

Hardware Simulator (2.5) - C:\Users\dandel\Documents\CS 220\HW03\HalfAdder.hdl

File View Run Help

Chip Name: **HalfAdder** Time: 0

Input pins		Output pins	
Name	Value	Name	Value
a	1	sum	0
b	1	carry	1

HDL

```
CHIP HalfAdder {
    IN a, b;
    OUT sum, carry;

    PARTS:
        Xor(a=a, b=b, out=sum);
        And(a=a, b=b, out=carry);
}
```

Internal pins

Name	Value
------	-------

```
// This file is part of www.nand2tetrtris.org
// and the book "The Elements of Computing Systems"
// by Nisan and Schocken, MIT Press.
// File name: projects/02/HalfAdder.tst

load HalfAdder.hdl,
output-file HalfAdder.out,
compare-to HalfAdder.cmp,
output-list a%B3.1.3 b%B3.1.3 sum%B3.1.3 carry%B3.1.3;

set a 0,
set b 0,
eval,
output;

set a 0,
set b 1,
eval,
output;

set a 1,
set b 0,
eval,
output;

set a 1,
set b 1,
eval,
output;
```

End of script - Comparison ended successfully

Hardware Simulator (2.5) - C:\Users\dandel\Documents\CS 220\HW03\FullAdder.hdl

File View Run Help

Chip Name: **FullAdder** Time: 0

Input pins		Output pins	
Name	Value	Name	Value
a	1	sum	1
b	1	carry	1
c	1		

HDL

```
CHIP FullAdder {
    IN a, b, c;
    OUT sum, carry;

    PARTS:
        HalfAdder(a=a, b=b, sum=sumab,
        HalfAdder(a=sumab, b=c, sum=sum,
        Or(a=carryab, b=carryabc, out=

```

Internal pins

Name	Value
sumab	0
carryab	1
carryabc	0

```
set b 0,
set c 0,
eval,
output;

set c 1,
eval,
eval,
output;

set b 1,
set c 0,
eval,
output;

set c 1,
eval,
output;

set a 1,
set b 0,
set c 0,
eval,
output;

set c 1,
eval,
output;

set b 1,
set c 0,
eval,
output;

set c 1,
eval,
output;
```

End of script - Comparison ended successfully

The screenshot shows the Hardware Simulator (2.5) interface. The top menu bar includes File, View, Run, and Help. Below the menu is a toolbar with various icons for simulation control. The main window is divided into several sections:

- Chip Name:** Inc16
- Time:** 0
- Input pins:**

Name	Value
in[16]	-5
- Output pins:**

Name	Value
out[16]	-4
- HDL:**

```
CHIP Inc16 {
  IN in[16];
  OUT out[16];

  PARTS:
    Add16(a=in, b[0]=true, out=out)
}
```
- Internal pins:**

Name	Value
------	-------
- Script:**

```
// This file is part of www.nand2tetrtris.org
// and the book "The Elements of Computing Systems"
// by Nisan and Schocken, MIT Press.
// File name: projects/02/Inc16.tst

load Inc16.hdl,
output-file Inc16.out,
compare-to Inc16.cmp,
output-list in%B1.16.1 out%B1.16.1;

set in %B0000000000000000, // in = 0
eval,
output:

set in %B1111111111111111, // in = -1
eval,
output:

set in %B00000000000000101, // in = 5
eval,
output:

set in %B1111111111111011, // in = -5
eval,
output:
```

At the bottom, a status bar indicates: "End of script - Comparison ended successfully".

