Project 1
PDF Document · 260 KB

0 =
1 =

NAND:

a	b	out
0	0	1
1	0	1
0	1	1
1	1	0

"¬a" → ou "não-b"
só é verdadeiro se b for falso

a	b	out
0	0	1
0	1	0
1	0	1
1	1	0

Se unirmos os fios no início, teremos construído a negação:

```
CHIP Not {
  IN in;
  OUT out;
  PARTS:
    Nand(a = in, b = in, out = out);
}
```

NOT:

a	out
0	1
1	0

AND:

a	b	out
0	0	0
0	1	0
1	0	0
1	1	1

```
CHIP And {
  IN a, b;
  OUT out;
  PARTS:
  Nand(a= a, b= b, out= out1);
  Nand(a= out1, b= out1, out= out);
}
```

OR:

a	b	out
0	0	0
0	1	1
1	0	1
1	1	1

```
CHIP Or {
  IN a, b;
  OUT out;
  PARTS:
  Nand(a= a, b= a, out= out1);
  Nand(a= b, b= b, out= out2);
  Nand(a= out1, b= out2, out= out);
}
```

XOR

a	b	out
0	0	0
0	1	1
1	0	1
1	1	0

```
CHIP Xor {
  IN a, b;
  OUT out;
  PARTS:
  Nand(a= a, b= b, out= out0);
  Nand(a= a, b= out0, out= out1);
  Nand(a= out0, b= b, out= out2);
  Nand(a= out1, b= out2, out= out);
}
```

```
CHIP Xor {
  IN a, b;
  OUT out;

  PARTS:
  Not(in= a, out= nota);
  Not(in= b, out= notb);
  And(a= a, b= notb, out= w1);
  And(a= nota, b= b, out= w2);
  Or(a= w1, b= w2, out= out);
}
```

MUX

a	b	sel	out
0	0	0	0
0	1	0	0
1	0	0	1
1	1	0	1
0	0	1	0
0	1	1	1
1	0	1	0
1	1	1	1

DMUX

sel	out0	out1
0	in	0
1	0	in

SEL
IN
out0

50%