

# EE2003 Assignment 1

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## P4. Question

Write a program to Compare Two Words (ie, two 4 digit hexadecimal numbers) and display the result in **RESULT**. If the Words are equal **RESULT** should be set as zero, else set as one.

### Logic used

Two numbers **X** and **Y** are to be compared. This is done by first loading **X** in the accumulator, taking its two's complement ( $\bar{X} + 1$ ), then adding **Y** to it. This gives us the value of  $Y - X$  in the accumulator. Now, if  $Y - X$  is non-zero, we load the value of 1 into the accumulator, else we leave it as-is. Then, we store the value of the accumulator in **RESULT**.

### Program

```
1 LDA X
2 CMA
3 INC
4 ADD Y
5 SZA
6 LDA ONE
7 STA RESULT
8 HLT
```

### Inputs

when inputs are not equal:

```
1 X, HEX 1111
2 Y, HEX 1234
3 ONE, HEX 0001
4 RESULT, HEX 0000
```

when inputs are equal:

```
1 X, HEX 1111
2 Y, HEX 1111
3 ONE, HEX 0001
4 RESULT, HEX 0000
```

### Outputs

Label	Address	Instruction	Hex	Label	Address	Instruction	Hex
	000	LDA X	2008		000	LDA X	2008
	001	CMA	7200		001	CMA	7200
	002	INC	7020		002	INC	7020
	003	ADD Y	1009		003	ADD Y	1009
	004	SZA	7004		004	SZA	7004
	005	LDA ONE	200A		005	LDA ONE	200A
	006	STA RESULT	300B		006	STA RESULT	300B
	007	HLT	7001		007	HLT	7001
X	008	HEX 1111	1111	X	008	HEX 1111	1111
Y	009	HEX 1234	1234	Y	009	HEX 1111	1111
ONE	00A	HEX 0001	0001	ONE	00A	HEX 0001	0001
RESULT	00B		0001	RESULT	00B		0000

with non-equal inputs

with equal inputs