
# Computer Architecture

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# Lab Task #04

**Task-1**

**OR Operation: Take two inputs, perform the OR operation, and display the result.**

**Code:**

```
START:
    INP             ;Take first input
    STA NUM1        ;Store in NUM1

    INP             ;Take second input
    STA NUM2        ; Store in NUM2

    LDA NUM1        ; Load first input into AC
    OR NUM2
    STA RESULT      ; Store result in RESULT
    LDA RESULT
    OUT             ; Output the result
    HLT
```

NUM1:  .data 1 0  ; First input

NUM2:  .data 1 0  ; Second input

RESULT: .data 1 0  ; Final OR result

**Out Put:**

```
EXECUTING...
Enter Inputs, the first of which must be an Integer: 0
Enter Inputs, the first of which must be an Integer: 1
Output:  0
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
```

**Task-2**

**XOR Operation: Take two inputs, perform the XOR operation, and display the result.**

**Code:**

START:

INP

STA NUM1

INP

STA NUM2

LDA NUM1

CMA

STA TEMP1

LDA NUM2

```
    CMA
    AND TEMP1
    CMA
    STA TEMP2

    LDA NUM1
    AND NUM2
    STA TEMP1

    LDA TEMP1
    CMA
    AND TEMP2
    STA RESULT

    LDA RESULT
    OUT
    HLT

; Data storage
NUM1: .data 1 0
NUM2: .data 1 0
TEMP1: .data 1 0
TEMP2: .data 1 0
RESULT: .data 1 0
```

**Out Put:**

```
EXECUTING...
Enter Inputs, the first of which must be an Integer: 1
Enter Inputs, the first of which must be an Integer: 1
Output:  0
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
```

**Task-3**

**NAND Operation: Take two inputs, perform the NAND operation, and display the result.**

**Code:**

```
START:
    INP
    STA NUM1

    INP
    AND NUM1
    CMA
    ADD TWO

    STA RESULT

    LDA RESULT
    OUT

    HLT

NUM1:   .data 1 0
```

RESULT: .data 1 0

TWO:  .data 1 2

### Out Put:

```
EXECUTING...
Enter Inputs, the first of which must be an Integer: 1
Enter Inputs, the first of which must be an Integer: 0
Output:  1
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
```

**Task-4**

**NOR Operation: Take two inputs, perform the NOR operation, and display the result.**

### Code:

```
START:
    INP
    STA NUM1
    INP
    STA NUM2

    LDA NUM1
    CMA
    STA TEMP1

    LDA NUM2
    CMA
    AND TEMP1
    CMA
    CMA
    ADD TWO
```

```
    STA RESULT


    LDA RESULT
    OUT


    HLT


NUM1: .data 1 0
NUM2: .data 1 0
TEMP1: .data 1 0
RESULT: .data 1 0
TWO: .data 1 2
```

**Out Put:**

```
EXECUTING...
Enter Inputs, the first of which must be an Integer: 1
Enter Inputs, the first of which must be an Integer: 1
Output:  0
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
```

**Task-5**

**NOT Operation: Take input, perform the NOT operation, and display the result.**

**Code:**

```
START:
    INP
    CMA
    INC
    INC
    STA RESULT
```

LDA RESULT

OUT

HLT

RESULT: .data 1 0

**Out Put:**

```
EXECUTING...
Enter Inputs, the first of which must be an Integer: 1
Output:  0
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
```

**Git Hub Link:**

**https://github.com/Wajahat725/Computer-Architecture**