

UCS704 EMBEDDED SYSTEMS DESIGN

SUBMITTED BY

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Experiment 1 (Truth Table and Logic Gates)

To study and verify the truth table of various logic gates (NOT, AND, OR, NAND, NOR, EX-OR)

Code :

```
module logic_gates_test;
```

```
    // Declare inputs
```

```
    reg a, b;
```

```
    // Declare outputs for each gate
```

```
    wire not_a;
```

```
    wire and_ab, or_ab, nand_ab, nor_ab, xor_ab, xnor_ab;
```

```
    // Instantiate the gates
```

```
    not U1 (not_a, a);
```

```
    and U2 (and_ab, a, b);
```

```
    or U3 (or_ab, a, b);
```

```
    nand U4 (nand_ab, a, b);
```

```
    nor U5 (nor_ab, a, b);
```

```
    xor U6 (xor_ab, a, b);
```

```
    xnor U7 (xnor_ab, a, b);
```

```
    // Initial block to generate input combinations and display results
```

```
    initial begin
```

```
        $display("A B | NOT AND OR NAND NOR XOR XNOR");
```

```
        $display("-----");
```

```
        // Loop through all combinations of a and b
```

```
        a = 0; b = 0; #10 display_values();
```

```
        a = 0; b = 1; #10 display_values();
```

```
        a = 1; b = 0; #10 display_values();
```

```
        a = 1; b = 1; #10 display_values();
```

```
    $finish;
```

```
end
```