Thought Protocol Games Presents...

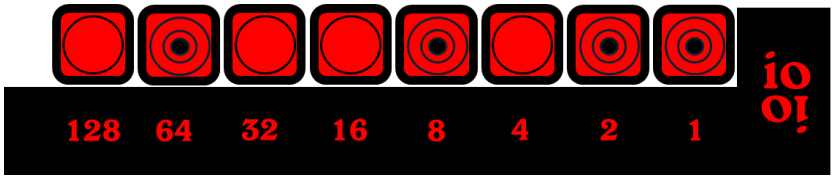
radx.io®

the codable math game

Featuring **Ada!**: A fast-paced number coding game for players age 10+

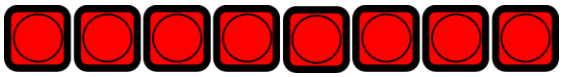
What's in the box?

- **128 Code Cards** – Coded in decimal, hexadecimal, octal, and ASCII
- **10 Wildcards** – Adds chance to the game
- **32 Dice** (called **bits**) – 4 color suits, 8 bits per player (each bit has 3 blank & 3 dotted faces)
- **4 Ciphers**: L-shaped boards that help with dice alignment and number conversion
- **2 Solution Cards** – Provides answers to first 16 bit code/decimal conversions



Featured Game: Ada! "Race to convert decimal numbers into bit code sequences"

- Choose your playing bit length: 4 bits (easiest) to 8 bits (hardest)
- Use matching **Code Cards**, e.g. 4 bits = cards 0 – 15 (cards with the blue borders); 5 bits = cards 0 – 31 (blue and red borders); 6 bits = 0 – 63 (blue, red, and yellow borders); 7 and 8 bits = all cards.
- All bits start "off" - blank faces up, as shown below:



Play:

- Shuffle the **Code Cards** thoroughly and place face down in a pile. Add **Wildcards** as desired throughout the pile (described on top of next page).
- Each player rolls one or more bits. The first to roll the most **"io"** faces begins gameplay.
- Player 1 draws a pile card, calls out the decimal number and lays it face up on the table. The decimals are the blue numbers on white backgrounds.
- All players race to build the bit code by flipping on their bits (blank = "off", dot = "on").
- The first player to correctly convert the decimal number to the bit code calls out "**Ada!**" and wins the round, keeping the solved **Code Card** in their own score pile.
- If correct, the winner draws the next card. If incorrect, that player discards and draws a new card for the remaining players to solve. (Player can call out new number but can't finish out that round.)
- Make sure to place all bits back to "off" position before starting the next round.
- In the event of a tie, players roll one or more dice. The highest number of "**io**" faces breaks the tie.
- You cannot call out "**Ada!**" before flipping the bits to the sequence you think is correct.

Win:

- The first player to collect **Code Cards** equal to the number of bits used during gameplay wins (e.g. 5-bit **Ada!** = first player to score 5 cards wins)

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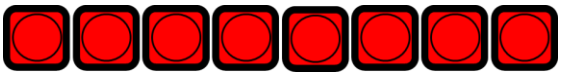
Wildcards:

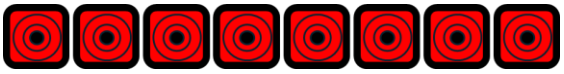
- The ↑↓ wildcard is a "swap" – the player who draws that card must swap their score pile with another player's score pile, even if no one else has cards. Put back into deck if no one has cards.
- The **§** wildcard is a "steal" – the player who draws that card steals *one* card from one opponent's score pile. If no one has any scored cards, the player can save the card for future use.
- The **Ø** wildcard is a "reset" – the player must forfeit their entire score pile. Discard them off to the side or to the bottom of the **Code Card** pile.
- The **+1** wildcard is a "free card" – the player may keep the +1 and consider it to be a solved card.
- The **io** wildcard is an "add two" – the player who draws that card must then draw **2 Code Cards** and add those 2 values together for everyone to solve. This makes it possible to use the 8th bit during a full 8-bit **Ada!** game. When using less than 7 bits, the wildcard may become a "house rules" wildcard.
- Wildcards may be discarded or placed back into the deck after use, if desired. (Another "house rules.")

Example draw and solve using the Cipher:
When you line up 8 bits, you can make different bit codes that can be converted to decimal numbers. Here's a quick way to understand it.

- If all 8 bits are "off" it means the number is 0.

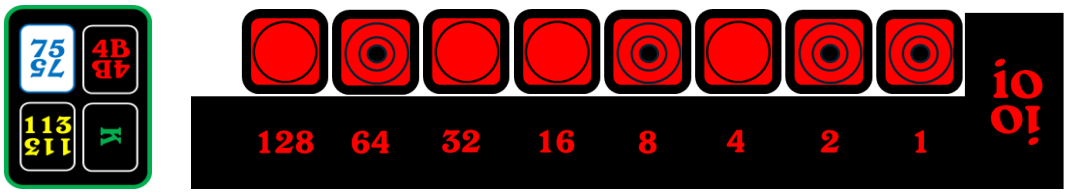
 = 0

- If all 8 bits are "on" it means the number is 255.

 = 255

The **Cipher** allows you to visualize the bit-to-decimal conversion for numbers between 0 and 255.

Now, say a player draws a **Code Card** with decimal number 75. (Remember, the white background with blue numbers represents the decimal numbers). In bit code, 75 = off-on-off-off-on-off-on-on (or 01001011 in base-2 binary). By turning on a bit, you are activating a number, so 0+64+0+0+8+0+2+1 = 75. The solve sequence is shown below, with bits placed on top of the **Cipher**.



Share your variations of radxio the codable math game! (pronounced radix eye-oh)
The number of games you can create using bits and **Code Cards** is virtually endless, especially when you try using the hexadecimal, octal, and ASCII values. Can you come up with a game worth sharing? If so, email us at games@thoughtprotocol.com and we'll consider sharing it with others to try! (Restrictions and conditions apply.)

We just made a card-only version! Great for schools and travel.
Go to http://www.thoughtprotocol.com/games to learn more!

Fun fact: **Ada!** is named after Ada Lovelace. She is often considered the first computer programmer.

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