

Are you looking for something to do to keep your brain active and engaged? We're here to help with Science at Home! You can do these fun science activities using commonly found items. You can also visit us at the Museum's [Science at Home](#) page for additional resources.



Game Introduction

Coding Bug is a "print-your-own" board game that aims to teach players how to think through problems completely and accurately. Computer programs only work when every line of code is well thought-through. This helps to avoid unexpected outcomes or failure. *Coding Bug* teaches basic coding skills by encouraging the player to think through and plan every move carefully, much in the same way computer programmers do when coding.

Customize It!

Game pieces may be substituted with custom materials such as small figures, toys, or even hand-made models (*polymer clay works great here!*)

Learn How to Code Online

Anyone can learn how to code! There are many free online services and offline programs that can teach you. Here are a few of our favorites:

[Scratch](#) | [MakeCode Arcade](#) | [Small Basic](#) | [Kodu](#) | [Processing](#)

First Time Setup

1. Print out the game board and graphic tiles. Game durability and ease of play can be enhanced by affixing the printouts to paper stock or cardboard using glue before cutting (*spray adhesive or extra-strength glue sticks work well*). Print out card sheet #1 and #2 for every player.
2. Next, cut the positive/minus tokens out and fold them over so that one side displays a plus symbol and the other displays a minus symbol. Follow the same procedure for the roly poly graphic tiles.
3. If desired, the game board can be expanded by printing, cutting, and gluing together additional sheets. A single die (*not included*) is also required.

What is a Roly Poly?

Roly poly, pill bug, wood louse, doodle bug, isopod, etc. These harmless little creatures go by many names and if you have a moist yard, you probably have seen them under leaves and logs. Often mistaken for insects, they are in fact crustaceans (*like shrimp*) with modified gills for aerial respiration. Roly polies are detritivores, meaning that they eat decaying matter such as rotting wood and leaves, the act of which recycles nutrients back into the soil. Sometimes they will roll up into a ball to protect themselves from predators or to help keep themselves moist if their habitat is drying out. There are 30 species of roly poly that come in many different colors, from red and blue to yellow-spotted. Roly polies are beneficial organisms and should be celebrated when found in gardens!



Having Fun?

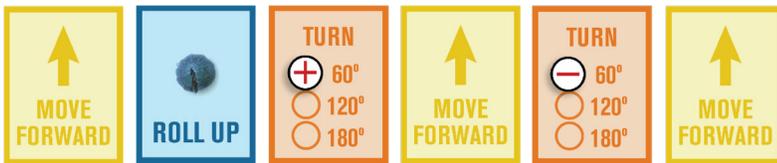
We want to see! Tag [@naturalsciences](#) on social media, so we can see you and your loved ones enjoying our Science at Home activities.

How to Play

The number of players is limited only by how many tiles and cards are printed out. Begin by first setting up the board (see *example setup below*). The goal of *Coding Bug* is to get your roly poly to its prized destination: damp leaves. Place each player's roly poly tile in a corner of the game board, place the damp leaves anywhere you like, and place the obstacles everywhere in between.

Each player gets at least 8 "Roll Up" cards, 8 "Unroll" cards, 8 "Turn" cards, 8 "+/-" tokens, and 16 "Move Forward" cards. See the example setup image below.

Players roll the die each time to see how many cards they can play in a turn. If, for example, the player rolls a "6" and wants to move around a predator, such as the roly poly trying to get to the "*" spot below, the player would "write a line of code" like this:



Then move their tile accordingly. Each turn adds a new line of code, directly below the last one, so that in the end the player has created a complete program that is replayable. The game ends when each player makes it to the pile of damp leaves.

Move Forward Card

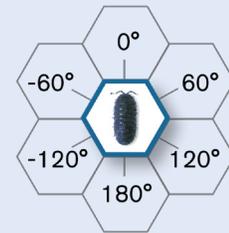
Move once to the space you are facing.

Roll Up and Unroll Cards

Use a roll up card when touching a predator tile and flip the roly poly over. Use the unroll card when the roly poly has moved past the predator and then flip it again.

