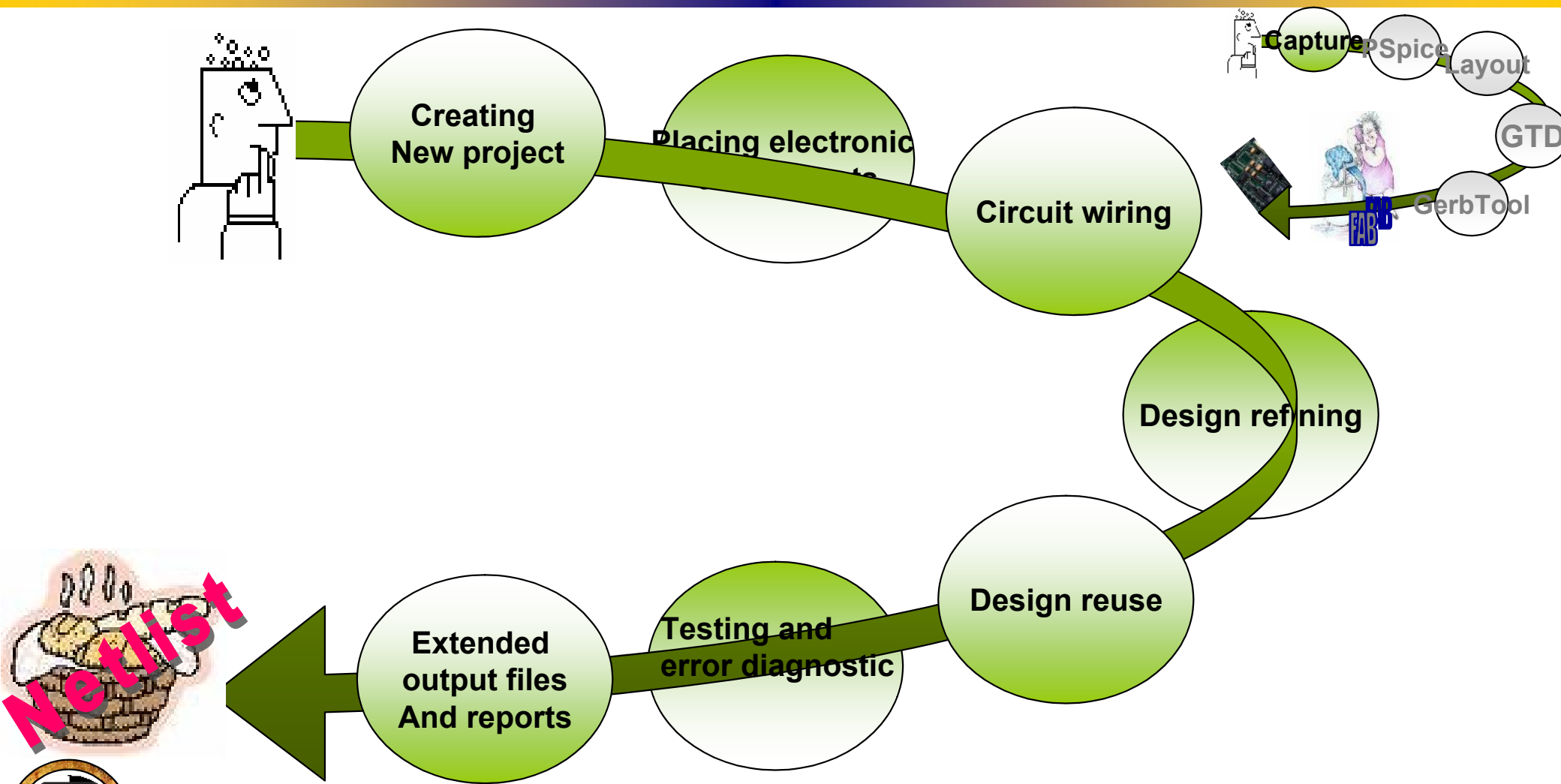
Capture Advantages



- SCHEMATIC EDITING
- PROJECT MANAGEMENT
- LIBRARIES AND PART EDITING
- HIERARCHICAL DESIGN AND REUSE
- EXTENDED CIS DOCUMENTATION



