Name- Samsul Alam Niom

ID-1620075042

Course – CSE 231.L

LAB 05 Performance work

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Operation | M | A | B | C | S4 S3 S2 S1 |
| 7+5 | 0 | 0111 | 0101 | 0 | 1100 |
| 4+6 | 0 | 0100 | 1010 | 0 | 1010 |
| 9 + 11 | 0 | 1001 | 1011 | 1 | 0100 |
| 15 + 15 | 0 | 1111 | 1111 | 1 | 1110 |
| 7 – 5 | 1 | 0111 | 0101 | 0 | 0010 |
| 4 – 6 | 1 | 0100 | 0110 | 0 | 1110 |
| 11 – 2 | 1 | 1001 | 0110 | 0 | 1001 |
| 15 – 15 | 1 | 1111 | 1111 | 0 | 0 |

Experimental data (4-bit Binary Adder-Subtractor)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Decimal  Value | Binary Sum | Binary Sum | Binary Sum | Binary Sum | Binary Sum | BCD  Sum | BCD  Sum | BCD  Sum | BCD  Sum | BCD  Sum |
|  | Cout | Z3 | Z2 | Z1 | Z0 | C | S3 | S2 | S1 | S0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 5 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 7 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 8 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 10 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 11 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| 12 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 13 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 14 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 15 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| 16 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| 17 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 18 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 19 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |

Experimental Data (BCD Adder)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operations | A | B | Overflow Carry | SUM |
| 9+0 | 1001 | 0000 | 0 | 1001 |
| 9+1 | 1001 | 0001 | 0 | 1010 |
| 9+2 | 1001 | 0010 | 0 | 1111 |
| 9+3 | 1001 | 0011 | 0 | 1100 |
| 9+4 | 1001 | 0100 | 0 | 1101 |
| 9+5 | 1001 | 0101 | 0 | 1110 |
| 9+6 | 1001 | 0110 | 0 | 1111 |
| 9+7 | 1001 | 0111 | 1 | 0000 |
| 9+8 | 1001 | 1000 | 1 | 0001 |
| 9+9 | 1001 | 1001 | 1 | 0010 |
|  |  |  |  |  |

Today’s summery- Today we learned about binary addition and subtraction. Throughout the class, it was the most important lab of all time. We learned about some new concepts like half binary adders, full binary adders. How to add and subtract binary adders using ic diagram, Bcd addition & implementation of BCD adder using IC74293 & much more.