Turn Card

Place a +/- token near the desired degree amount. Positive is clockwise and negative is counter-clockwise. The turn degree is relative to the player's tile (*the roly poly is always facing zero degrees*). Turn while staying in your space.



Example Setup



Coding Bug: Game Tiles



Player Tile
Unrolled Roly Poly

Player Tile
Rolled-up Roly Poly



Predator Tile
Bark Centipede

Predator Tile
Wolf Spider



Predator Tile
American Toad

Obstacle Tile
Rock

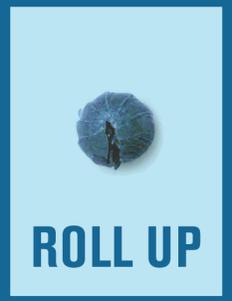
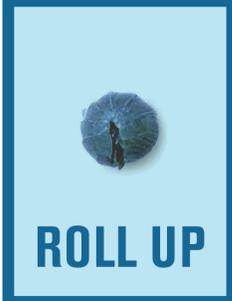
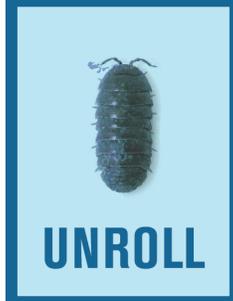
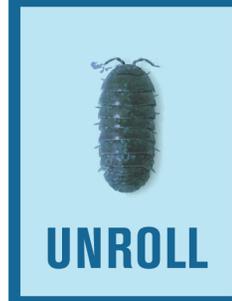
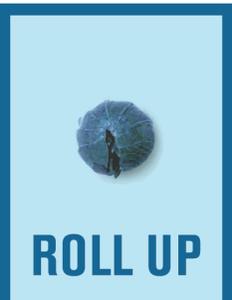
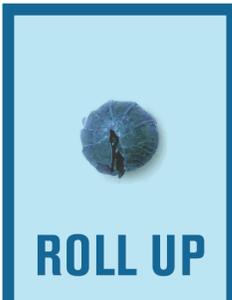
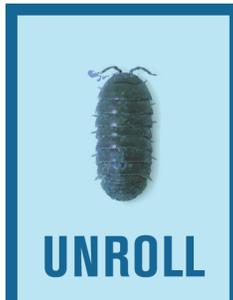
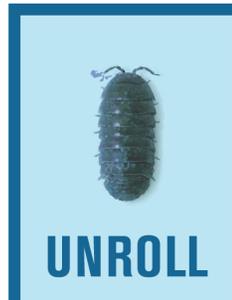
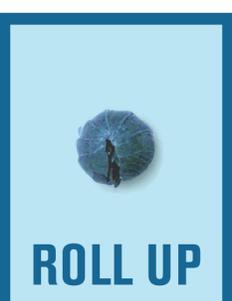
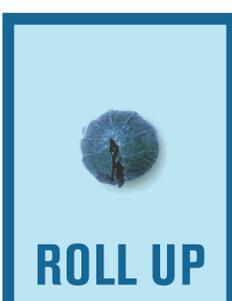
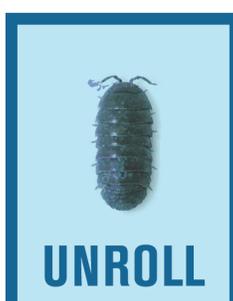
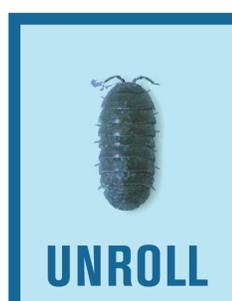
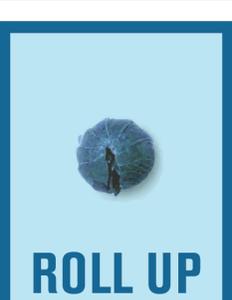
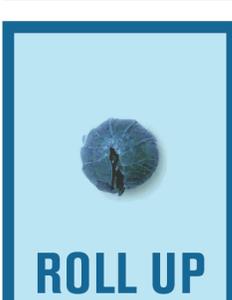
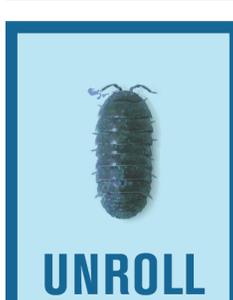
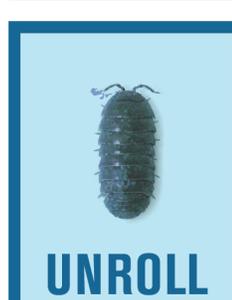


