@Sree Vishnu Varthini

Day - 20

Embedded Systems Programming

MICROPROCESSOR - INPUT LOGIC

WRITE OPERATION DEMONSTRATION

Address Range	Memory Type
0 - 15	ROM (Read-Only Memory)
16 - 31	RAM (Read-Write Memory)
32 - 47	OUTPUT (Output Devices)
48 - 63	INPUT (Input Devices)

The microprocessor interacts with these memory regions using **read and write operations**.

Code Snippet

```
int *x;
x = 33; // address line 33 (OUTPUT) selected
*x = 1; // writing value 1 in location 33
```

STEP-BY-STEP BREAKDOWN:

1. **int *x;**
    - Declares a pointer x, which will store a memory address.
2. **x = 33;**
    - Assigns address 33 to x.
    - The pointer x now points to address 33, which is inside the OUTPUT (32 - 47) range.
3. ***x = 1;**
    - This tells the microprocessor to write the value 1 to memory address 33.
    - **Microprocessor operation:**
        - Address Bus selects address 33.
        - Data Bus sends value 1.
        - Control Bus sets the signal to WRITE mode.
        - The value 1 is written at address 33 in OUTPUT.

💡 **Result:** Memory location 33 (OUTPUT) now holds the value 1.

READ OPERATION DEMONSTRATION

Address Range	Memory Type
0 - 15	ROM (Read-Only Memory)
16 - 31	RAM (Read-Write Memory)
32 - 47	OUTPUT (Output Devices)
48 - 63	INPUT (Input Devices)

The microprocessor interacts with these memory regions using **read and write operations**.

Code Snippet

```
int *x, y;
x = 49; // address line 49 (INPUT) is selected
y = *x; // reading operation done and value in
address 49 will be stored in y
```

STEP-BY-STEP BREAKDOWN:

1. **int *x, y;**
    - Declares a pointer x which will store a memory address and an integer y.
2. **x = 49;**
    - Assigns address 49 to x.
    - The pointer x now points to address 49, which is inside the INPUT (48-63) range.
3. **y = *x;**
    - This tells the microprocessor to read the value stored at address 49.
    - **Microprocessor operation:**
        - Address Bus selects address 49.
        - Control Bus sets the signal to READ mode.
        - Data Bus retrieves the value stored at address 49 and assigns it to y.

💡 **Result:** The value stored at address 49 (INPUT) is now in variable y.

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P.S. You can access the **Embedded Systems Programming** course by contacting **Balajee Seshadri** Sir through the WhatsApp number provided on his linkedin profile.