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# ARM ASSIGNMENT

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IITH - Future Wireless Communication (FWC22029)



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Assign  $X = U' + V$

		V	
		0	1
U	0	1	1
	1	0	0

Assign  $Y = U'V' + U'V + UV$

		V	
		0	1
U	0	1	1
	1	0	1

## Abstract

The objective of this manual is to show how to Verify the Boolean Expression using **ARM Processor-VAMAN** Board  
 $U' + V = U'V' + U'V + UV$

## 1 Components

Component	Value	Quantity
Vaman Board	-	1
Jumper wires	-	as required

TABLE 1.0

## 2 MATHEMATICAL PROOF

To prove:  $U' + V = U'V' + U'V + UV$

Using Distributive and Complement law

$$U'V' + U'V + UV = U'(V+V') + U.V$$

$$U'V' + U'V + UV = U'(1) + U.V$$

$$U'V' + U'V + UV = U' + U.V$$

$$U'V' + U'V + UV = (U' + U). (U' + V)$$

$$U'V' + U'V + UV = 1.(U' + V)$$

$$U'V' + U'V + UV = U' + V$$

## 3 Karunugh Map

A Karnaugh map (K-map) is a visual method used to simplify the algebraic expressions in Boolean functions without having to resort to complex theorems or equation manipulations. It involves fewer steps than the algebraic minimization technique to arrive at a simplified expression.

## 4 Truth Table

Above K-maps are verify using Table-0  
 Assume that  $F = X = Y$

A	B	F
0	0	1
0	1	1
1	0	0
1	1	1

TABLE 2.3

## 5 Software

1. Download the codes given in the link below and execute them.

[https://github.com/19PA1AO410/FWC-Module-1/blob/main/arm\\_Assignment/src/main.c](https://github.com/19PA1AO410/FWC-Module-1/blob/main/arm_Assignment/src/main.c)

## 6 Conclusion

1. Distributive law is expressed by

$U' + V = U'V' + U'V + U.V$  with LHS =  $U' + V$ , RHS =  $U'V' + U'V + U.V$ ,

2. Codes are written for both Distributive laws and are executed using Vaman Board(Arm processor).

3. Result has been displayed on LEDs (i.e. LED1, LED2).

4. LED1 is assigned for LHS of the Boolean expression of Distributive Law.

5. LED2 is assigned for RHS of the Boolean expression of Distributive Law.

6. For random digital inputs U, and V as per Truth tables (at Vaman Board(Pigmy side) pins 2, and 4), it has been noticed that, the output pins (18 and 21) of Vaman Board are at the same level.