SAB35403

PCB DESIGN

LAB 4

Dual power supply

LECTURER: DR REZAL BIN MOHAMED
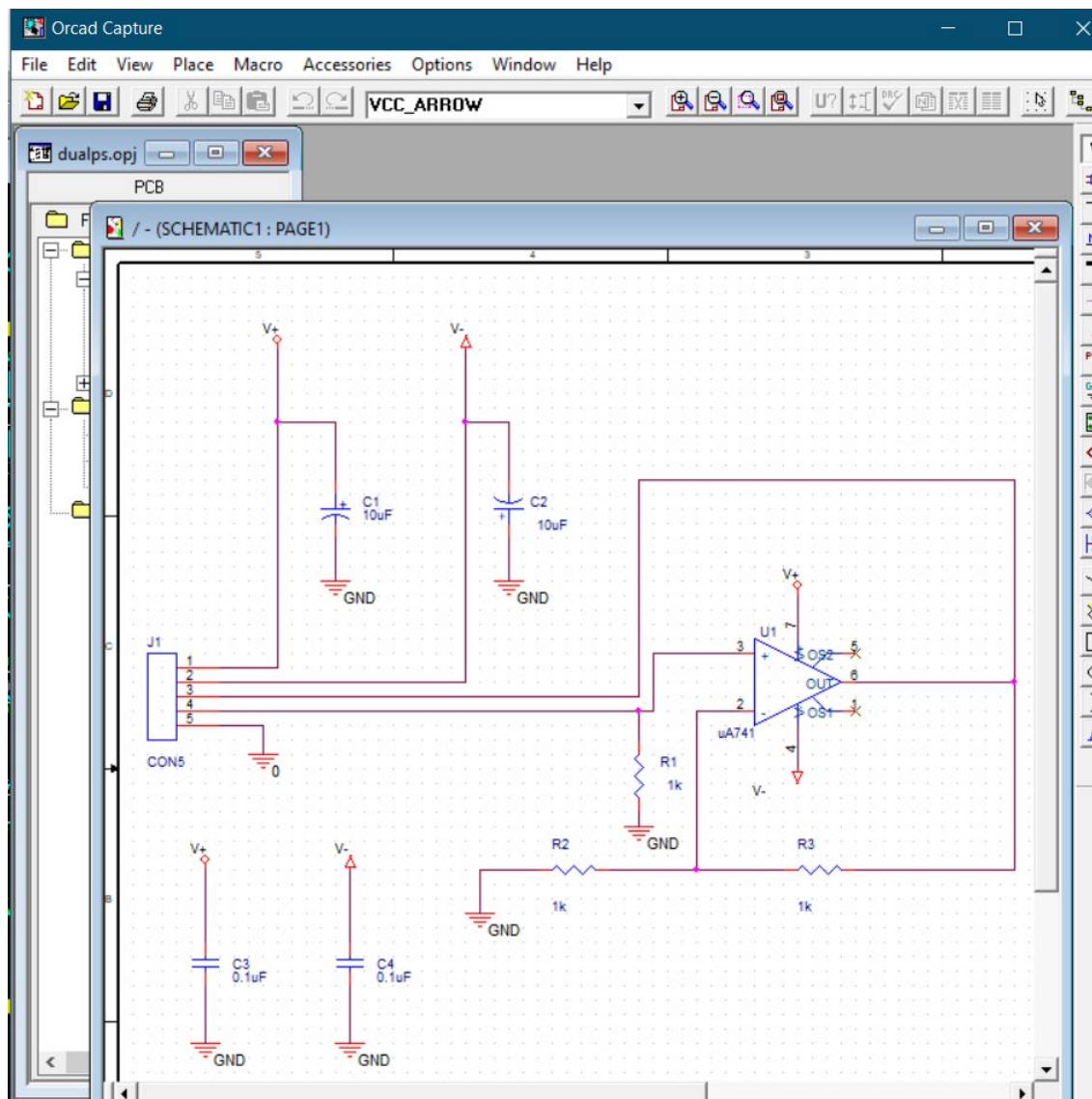
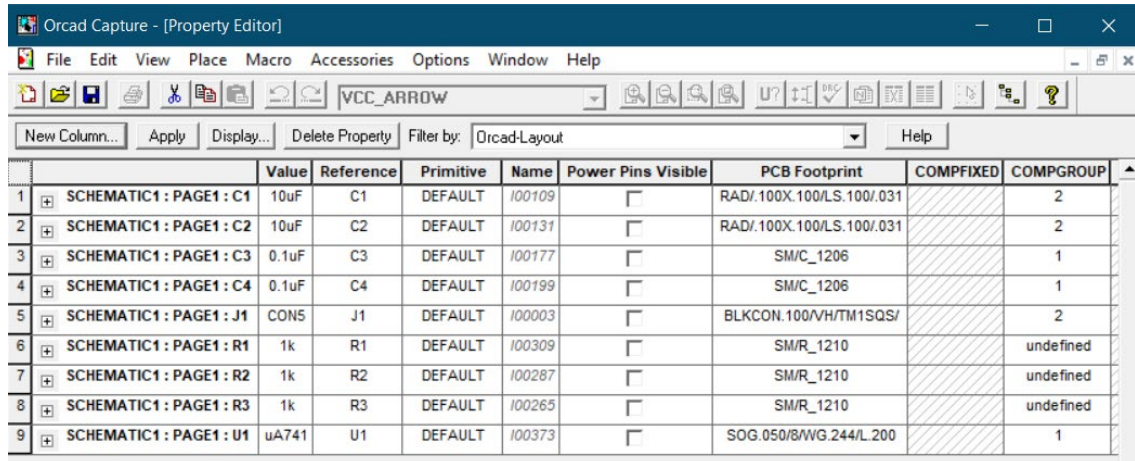| NO	STUDENT NAME	STUDENT ID
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Objectives