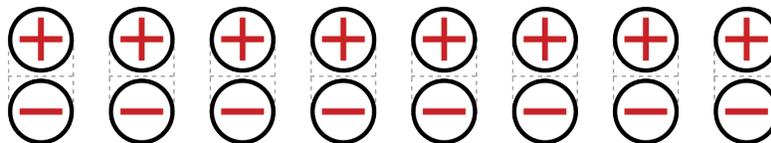
Obstacle Tile
Mushrooms

Home Base Tile
Damp Leaves

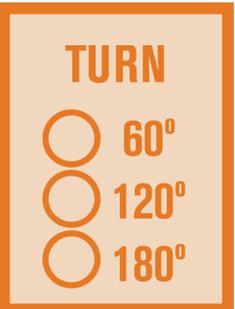
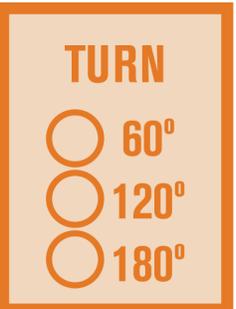
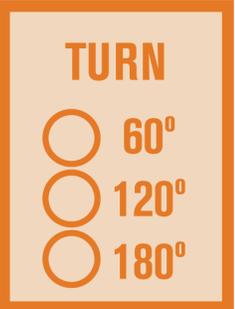
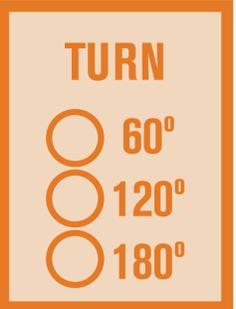
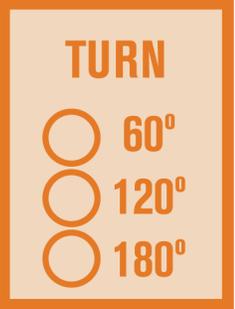
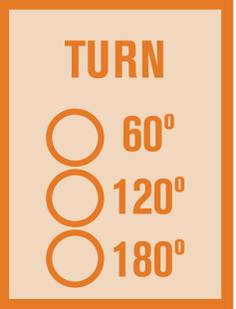
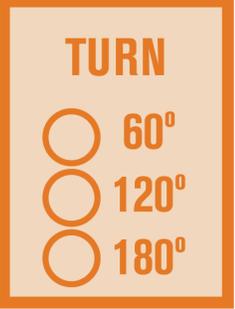
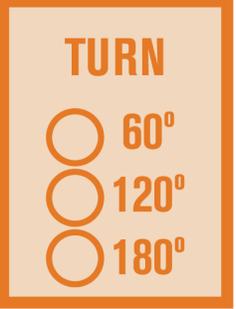


Coding Bug: Game Cards – Sheet 1

 <p>ROLL UP</p>	 <p>ROLL UP</p>	 <p>UNROLL</p>	 <p>UNROLL</p>	 <p>MOVE FORWARD</p>
 <p>ROLL UP</p>	 <p>ROLL UP</p>	 <p>UNROLL</p>	 <p>UNROLL</p>	 <p>MOVE FORWARD</p>
 <p>ROLL UP</p>	 <p>ROLL UP</p>	 <p>UNROLL</p>	 <p>UNROLL</p>	 <p>MOVE FORWARD</p>
 <p>ROLL UP</p>	 <p>ROLL UP</p>	 <p>UNROLL</p>	 <p>UNROLL</p>	 <p>MOVE FORWARD</p>



Coding Bug: Game Cards – Sheet 2

Coding Bug: Game Board

