

CMPE 321- Computer Architecture

Worksheet

October 22, 2018

Half Adder Truth Table			
Input		Output	
a	b	carry	sum
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

Figure 1: Half Adder Truth Table.

1. Example of And gate

```
// This file is part of www.nand2tetris.org
// and the book "The Elements of Computing Systems"
// by Nisan and Schocken, MIT Press.
// File name: projects/01/And.hdl
/**
 * And gate:
 * out = 1 if (a == 1 and b == 1)
 *      0 otherwise
 */
CHIP And {
    IN a, b;
    OUT out;
    PARTS:
        // Put your code here:
        Nand(a=a, b=b, out=carry);
        Not(in=carry, out=out);
}
```

2. Implement the half adder from Nand2tetris software.

```
// This file is part of www.nand2tetris.org
// and the book "The Elements of Computing Systems"
// by Nisan and Schocken, MIT Press.
// File name: projects/02/HalfAdder.hdl
/**
 * Computes the sum of two bits.
 */
CHIP HalfAdder {
    IN a, b;    // 1-bit inputs
    OUT sum,    // Right bit of a + b
```

```
        carry; // Left bit of a + b
PARTS:
    // Put your code here:
}
```
