DIGITAL SYSTEMS AND MICROCONTROLLERS - LAB REPORT 4

11/8/25

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2025114007 GROUP-11 TABLE-7

Experiment 1

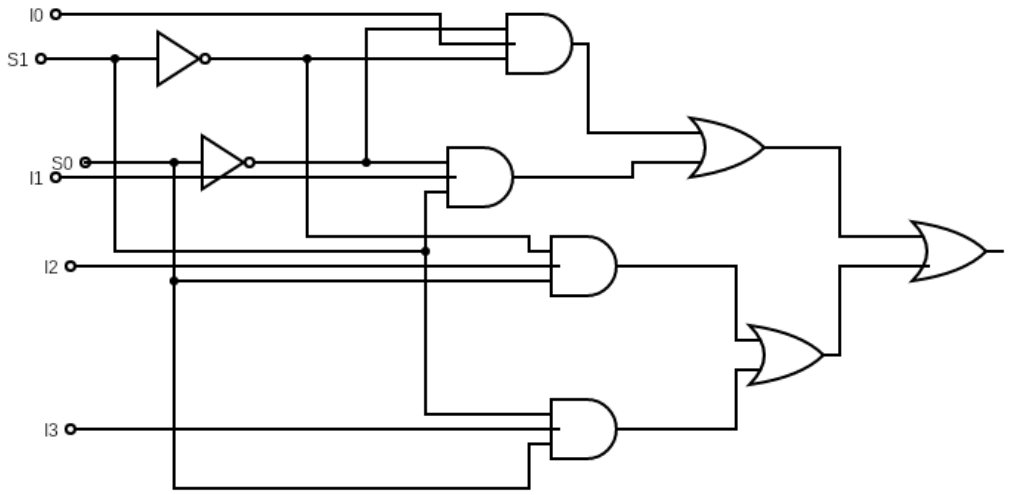
Objective:

To design, assemble and test a (1:4) Multiplexer using basic logic gates (whose select lines and inputs are through Arduino).

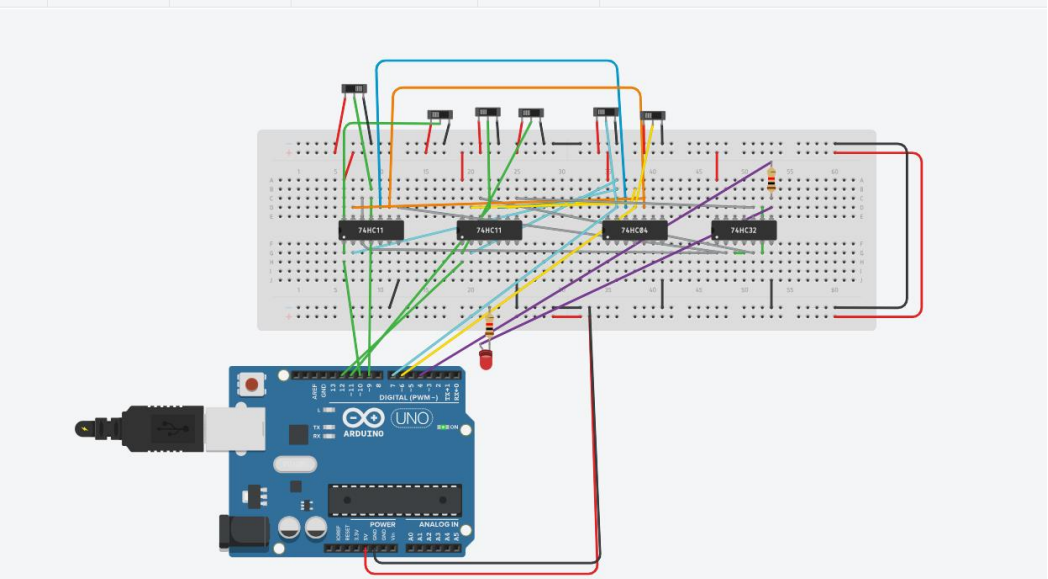
Electronic components used:

1. Digital Test Kit
2. Connecting Wires
3. ICs: 74HC04 (INVERTER), 74HC11 (Triple input AND), 74HC32 (OR)

Reference circuit:



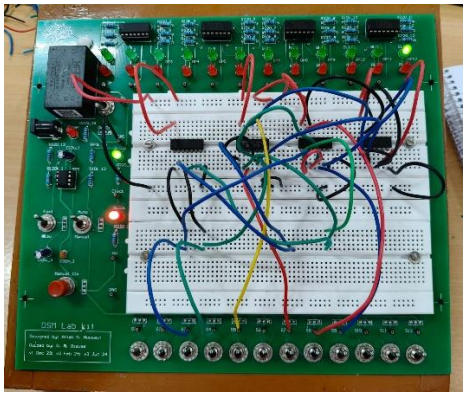
Tinkercad Reference circuit:



Procedure:

1. Connect the VCC (14) and GND (7) pins of the ICs to the VCC and GND lines of the Digital Test Kit respectively.
2. Make the connections as shown in the reference circuit.

Observation:



Conclusion:

S0	S1	OUTPUT
0	0	I0
0	1	I1
1	0	I2
1	1	I3

Link to TinkerCAD simulation:
https://www.tinkercad.com/things/6quPEGax28p-lab4exp1?sharecode=rpXRDMQI8f4XMZKdEXsyZpBej_JpRQ-hWUsyoq-A08E

****The TinkerCAD link does not work properly sometimes. If there's an issue with the same, please tell me and I can send you the login details of my Tinkercad Account.

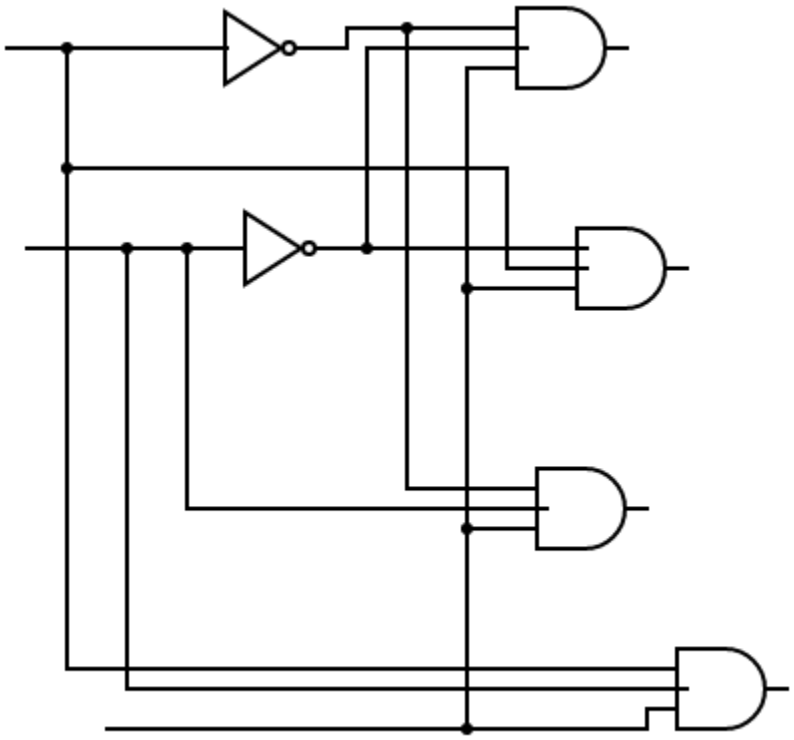
Experiment 2

Objective:

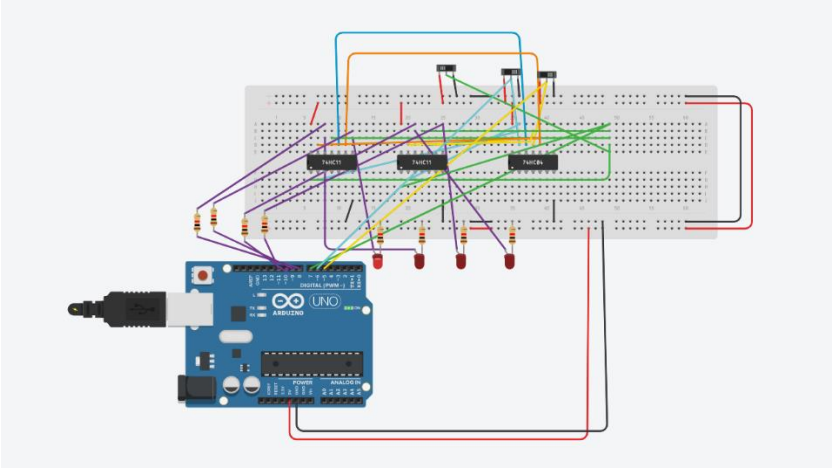
To design, assemble and test a (4:1) De-multiplexer using basic logic gates (whose select lines and inputs are through Arduino).