Capture Flow

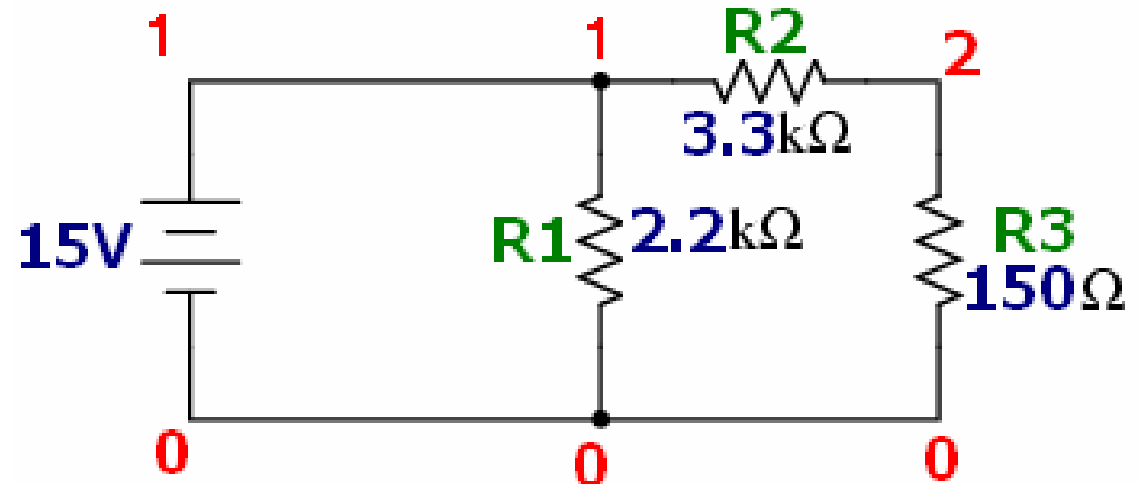


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What is the netlist file?

A File: describes the circuit wiring and simulation analysis

```
v1 1 0 dc 15
r1 1 0 2.2k
r2 1 2 3.3k
r3 2 0 150
.end
```