- To design and simulate dual power supply circuit in OrCAD, to represent the complete circuit design

- To Utilize OrCAD's schematic capture tools to represent the complete circuit design, including voltage regulators, filtering components, and feedback mechanisms.

- To Utilize OrCAD's layout tools to represent the footprint, padstack used in pcb board.

- To practically make step-by-step design process, including schematic diagrams, component values, and simulation results.

## Simulation result:

1. Schematic circuit

2. Component used and its attributes.

		Value	Reference	Primitive	Name	Power Pins Visible	PCB Footprint	COMPFIXED	COMPGROUP
1	SCHEMATIC1 : PAGE1 : C1	10uF	C1	DEFAULT	I00109	☐	RAD/.100X.100/LS.100/.031		2
2	SCHEMATIC1 : PAGE1 : C2	10uF	C2	DEFAULT	I00131	☐	RAD/.100X.100/LS.100/.031		2
3	SCHEMATIC1 : PAGE1 : C3	0.1uF	C3	DEFAULT	I00177	☐	SM/C_1206		1
4	SCHEMATIC1 : PAGE1 : C4	0.1uF	C4	DEFAULT	I00199	☐	SM/C_1206		1
5	SCHEMATIC1 : PAGE1 : J1	CON5	J1	DEFAULT	I00003	☐	BLKCON.100/VH/TM1SQS/		2
6	SCHEMATIC1 : PAGE1 : R1	1k	R1	DEFAULT	I00309	☐	SM/R_1210		undefined
7	SCHEMATIC1 : PAGE1 : R2	1k	R2	DEFAULT	I00287	☐	SM/R_1210		undefined
8	SCHEMATIC1 : PAGE1 : R3	1k	R3	DEFAULT	I00265	☐	SM/R_1210		undefined
9	SCHEMATIC1 : PAGE1 : U1	uA741	U1	DEFAULT	I00373	☐	SOG.050/8/WG.244/L.200		1

3. Create bill of material, design rule check,MNL AND MAX file and update the component properties.
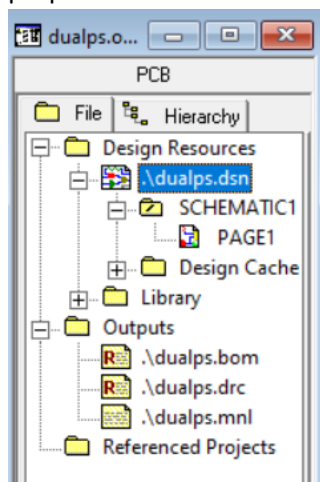
Layout