Electronic components used:

1. Digital Test Kit
2. Connecting Wires
4. ICs: 74HC04 (INVERTER), 74HC11 (Triple input AND)



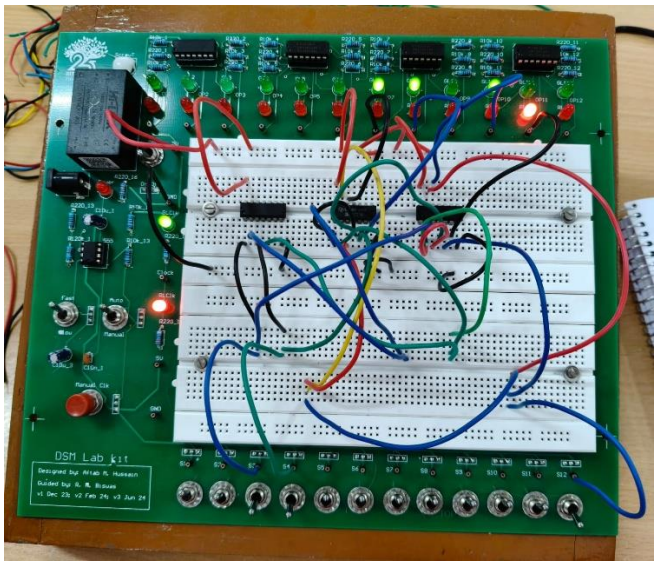
Tinkercad Reference circuit:



Procedure:

1. Connect the VCC (14) and GND (7) pins of the ICs to the VCC and GND lines of the Digital Test Kit respectively.
2. Make the connections as shown in the reference circuit.

Observation:



Conclusion:

S0	S1	A	B	C	D
0	0	1	0	0	0
0	1	0	1	0	0
1	0	0	0	1	0
1	1	0	0	0	1

Link to TinkerCAD simulation:
https://www.tinkercad.com/things/aIjHoXj5AwB-lab4exp2?sharecode=undefined

**Site used to make circuit reference diagrams: https://www.circuit-diagram.org/editor/
****The TinkerCAD link does not work properly sometimes. If there's an issue with the same, please tell me and I can send you the login details of my Tinkercad Account.

Experiment 3

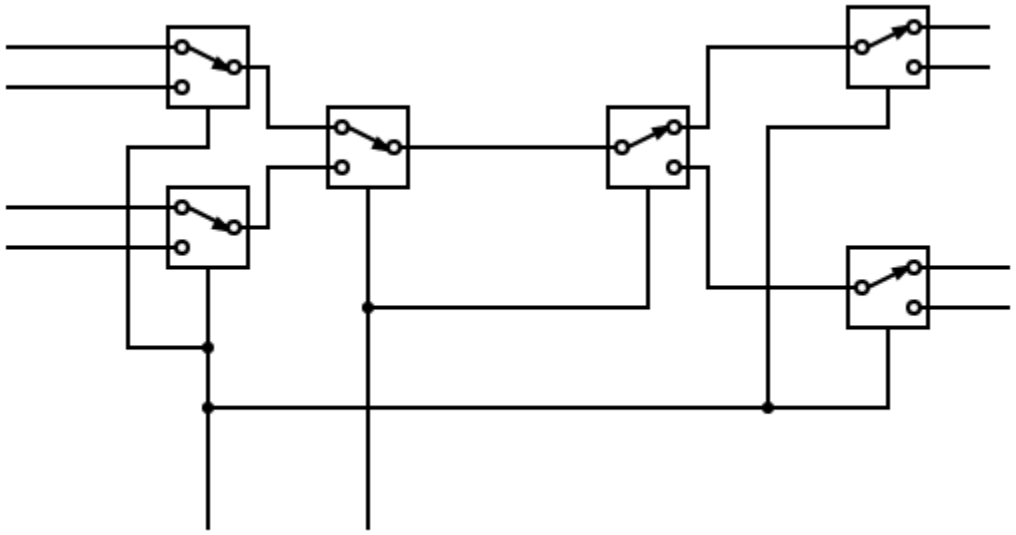
Objective:

Assemble and test circuits designed in Experiment 1 and 2

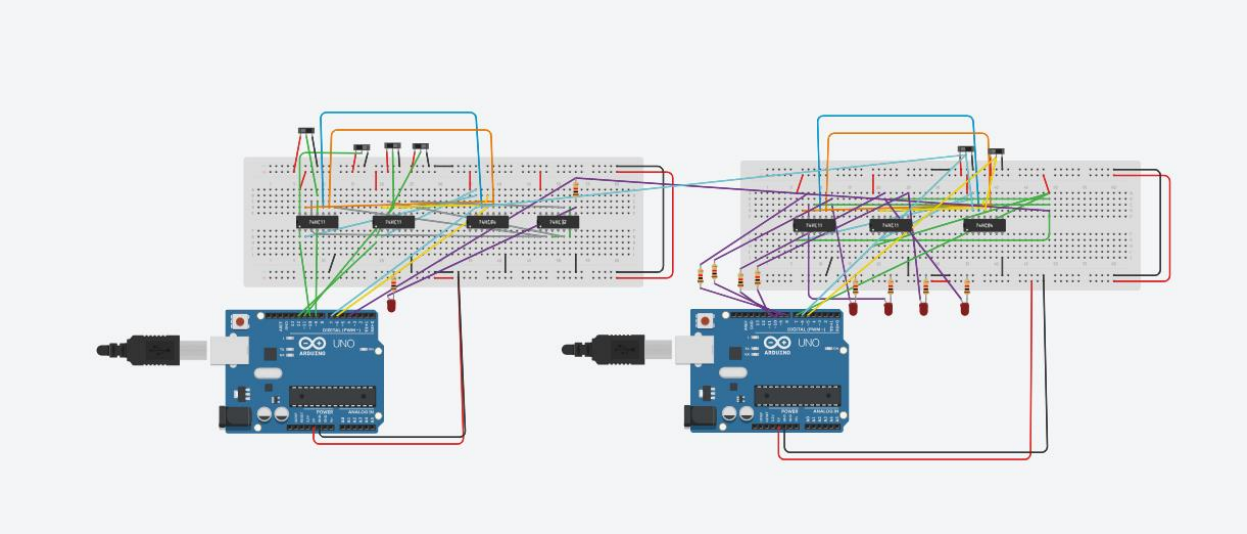
Electronic components used:

1. Digital Test Kit
2. Connecting Wires
3. IC: 74HC04 (INVERTER), 74HC11 (Triple input AND), 74HC32 (OR)

Reference circuit:



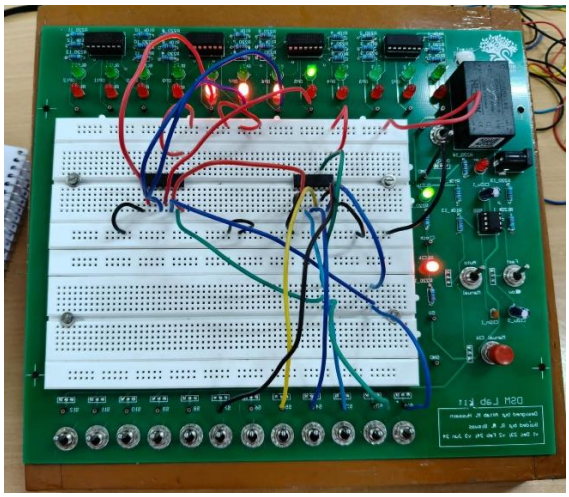
Tinkercad Reference circuit:



Procedure:

1. Connect the VCC (14) and GND (7) pins of the ICs to the VCC and GND lines of the Digital Test Kit respectively.
2. Make the connections as shown in the reference circuit.

Observation:



Conclusion:

S0	S1	OUTPUT
0	0	A
0	1	B
1	0	C
1	1	D

S0	S1	A	B	C	D
0	0	1	0	0	0
0	1	0	1	0	0
1	0	0	0	1	0
1	1	0	0	0	1

Link to TinkerCAD simulation:
https://www.tinkercad.com/things/jG98HhBXQgk-lab4exp3?sharecode=HMpLyp_vbZ-CPJT8LsMwqrHvG7SQ23zSPgFN2niVF7E

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