Outline

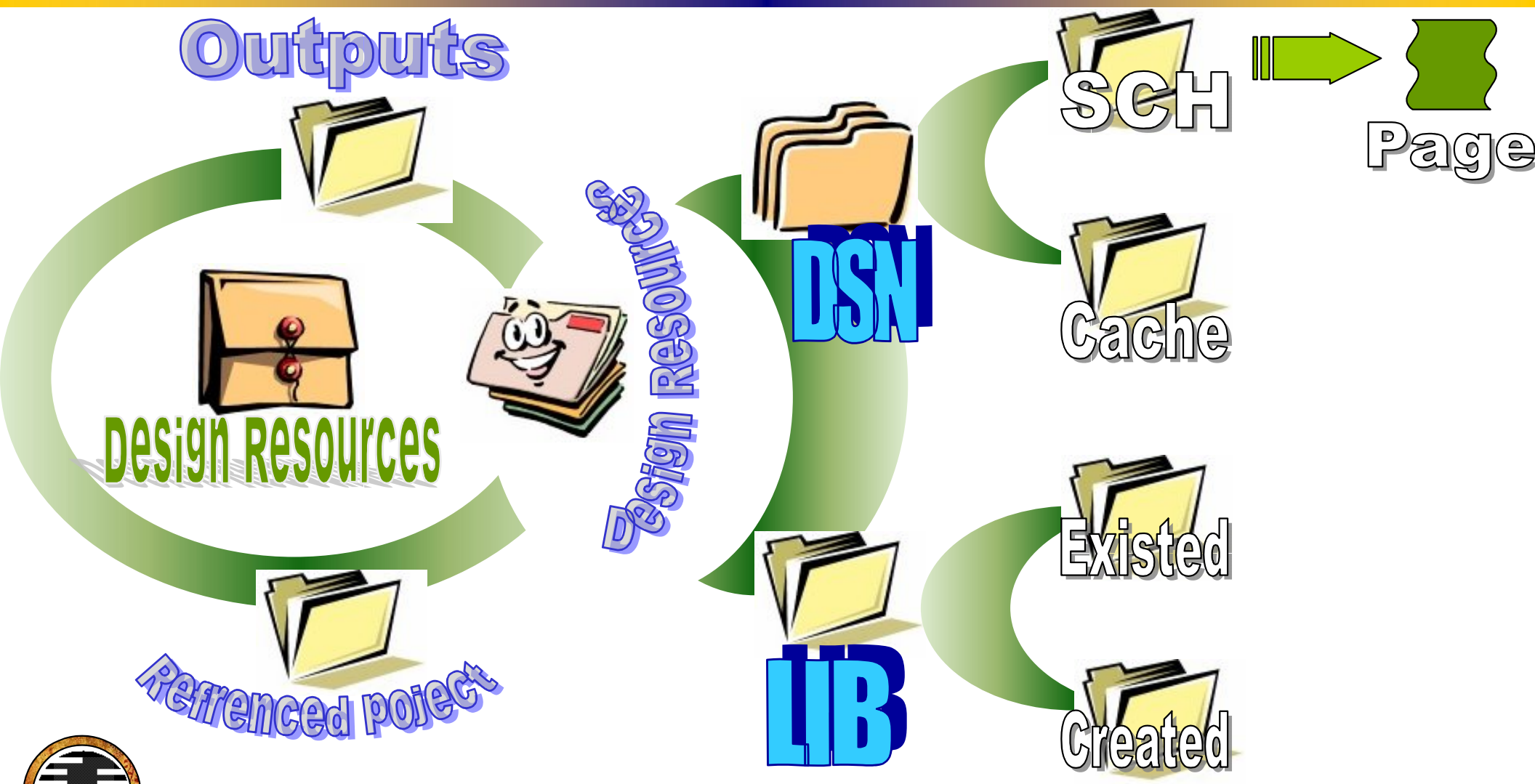
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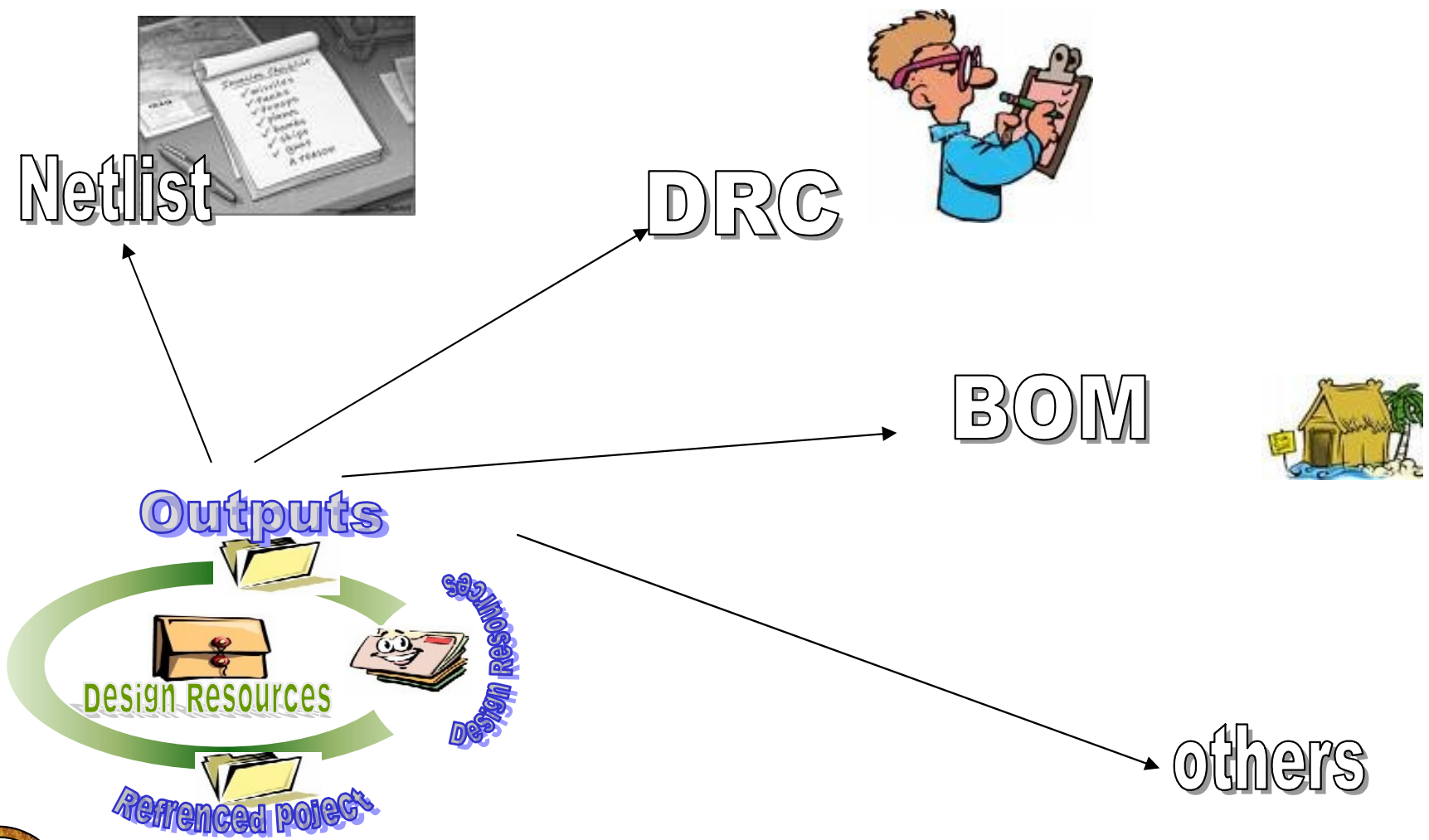
File Management



