# FEDERAL UNIVERSITY OF AGRICULTURE ABEOKUTA

**DEPARTMENT OF COMPUTER SCIENCE**

**CSC 323 PRACTICAL**

**EXPERIMENTAL REPORT ON THE CONTROL FEATURES OF THE SIX LOGCAL GATES {AND,OR,NOT,NAND,NOR,XOR}**

**Group 5**

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**TITLE: AND GATE EXPERIMENT**

**AIM:**

1. To understand basic functions of the AND gate.
2. To understand the control features of the ANDgate.

**PRECAUTIONS**

1. We ensured that the jumper wire was straight and did not break inside.
2. We ensured that the logical trainer was switched off when connecting the jumper wires.
3. We ensured right connection from the input to the output.
4. We ensured that we connected the jumper wires to the correct input on the bread board.
5. We ensured tight connections on the bread board.

**MATERIALS REQUIRED:** Basic AND GATE logical symbol, bread board, logical trainer, jumper wires, and pliers.

**PROCEDURES**

We connected the INPUT "A", "B" to logical switch P2, P3, and connected the OUTPUT "Y" to LED display "0". We changed both of the logical switch P2, P3 from "0", to "1" and back to "0", then we observed the INPUT and OUTPUT situation, and recorded them on truth table.

TRUTH TABLE FOR AND GATE (Y= A **.** B)

|  |  |  |
| --- | --- | --- |
| A | B | Y |
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

**CONCLUSION**

The light is turned on only when the two inputs are logical “1”, otherwise “0”.This means that the AND gate gives an output “1” only when both inputs are “1”.

**TITLE: OR GATE EXPERIMENT**

**AIM:**

1.To understand basic functions of the OR gate.

2.To understand the control features of the ORgate.

**PRECAUTIONS**

1. We ensured that the jumper wire was straight and did not break inside.
2. We ensured that the logical trainer was switched off when connecting the jumper wires.
3. We ensured right connection from the input to the output.
4. We ensured that we connected the jumper wires to the correct input on the bread board.
5. We ensured tight connections on the bread board.

**MATERIALS REQUIRED:** Basic OR GATE logical symbol, bread board, logical trainer, jumper wires, and pliers.

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**PROCEDURES**

We connected the INPUT "A", "B" to logical switch P2, P3, and also connected the OUTPUT "Y" to LED display "0". We changed both of the logical switch P2, P3 from "0", to "1" and back to "0", we then observed the INPUT and OUTPUT situation, and recorded them in truth table.

TRUTH TABLE

|  |  |  |
| --- | --- | --- |
| A | B | Y |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

Y= A+B

**CONCLUSION**

The light is turned off only when the two inputs are logical “0”, otherwise “1”.This means that the OR gate gives an output “0” only when both inputs are “0”.

**TITLE: NOT GATE EXPERIMENT**

**AIM:**

1.To understand basic functions of the NOT gate.

2.To understand the control features of the NOTgate.

**PRECAUTIONS**

1. We ensured that the jumper wire was straight and did not break inside.
2. We ensured that the logical trainer was switched off when connecting the jumper wires.
3. We ensured right connection from the input to the output.
4. We ensured that we connected the jumper wires to the correct input on the bread board.
5. We ensured tight connections on the bread board.

**MATERIALS REQUIRED:** Basic NOT GATE logical symbol, bread board, logical trainer, jumper wires, and pliers.

**PROCEDURES**

We connected the INPUT "A", "B" to logical switch P2, P3, and also connected the OUTPUT "Y" to LED display "0". We changed both of the logical switch P2, P3 from "0", to "1" and back to "0", we then observed the INPUT and OUTPUT situation, and recorded them in truth table.

TRUTH TABLE

|  |  |
| --- | --- |
| A | Y |
| 1 | 0 |
| 0 | 1 |

Y = AΦB

**CONCLUSION**

The light is turned on when the input is off and off when the input is on.

**TITLE: NAND GATE EXPERIMENT**

**AIM:**

1.To understand basic functions of the NAND gate.

2.To understand the control features of the NANDgate.

**PRECAUTIONS**

1. We ensured that the jumper wire was straight and did not break inside.
2. We ensured that the logical trainer was switched off when connecting the jumper wires.
3. We ensured right connection from the input to the output.
4. We ensured that we connected the jumper wires to the correct input on the bread board.
5. We ensured tight connections on the bread board.

**MATERIALS REQUIRED:** Basic NAND GATE logical symbol, bread board, logical trainer, jumper wires, and pliers.

**PROCEDURES**

We connected the INPUT "A", "B" to logical switch P2, P3, and also connected the OUTPUT "Y" to LED display "0". We changed both of the logical switch P2, P3 from "0", to "1" and back to "0", we then observed the INPUT and OUTPUT situation, and recorded them in truth table.

TRUTH TABLE

|  |  |  |
| --- | --- | --- |
| A | B | Y |
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

**CONCLUSION**

The light is turned off only when the two inputs are logical “1”.This means that the NAND gate gives an output “0” only when both inputs are “1” otherwise, output is ”1”.

**TITLE: NOR GATE EXPERIMENT**

**AIM:**

1.To understand basic functions of the NOR gate.

2.To understand the control features of the NORgate.

**PRECAUTIONS**

1. We ensured that the jumper wire was straight and did not break inside.
2. We ensured that the logical trainer was switched off when connecting the jumper wires.
3. We ensured right connection from the input to the output.
4. We ensured that we connected the jumper wires to the correct input on the bread board.
5. We ensured tight connections on the bread board.

**MATERIALS REQUIRED**:Basic NOR GATE logical symbol, bread board, logical trainer, jumper wires, and pliers.

**PROCEDURES**

We connected the INPUT "A", "B" to logical switch P2, P3, and also connected the OUTPUT "Y" to LED display "0". We changed both of the logical switch P2, P3 from "0", to "1" and back to "0", we then observed the INPUT and OUTPUT situation, and recorded them in truth table.

TRUTH TABLE

|  |  |  |
| --- | --- | --- |
| A | B | Y |
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |

Y= A+B

**CONCLUSION**

The light is turned on only when the two inputs are off.This means that the NOR gate gives an output “1” only when both inputs are “0”, and gives “0” for every other input.

**TITLE: EX-OR GATE EXPERIMENT**

**AIM:**

1.To understand basic functions of the EX-OR gate.

2.To understand the control features of the EX-ORgate.

**PRECAUTIONS**

1. We ensured that the jumper wire was straight and did not break inside.
2. We ensured that the logical trainer was switched off when connecting the jumper wires.
3. We ensured right connection from the input to the output.
4. We ensured that we connected the jumper wires to the correct input on the bread board.
5. We ensured tight connections on the bread board.

**MATERIALS REQUIRED:** Basic EX-OR GATE logical symbol, bread board, logical trainer, jumper wires, and pliers.

**PROCEDURES**

We connected the INPUT "A", "B" to logical switch P2, P3, and also connected the OUTPUT "Y" to LED display "0". We changed both of the logical switch P2, P3 from "0", to "1" and back to "0", we then observed the INPUT and OUTPUT situation, and recorded them in truth table.

TRUTH TABLE

|  |  |  |
| --- | --- | --- |
| A | B | Y |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

**CONCLUSION**

The light is off when both inputs are on or both inputs are off.This means that the EX-OR gate gives an output “1” when one and only one of the input is “1”.