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Lab Tasks

Task 1: (OR Operation)

START:

INP

STA NUM

INP

OR NUM

OUT

HALT

NUM: .data 1 0

Output:

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

According to the truth table of OR operation, when any one input is 1, the output is 1.

The inputs were 0 and 1, so the output is 1.

Task 2: (NAND)

START:

INP

STA NUM

INP

NAND NUM

OUT

HALT

NUM: .data 1 0

Output:

```
EXECUTING...
Enter Inputs, the first of which must be an Integer: 1
Enter Inputs, the first of which must be an Integer: 1
Output:  -2
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
```

NAND is the opposite of AND.

When any one of the input is 0, the output is 1 and when the inputs are 1 and 1, the output is 0.

Hence the output is 0.

Task 3: (NOR)

START:

INP

STA NUM

INP

NOR NUM

OUT

HALT

NUM: .data 1 0

Output:

```
EXECUTING...
Enter Inputs, the first of which must be an Integer: 1
Enter Inputs, the first of which must be an Integer: 1
Output: -2
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
```

NOR is the opposite of OR.

When both inputs in OR are 1, it gives the output 1, but in case of NOR, it gives output 0.

Task 4 : (XOR)

START:

INP

STA NUM

INP

XOR NUM

OUT

HALT

NUM: .data 1 0

Output:

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

When both inputs in XOR are different, output is 1.

When both inputs are same, the output is 0.

Since both inputs are different, the output is 1.

Task 5: (NOT)

START:

INP

STA NUM

NOT NUM

OUT

HALT

NUM: .data 1 0

Output:

```
EXECUTING...  
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]
```

NOT inverts the input.

If input is 0, output is 1 and when input is 1 the output is 0.