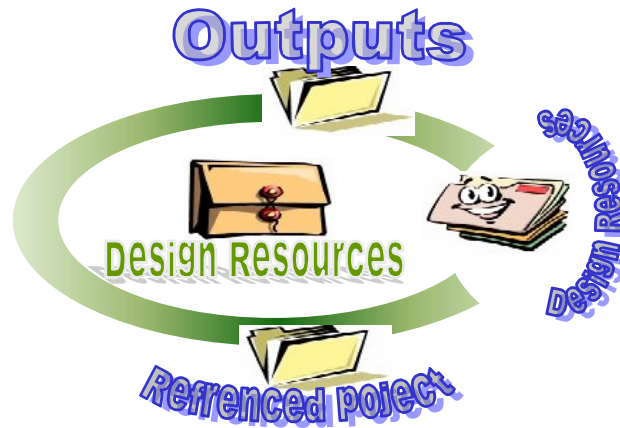
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Output reports



Referenced Project



Main project

Slave project



pointer



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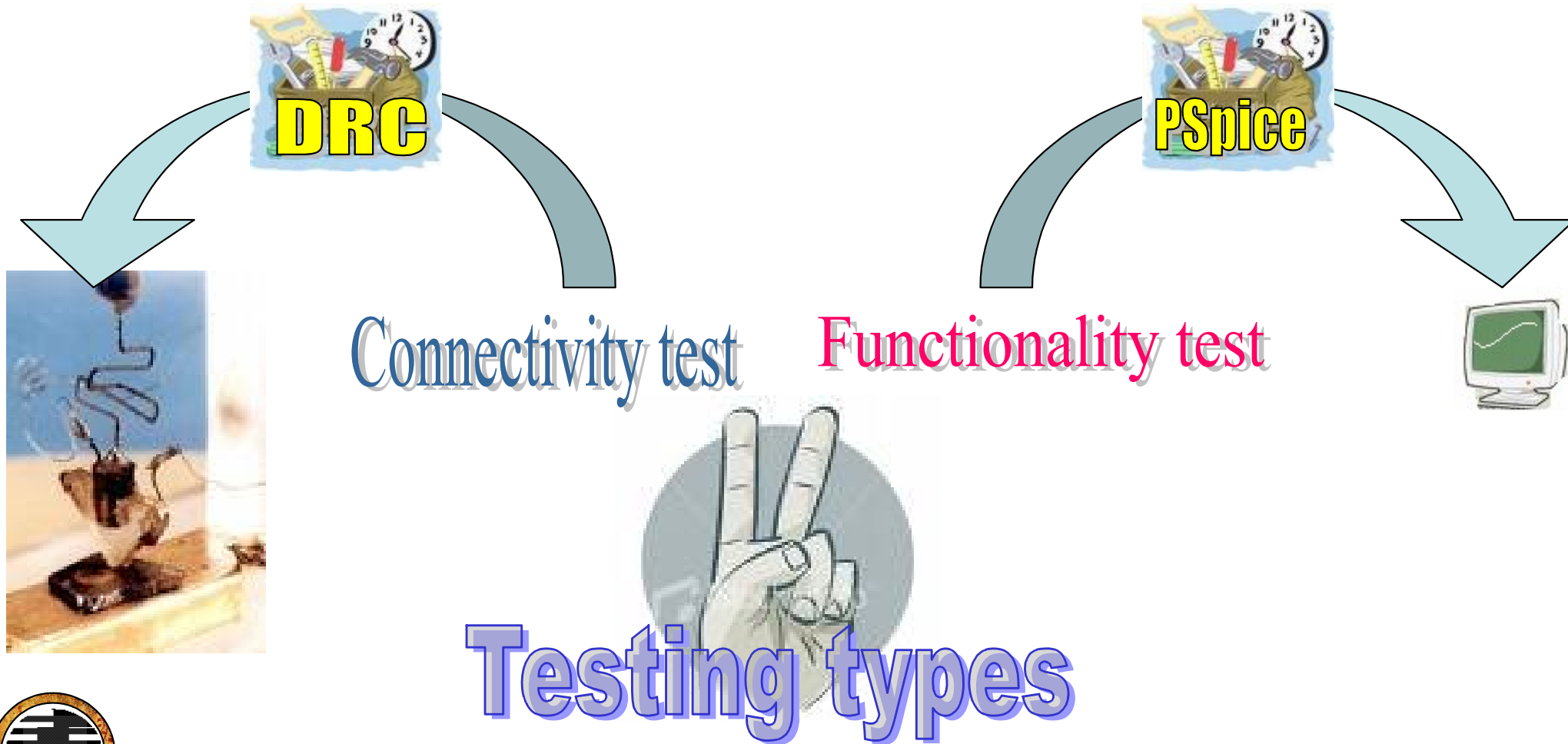
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Testing procedure



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Extra gifts

- Friendly GUI
- Automatic reference designator correction, is it important???
- Accepts diverse file formats for netlist file.
- Allows to insert graphical pictures and mottos .