1. Circuit layout
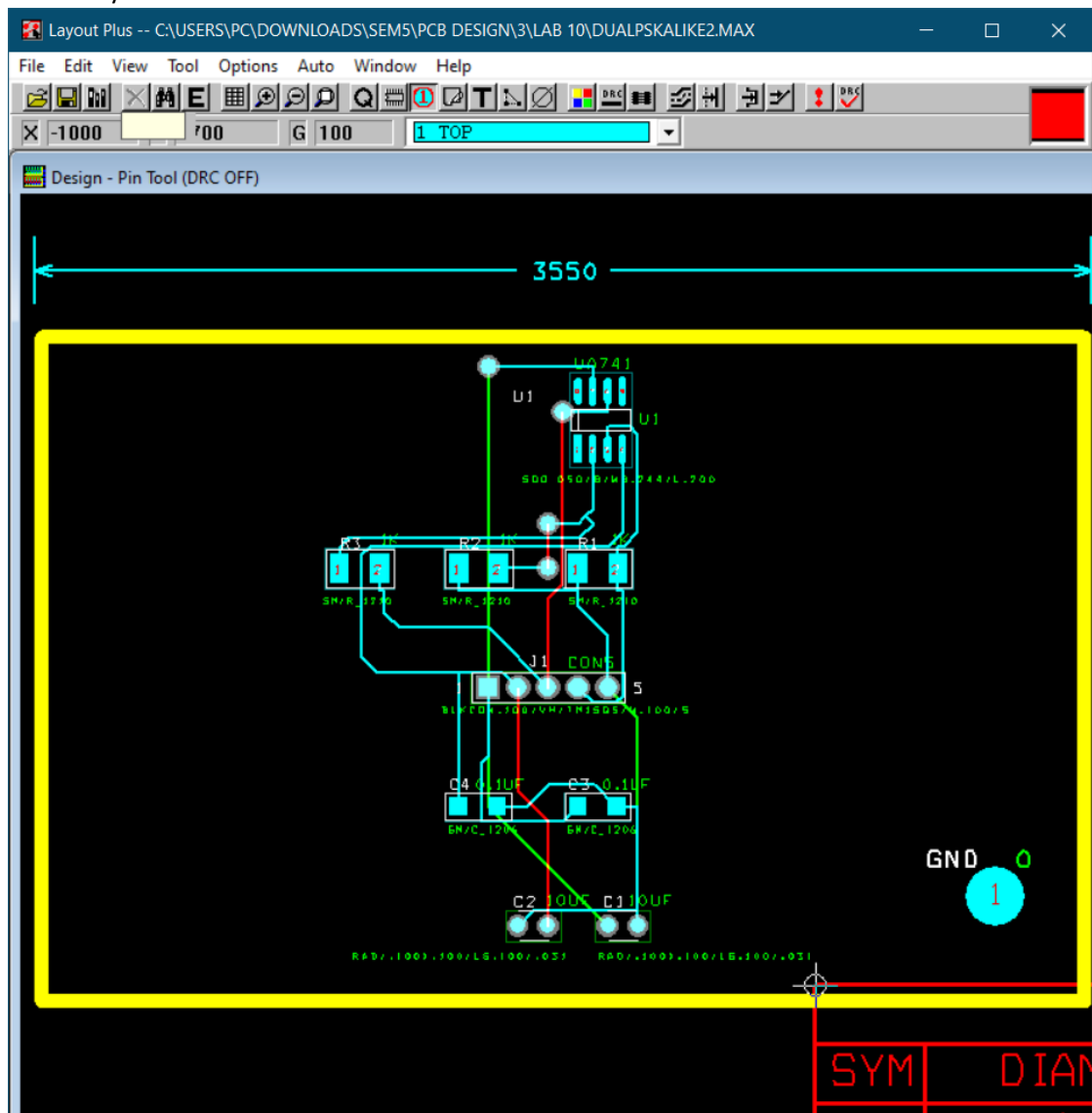
2. Padstack properties viewed from spreadsheet.

Padstack or Layer Name	Pad Shape	Pad Width	Pad Height	X Offset	Y Offset
VIA1					
TOP	Round	58	58	0	0
BOTTOM	Round	58	58	0	0
GND	Round	78	78	0	0
POWER	Round	78	78	0	0
INNER1	Round	58	58	0	0
INNER2	Round	58	58	0	0
INNER3	Round	58	58	0	0
INNER4	Round	58	58	0	0
INNER5	Round	58	58	0	0
INNER6	Round	58	58	0	0
INNER7	Round	58	58	0	0
INNER8	Round	58	58	0	0
INNER9	Round	58	58	0	0
INNER10	Round	58	58	0	0
INNER11	Round	58	58	0	0
INNER12	Round	58	58	0	0
SMTOP	Round	58	58	0	0
SMBOT	Round	58	58	0	0
SPTOP	Undefined	0	0	0	0
SPBOT	Undefined	0	0	0	0

