

Communication Technical Engineering Department 1st Stage Digital Logic- UOMU028021 Lab 2

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Al Mustaqbal University - Communication Technical Engineering Department

Communication Techniques Engineering

First Stage-Second Course

2024-2025

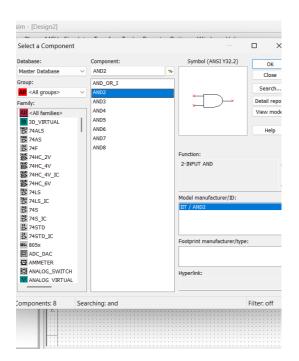
Lab 2:

Implement the logic gates (AND, OR, & NOT) using diodes, transistors, and resistors

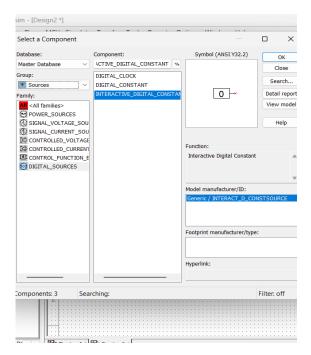
1)place + component

🚮 Design2 - Multisir		
	Place MCU Simulate Transfer Tools Repor Component Ctrl+W	
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* ~~ ł+ ⊀ ⊅> ₿	Probe	•
Design Toolbox	¥ Junction Ctrl+J	A 4 4
Design1 Design1 Design2 2 Design2	Wire Ctrl+Shift+W	
	⊥ <u>B</u> us Ctrl+U	
	Connectors	•
	New hierarchical block	
	Hierarchical block from file Ctrl+H	
	Replace by hierarchical block Ctrl+Shift+H	e ferrar en la compañía de la
	New subcircuit Ctrl+B	 1
	Replace by subcircuit Ctrl+Shift+B	
	New PLD subcircuit	
	New PLD hierarchical block	
	Multi_page	
	Bus vector connect	
	Gomment	
	A Text Ctrl+Alt+A	•
	<u>G</u> raphics	▶
	则 Circuit p <u>a</u> rameter legend	
	Title block	
	🗄 Place Ladder Rungs	1
		-

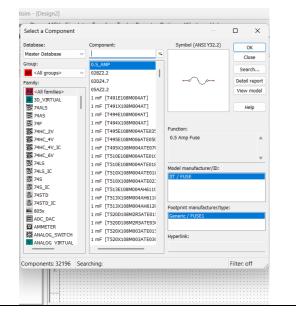
3) choose logic gates (AND-OR-NOT)



4)sources + digital-sources + interactive- digitaconstant



2)all groups

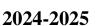






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sim - [Design2 *] Select a Component > Database: Component: Symbol (ANSI Y32.2) ОК Master Database PROBE_DIG_YELLOW Υ. Close Group: PROB Search. Indicators

 Indicators

 Indicators

 Indicators

 Sources

 Basic

 Diodes

 Transistors

 Analog

 TTL

 CMOS

 Advanced_Peripherc

 Mixec Digital

 Mixed

 Electro_Nechanical

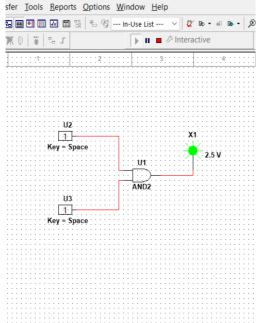
 Electro_Mechanical

 Electro_Diagrams

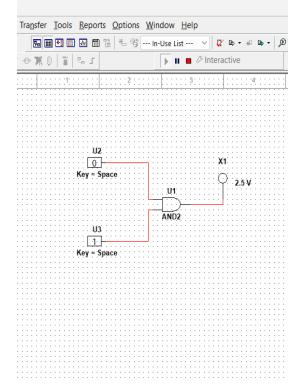
PROBE BLUE PROBE_DIG Detail repo PROBE_DIG_BLUE View mod PROBE_DIG_GREEN PROBE_DIG_ORANGE Help PROBE_DIG_RED PROBE_DIG PROBE_GREEN Function: Yellow Probe - Digital Node Input PROBE ORANGE PROBE_RED PROBE_YELLOW Model manufacturer/ID: Ladder_Diagrams Footprint manufacturer/type: Hyperlink: Filter: off Components: 12 Searching

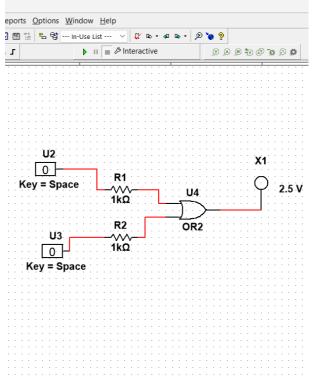
5) indicators + PROBE

7) run(OFF)



HW\\





6) run(ON)





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Lab 3:

Verify the truth table of logic gates by using integrated circuits IC

Logic gates	IC number	
AND	7408	
OR	7432	
NOT	7404	
NAND	7400	
NOR	7402	
XOR	7486	

IC Digital Logic Families

Digital IC gates are classified not only by their logic operation, but also by the specific logic-circuit family to which they belong. Each logic family has its own basic electronic circuit upon which more complex digital circuits and functions are developed.

The basic circuit in each family is either a NAND or a NOR gate. The electronic components employed in the construction of the basic circuit are usually used to name the logic family.

Many different logic families of digital ICs have been introduced commercially. The ones that have achieved widespread popularity are listed below:

- **TTL** Transistor-Transistor Logic
- ECL Emitter-Coupled Logic
- MOS Metal-Oxide Semiconductor

CMOS Complementary Metal-Oxide Semiconductor

I2L Integrated-injection Logic



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XOR gate is a special type of gat .It can be used in the half adder, full adder and subtractor .The exclusive-OR gate is abbreviated as XOR gate or sometime as X-OR gate. It has n input (n >= 2) and one output.

HW\\

A circuit which performs an OR operation It has input (n>=2) and one output