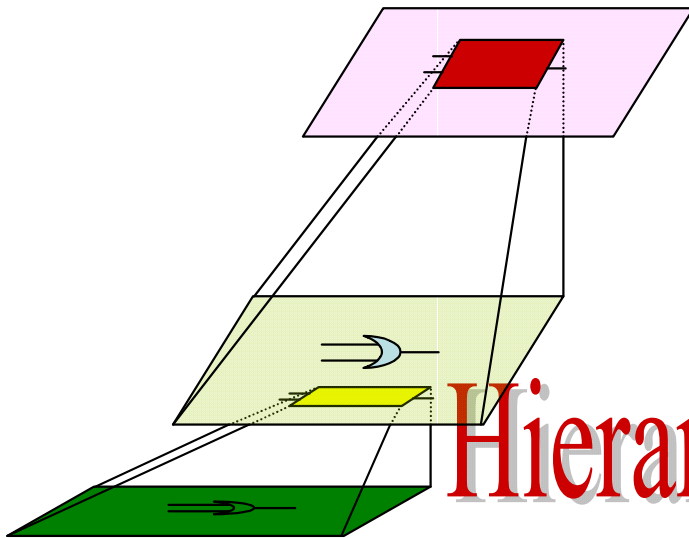
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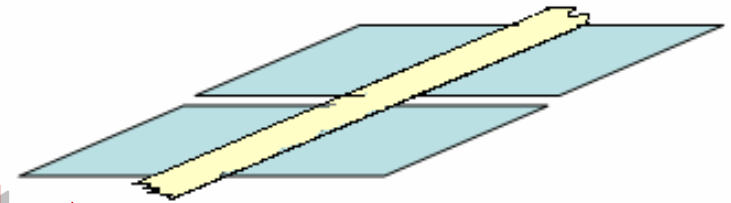


Graphics philosophy

schematics



Pages



Hierarchal Flat



Drawing Types



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Open Discussion

You are R&D manager!!!



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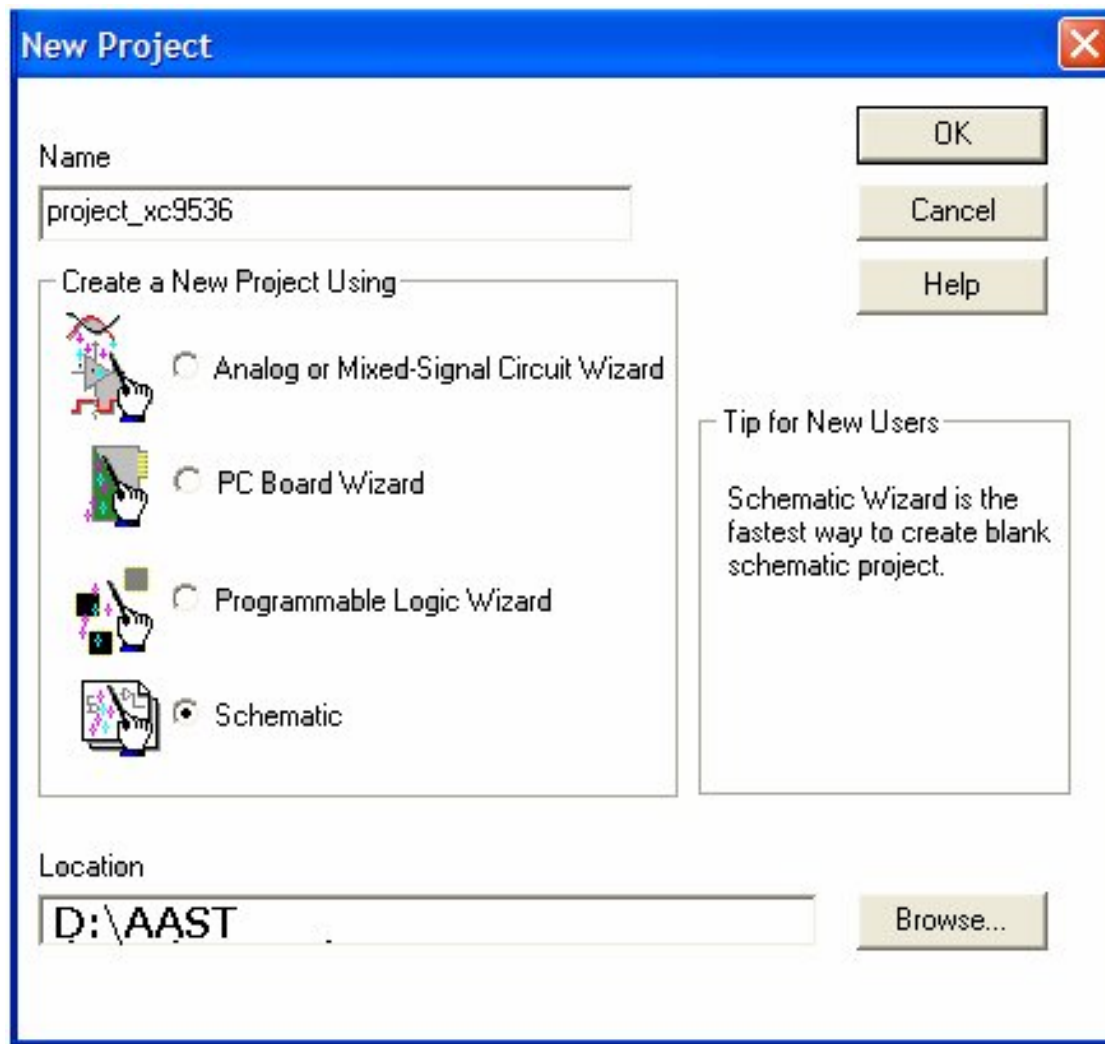