3. Net properties
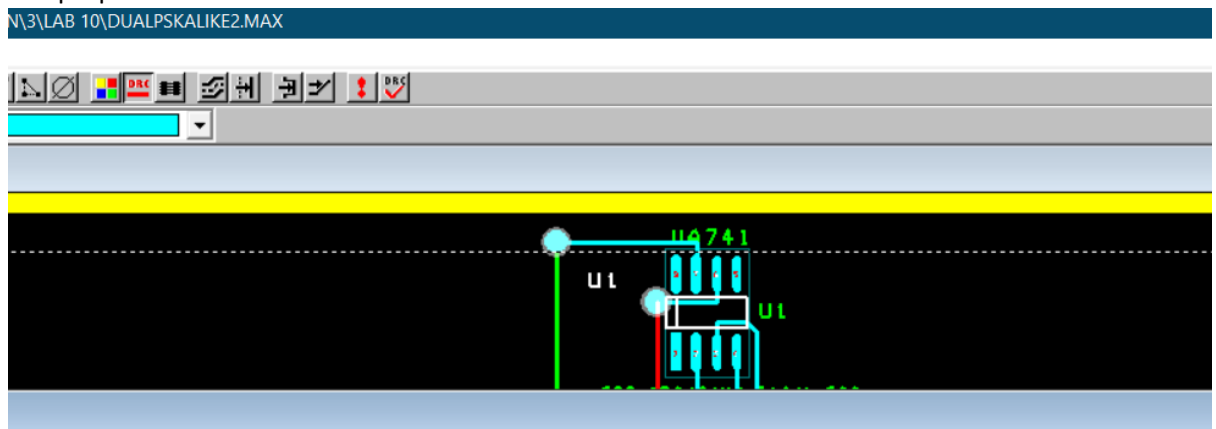
Net Name	Color	Width Min Con Max	Routing Enabled	Share	Weight	Reconn Rule
GND		12	No*	Yes	50	Std
N00621		12	No	Yes	50	Std
N00726		12	No	Yes	50	Std
N00836		12	No	Yes	50	Std
V+		12	Yes	Yes	50	Std
V-		12	Yes	Yes	50	Std

