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COMPUTER ARCHITECTURE
EXPERIMENT – 1

Implementation of Multiplexers

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Aim: In this experiment, students will be introduced to the operation of multiplexers and implement the full-adder circuit using multiplexers.
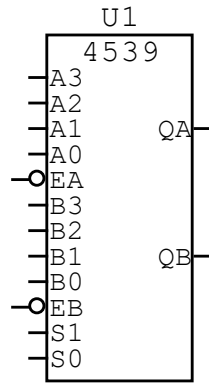
Experimental Work:

Consider the Full-Adder circuit:

$$S(x,y,z) = x \oplus y \oplus z$$
$$C(x,y,z) = x.y + (x \oplus y).z$$

Implement the Full-Adder circuit by using the multiplexer 4539. Confirm that your multiplexer implementation is satisfying the truth table of Full-Adder.

```
            U1
           4539
       ─┤A3
       ─┤A2
       ─┤A1      QA├─
       ─┤A0
       ─o┤EA
       ─┤B3
       ─┤B2
       ─┤B1      QB├─
       ─┤B0
       ─o┤EB
       ─┤S1
       ─┤S0
```

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Multiplexer

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X	Y	Z	C	S
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

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