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EXPERMINTAL ONE

Creating a schematic design

Creating a New Project

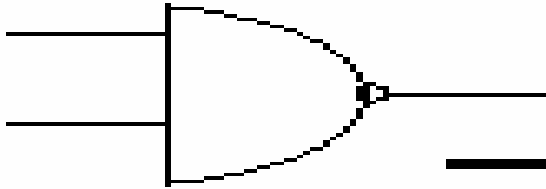


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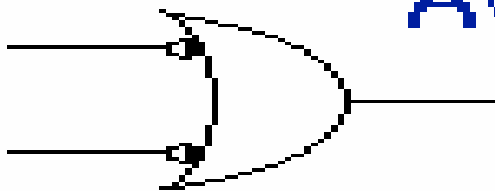
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Placing Parts

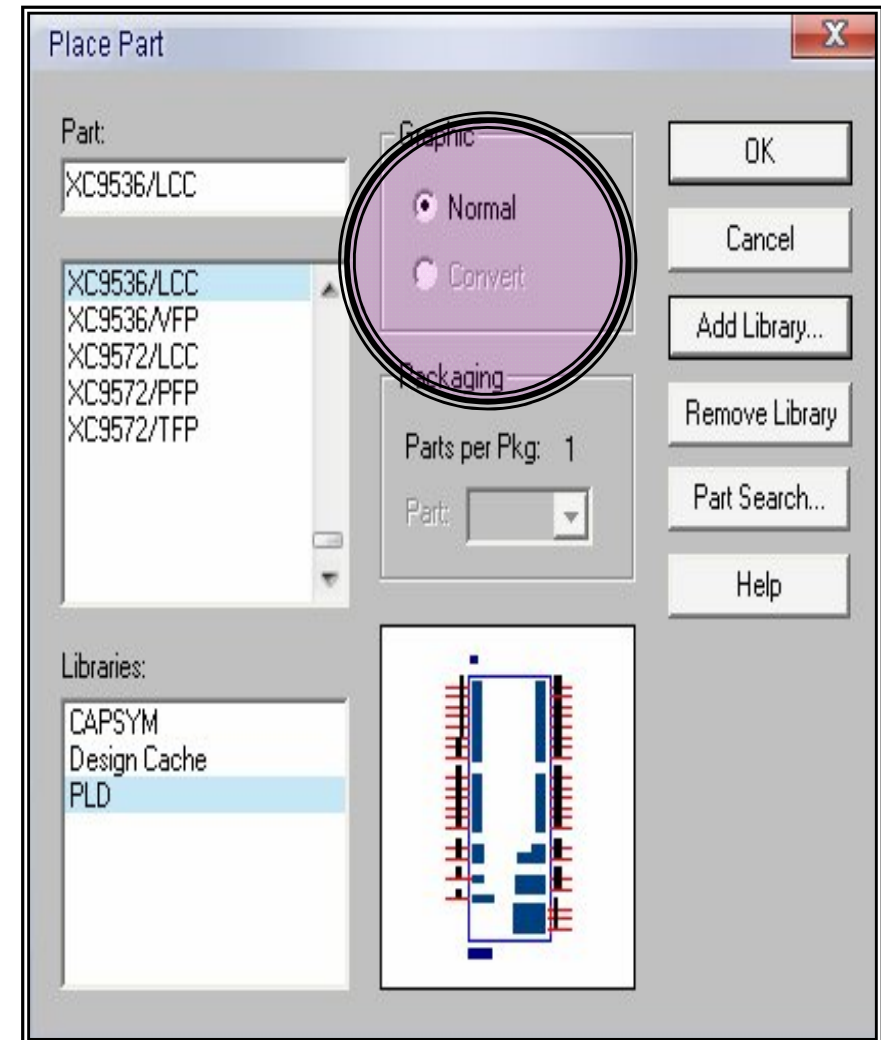
De'Morgan theory

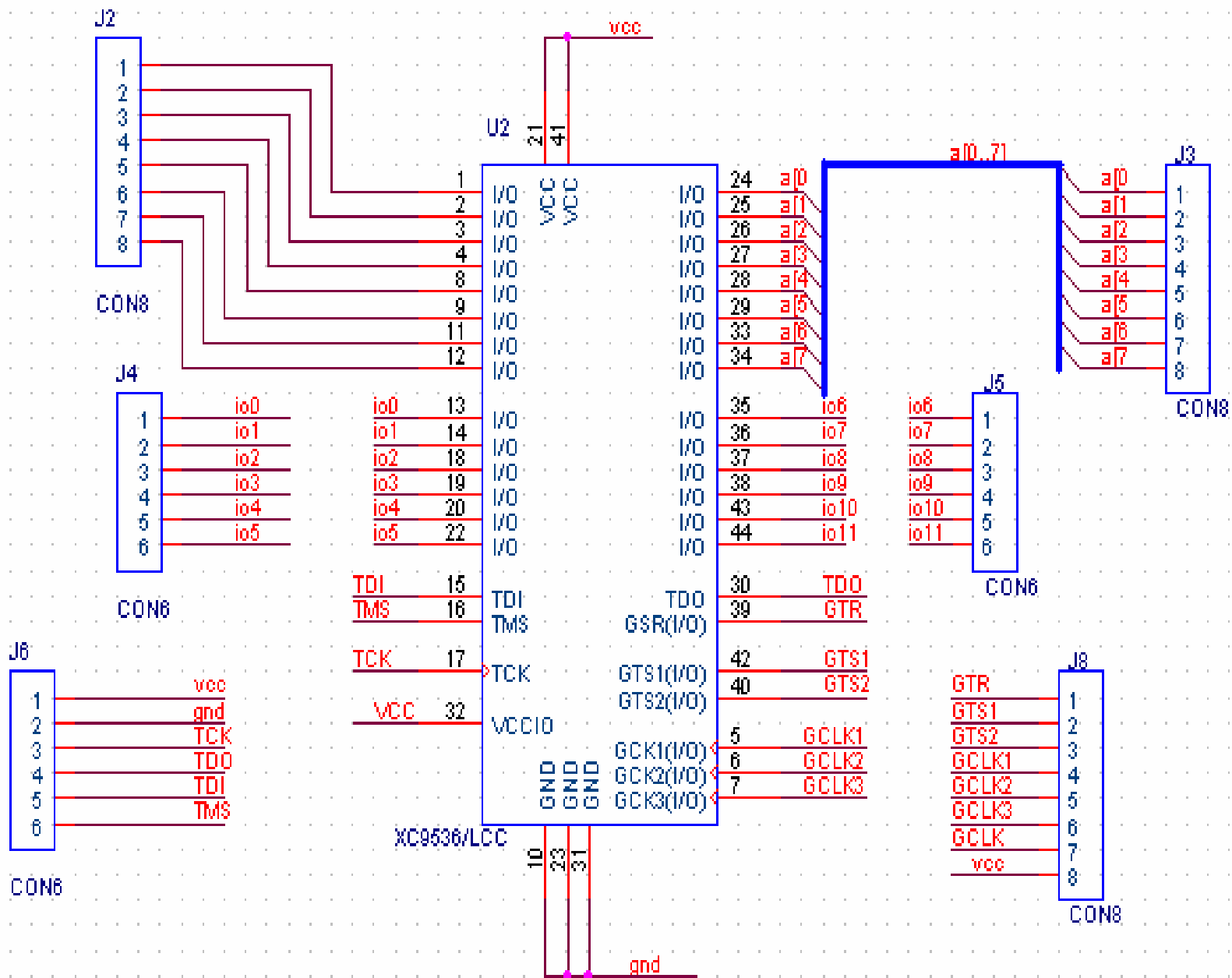


$$\overline{A \oplus B} = \overline{A} \oplus \overline{B}$$



