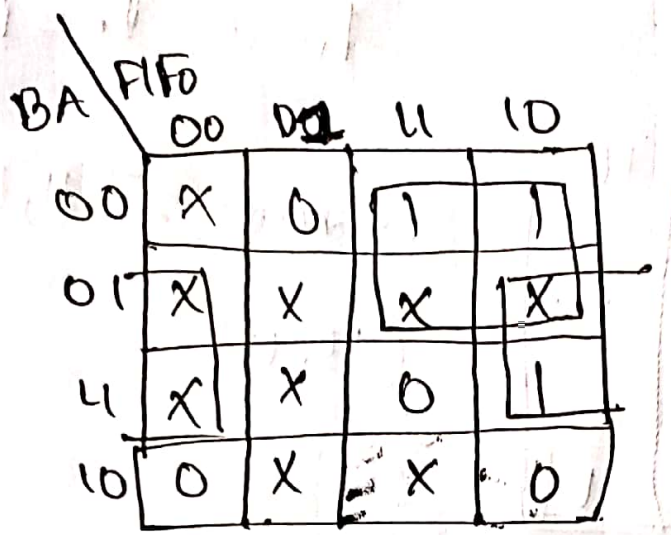
Name: Riaz Mahadi

ID : 1931746042

ALUOp		Functional feild		ALOOp
Binvert	Ainvert	F1	Fo	$O_2O_1O_o$
1	0	0	0	010 (add)
1	0	1	0	110 (Sub)
1	1	1	0	011 (Multiply)
0	0	0	1	000 (and)
0	0	1	0	001 (Or)
0	0	1	1	111 (X-Or)

K-map for O_0

Let $B_{in}=A$, $A_{in}=B$, $F_1=C$, $F_0=D$



Group (2, 3, 6, 7)

(4, 6, 12, 14)

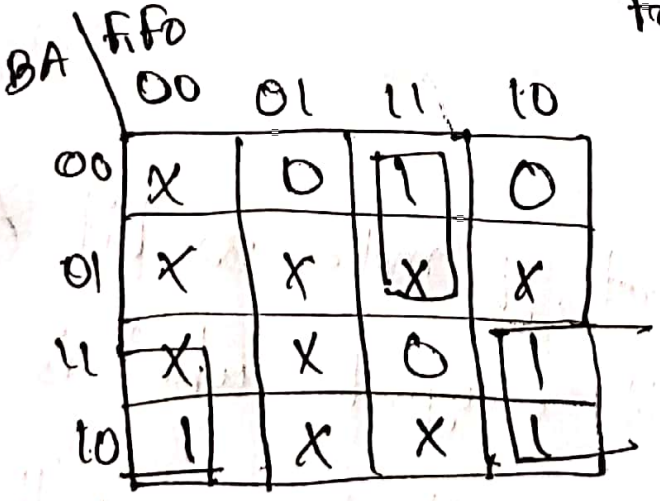
$O_0 = \bar{A}C + B\bar{D}$

K-map for O_1

Let

$B_{in}=A$, $A_{in}=B$

$F_1=E$, $F_0=D$



Group = (8, 10, 12, 14)

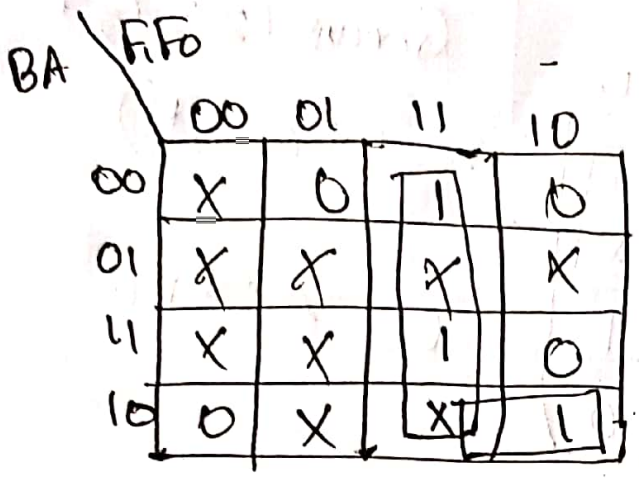
(3, 7)

$O_1 = A\bar{D} + \bar{A}CD$

O_2 – Kmap

Let Bin = A, Ain = B

$F_i = C$, $F_o = D$



Group (3, 7, 11, 15)

(10, 11)

$$O_2 = A\bar{B}C + CD$$

Discussion:

In this project, I make 32 bit ALU. Firstly, I make 16 bit project which is 16 bit. Then I make it 32 bit by cascading two 16 bit ALU.

For making 16 bit ALU, I have to use three 16 bit ie which I make in

the lab 1, 2, and 3. One ie is for multiplier which is 8 bit. The rest of the two is Arithmetic and Logic unit. In Arithmetic unit, I use adder for doing add and subtraction. In the logic unit ie, I use AND, OR, X-OR Gate for doing these operation.

Then I design a ALU control unit which is mainly use for controling the whole project. I make ALU control unit by equation of O_0, O_1 and O_2 which I get from the K-map. I use spliter for merging the the three equation in one output. Then I maka a ie of ALU control unit. Then I use it for run the project smoothly.