4. Toggle Reconnect mode
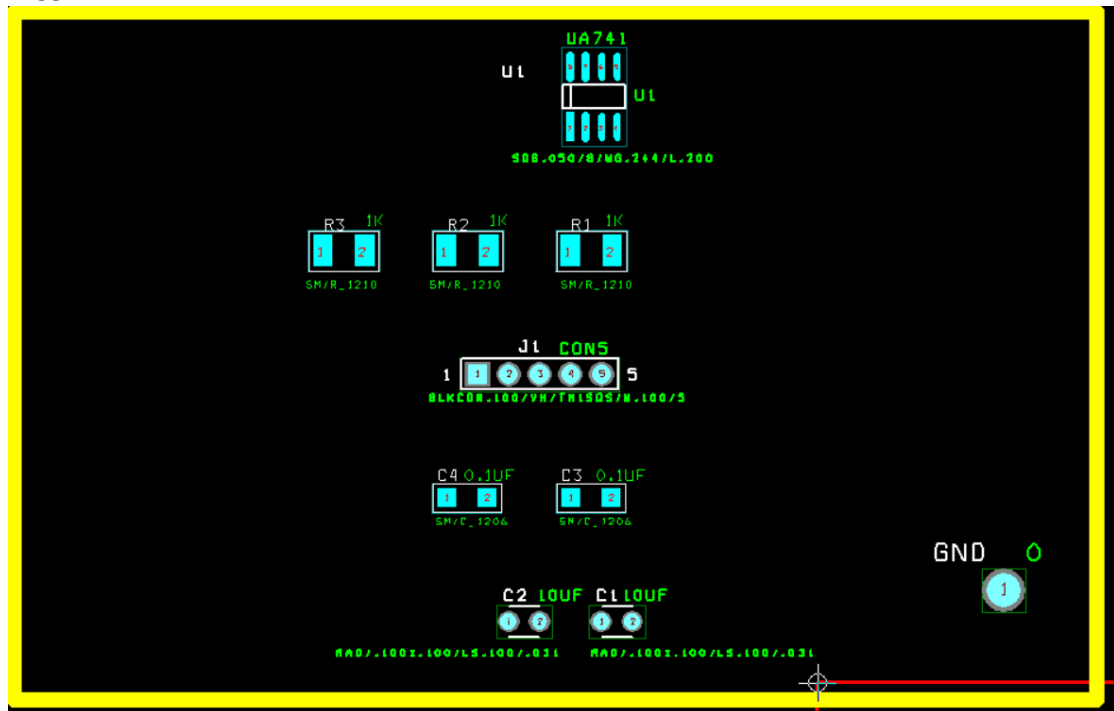
5. Click auto from menu > autoroute > board. It will help to autoroute the wire from the board nicely.
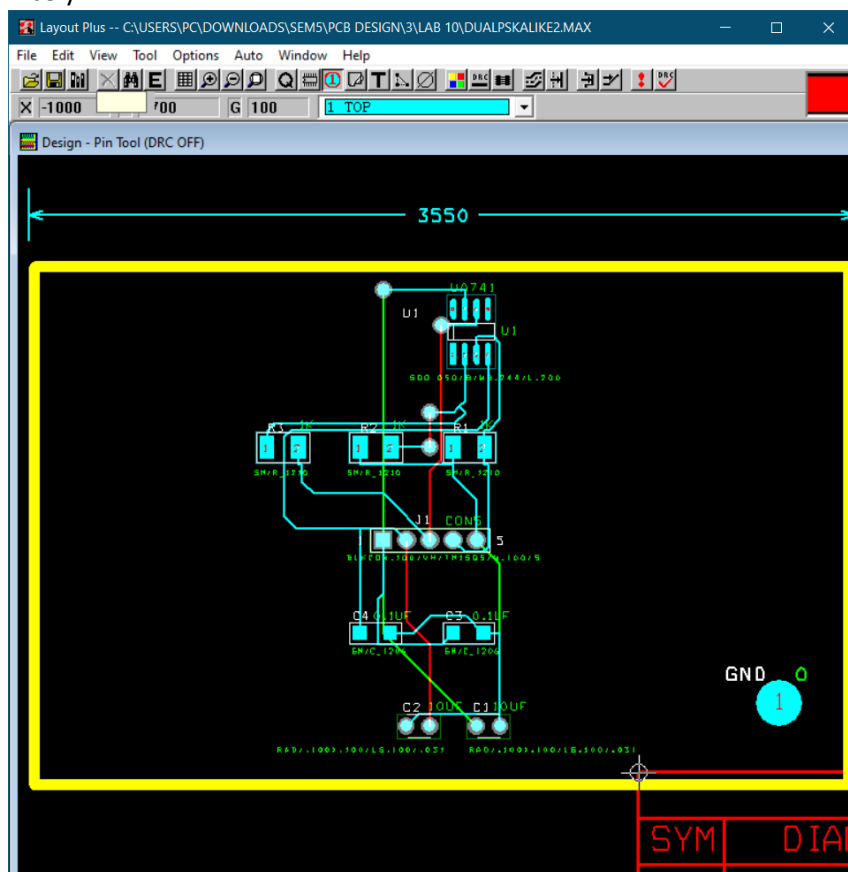
6. The footprint can be adjusted if the layout did not simulate the right component.

Conclusion

In conclusion, the objectives set forth for the design and simulation of a dual power supply circuit using OrCAD software have been successfully achieved. Through a systematic and comprehensive approach, each objective has contributed to the overall understanding of the design process and the capabilities of OrCAD in creating sophisticated electronic circuits.

this lab report successfully achieved its objectives, offering a comprehensive exploration of the dual power supply design process using OrCAD software. The integration of **schematic capture, layout, and simulation tools** showcases the versatility of OrCAD in guiding engineers through the entire design workflow. The acquired insights and documented design process contribute to the broader understanding of electronic circuit design and emphasize the proficiency gained in utilizing OrCAD for practical applications in the field of electrical engineering.