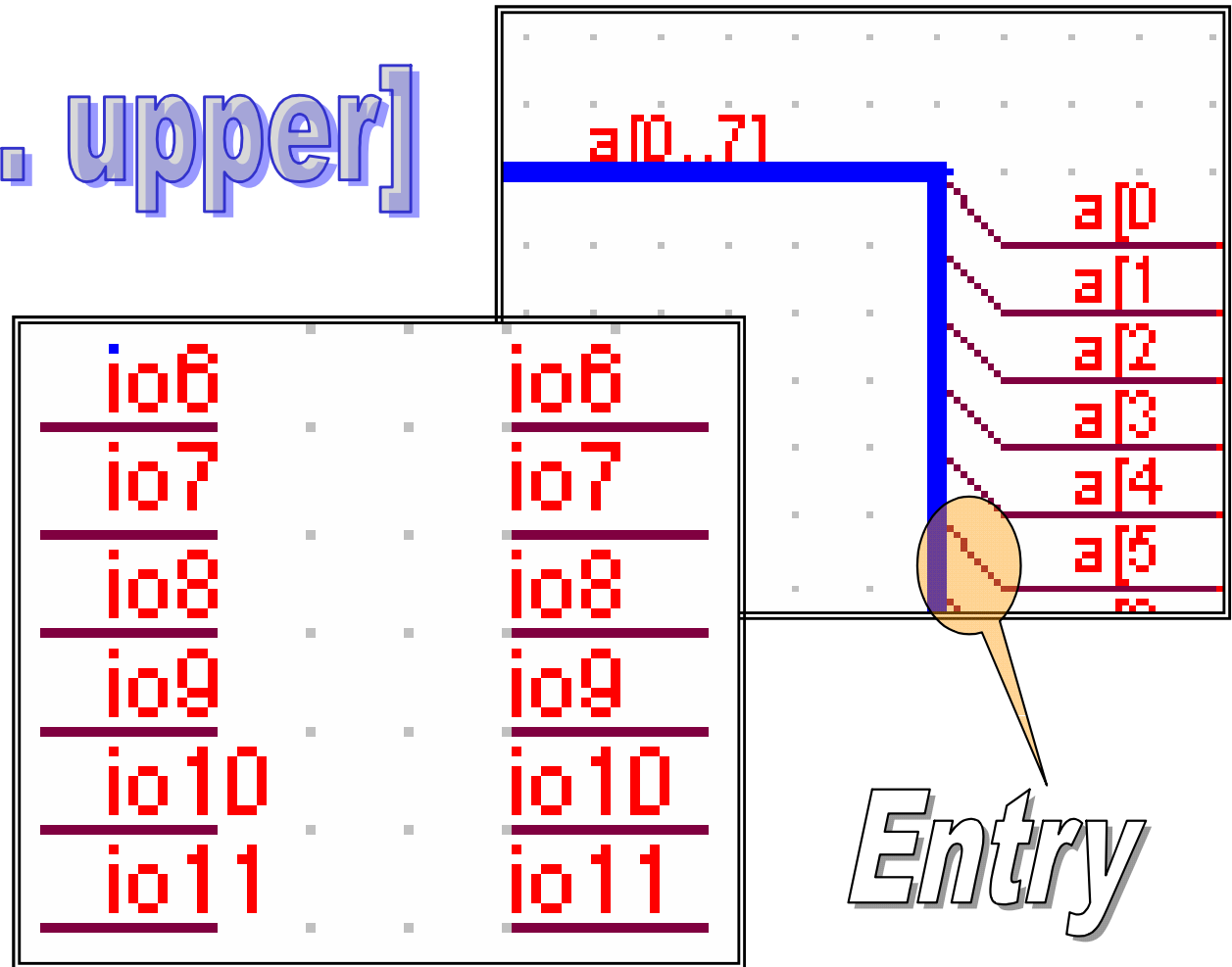
$$\overline{A \oplus B} = \overline{A} \oplus \overline{B}$$





NET and BUS Names

XXX[Lower .. upper]



Power and GND

Same name + Same symbol

VCC_WAVE



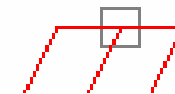
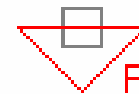
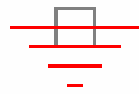
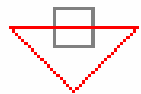
VCC_CIRCLE



VCC_BAR



VCC_ARROW

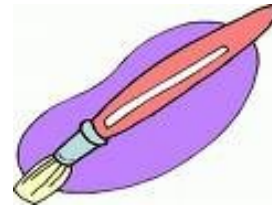


Creating a new part

1. Define the part.



2. Draw the part.



3. Place pins on the part.



Define the part.

New Part Properties

Name:

Part Reference Prefix:

PCB Footprint:

Create Convert View

Multiple-Part Package

Parts per Pkg:

Package Type

- Homogeneous
- Heterogeneous

Part Numbering

- Alphabetic
- Numeric

Pin Number Visible

OK

Cancel

Part Aliases...

Attach Implementation...

Help

C:\PROGRAM FILES\ORCAD\CAPTURE\LIBRARY\ATOD.OLB





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