Contents

1 Tutorial

1.1 Introduction to BabyTown

Min Size	Accepts	Returns
3	(Left 1)	(Right 1)

Instruction Text Place an input on side 3 and an output on side 1. Then connect them by using bus pieces to extend the range of the input signal.

	Input	Output
Tests	0	0
	1	1

Completion Text You did it! The easiest level in the game! Hopefully the game gets harder than this (Right?). Those pieces we were playing with a moment ago are called Gates, because they stop or allow the flow of a signal. This signal is represented by an electric blue current in ABED.

Upon Completion Unlock circuit 'NOT', Unlock level '0.1'

1.2 Is Nice?

Min Size	Accepts	Returns
3	(Left 1)	(Right 1)

Instruction Text We are going to test out our new Not gate. Place the input on side 3 and the output on side 1 as before, but this time create a Not gate in the center instead of a Bus.

Tests

Input	Output
0	1
1	0

Completion Text Another success! A Not gate negates the signal coming from the input. So if the input of a Not gate is off, it will output on, and vice versa. In general, the input of a gate is on the left and the output is on the right. But as we will see, we are by no means restricted to one input/output.

Upon Completion Unlock circuit 'OR', Unlock level ''

1.3 My First Three-way!

Min Size	Accepts	Returns
3	(Left 1) (Up 1)	

Instruction Text Oh boy, two inputs? Create an Or gate and place inputs at 3, 0 and an output at 1. Remember to rotate the input so the signal is facing the Or gate.

Tests

Input	Output
00	0
01	1
10	1
11	1

Completion Text Now were getting somewhere! An Or gate will output a signal if one or more of its inputs is turned on, otherwise it outputs nothing. Imagine of a waiter asking Would you like milk OR sugar in your coffee? Gates can have as many inputs/outputs as they damn well please, with one condition: there must at least one. Obviously.

Upon Completion Unlock circuit ", Unlock level 'Circuits on Circuits?'

1.4 Circuits on Circuits?

Min Size	Accepts	Returns
4	(Left 1) (Up 1)	(Right 1)

Instruction Text As it turns out, we can also create completely original circuits from those we already have. Create another Or, but this time use a not gate to negate the output. You may need to change the size of the circuit board.

Tests

Input	Output
00	1
01	0
10	0
11	1

Completion Text And there you go, a whole new gate. Once you complete a level, the game is turned into a circuit for you to use on any game you please. You can even create circuits without completing a level on sandbox mode.

Upon Completion Unlock circuit 'NOR', Unlock level 'Andromeda (Its a galaxy out there!)'

1.5 Andromeda (Its a galaxy out there!)

Min Size	Accepts	Returns
5	(Left 1) (Up 1)	(Right 1)

Instruction Text Create an And gate. This gate takes two inputs at 3, 0 and outputs a signal if both of the inputs are on. If one or more of the outputs are off, the output should also be off.

Tests

Input	Output
00	0
01	0
10	0
11	1

Completion Text Hey you did it! I was worried Id lose you there for a second. And, Not and Or are the fundamental operations of Boolean algebra, every electronic circuit in your computer is made exclusively of these gates. Now youve created these three, we can begin to really make things!

Upon Completion Unlock circuit 'AND', Unlock level 'Mr. NAND-Man'

1.6 Mr. NAND-Man

Min Size	Accepts	Returns
4	(Left 1) (Up 1)	(Right 1)

Instruction Text Negate an And gate.

Tests

Input	Output
00	1
01	1
10	1
11	1

Completion Text Yeah it was pretty easy, but you got a new circuit out of it. And you gotta collect em all! You feel like Ash Ketchum yet, you piece of millennial trash?

Upon Completion Unlock circuit 'NAND', Unlock level 'Make a Left'

2 Basic

2.1 Make a Left

Min Size	Accepts	Returns
3	(Left 1)	(Up 1)

Instruction Text Create a circuit that takes and input on 3 and outputs the signal to an output on side 0.

	Input	Output
Tests	0	0
	1	1

Completion Text Wow, writing these is really tiresome. These gates should give you more freedom in choosing where to place tiles.

Upon Completion Unlock circuit 'LEFT', Unlock circuit 'RIGHT', Unlock circuit 'SUPER', Unlock level 'Some XOR problems'

2.2 XOR problems

Min Size	Accepts	Returns
7	(Left 1) (Up 1)	(Right 1)

Instruction Text This ones tricky. Create a gate that outputs a signal if exactly one input is on. If both inputs are on or both inputs are off, then output off. Hint: The easiest way to do this is to use 4 NAND gates.

	Input	Output
Tests	00	0
	01	1
	10	1
	11	1

Completion Text Oh boy, this one was a good one. Did you have to use google? No shame if you did.

Upon Completion Unlock circuit 'XOR', Unlock level 'A Crossover Episode'

2.3 What is this, a crossover episode!

Min Size	Accepts	Returns
6	(Left 1) (Up 1)	(Right 1) (Down 1)

Instruction Text Using the new XOR gate, create a circuit the routes the signal at the top to the bottom, and the signal on the left to the right. In other words, create two buses that cross over each other.

	Input	Output
Tests	00	00
	01	10
	10	01
	11	11

Completion Text In computer science, this operation is called an XOR swap, and was used when memory was very expensive. Now days, memory is pretty cheap and we dont worry so much.

Upon Completion Unlock circuit 'CROSS OVER', Unlock level 'Scrublords Delight'

2.4 Scrublords Delight

Min Size	Accepts	Returns
4	(Left 1) (Up 1)	(Right 1) (Down 1)

Instruction Text Connect side 3 to side 2 and side 0 to side 1.

	Input	Output
Tests	00	00
	01	01
	10	10
	11	11

Completion Text Youll thank me later when youre trying to save space. This piece is a lifesaver!

Upon Completion Unlock circuit 'CORNER CUT'

3 Advanced Gates

3.1 A Two Parter

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

3.2 It's French for Ship

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

3.3 The Opposite of Merge!

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

3.4 The ol' Digital Sage Switcharoo

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

3.5 Double Negative

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

3.6 Double And

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

3.7 4 part bus

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

4 Mux and Demux

4.1 Multiplexer

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

4.2 Demultiplexer

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

4.3 Advanced BabyTown

Min Size	Accepts	Returns

Instruction Text

Tests

Input	Output

Completion Text

Upon Completion

5 Binary

5.1 Neo is One Backwards!

Min Size	Accepts	Returns
4		(Right 4)

Instruction Text Now that you have a Display, we can start to learn about binary!

Tests

Input	Output
	0001

Completion Text

Upon Completion

5.2 Number Fun

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

6 Bitwise Operations

6.1 Right Shift

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

6.2 Left Shift

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

6.3 Bitwise Not

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

6.4 Bitwise OR

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

6.5 Bitwise AND

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

6.6 Bitwise XOR

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7 Arithmetic Operation

7.1 Half Adder

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7.2 Full Adder

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7.3 2 bit adder

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7.4 Adder

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7.5 Subtract

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7.6 Multiplication

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7.7 Divide

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

7.8 Modulus

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

8 Memory

8.1 RS Latch

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

8.2 1 Bit of Memory

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

8.3 2 Bits!

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

8.4 A byte of memory

Min Size	Accepts	Returns

Instruction Text

Tests Input Output

Completion Text

Upon Completion

9 RAM

10 CPU