

Marble Runner – A Coding Card Game
(Rule Book & Cut-Out Material)



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Based on the programming language “MarblePunk” as defined on marblepunk.org

Partially based on exercises from <https://www.csunplugged.org/>

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Introduction

*>>> Help ethical Hacker-genius and Reggaeton-DJ Niña Halo
against the evil Hyper Corporation. <<<*

In an alternate history, technological advancement came through magic marbles, falling from the sky. In the year 2023, all machines have been fully automated based on marbles, with the Hyper cooperation coming out as the big winner of the so-called “marble race”, controlling every aspect of human life.

But a little hacking group around ethical hacker-genius and part-time reggaeton-DJ Nina Halo try to hack into the main-server of the all-encompassing Hyper-cooperation to escape to one of the far-off colonies. They call themselves marble runners. And now, you are part of them.

But for that, the team has to get through multiple security-protected doors, which can only be opened by the robo-mice Pan. Can you control it and help the group escape?

The game can be played with 3 to 6 players. The recommended minimal age is 8.

Setup

To play the game, the following material is needed:

- Track piece and action seal cards (see the next pages)
- Task cards (see the next pages)
- Timer
- Pen & Paper for every player

It should be prepared for the game and lay in reach.

Each player is given a pen and a piece of paper.

The track pieces are laid out for all players to see. The task cards are shuffled and laid in the middle of the table.

The timer is set up to 2 minutes.

Rules

The game is played in rounds, in each of which the players try to solve a little task by building a marble run. In every round, a player can win and gain points. After eight rounds, the player with the most points, wins.

A Round of Marble Runner

A round can be separated into three phases:

1. Revealing of new card
2. Construction Phase
3. Run Phase

Each round starts by revealing a card. The card shows a task that the players have to solve with marble track pieces.

This immediately leads to the next phase: the construction phase. In this phase, the players try to think up the marble run that could solve the task. They can do this in their heads or use pencil and paper as aid. If they found a solution, they say the number of pieces they used – but this does not necessarily end the round. Other players can still say lower numbers than this player. This is done by building a marble run (as described in the next session), the marble run is then run in the run phase, in which the marble runs through it and hopefully leads the mouse to the cheese, which opens the security door.

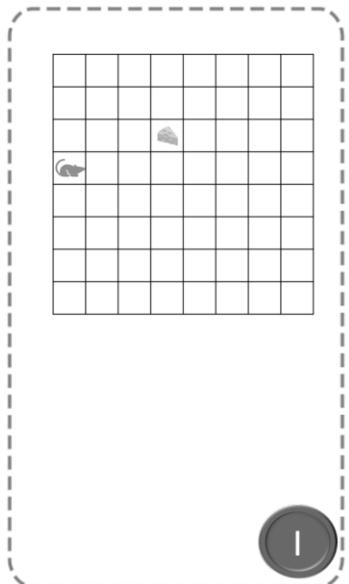
After a 2 minutes, the construction phase ends. In the next phase, it is determined whether the proposed marble runs actually solve the task. For that, the player, who said the lowest number has to solve the task with exactly this number of track pieces in a certain amount of time. This is done with pen and paper. If they do it, they get as much points as are noted on the task (which also indicates the difficulty of the task), if not, the player, which said the next lowest number can have a try. This goes on until some player solves the problem or no player does, and the task is discarded.

For trying out the solution, one player may play “the marble” and the other player “the mouse” (the player left to the player who said the number is the marble, the one after that the mouse). The

marble-player then moves the marble through the marble run and tells the mouse-player the instructions to follow. If the mouse reaches the cheese was the marble run successful for this task and the player, who build it gets points.

For example:

The following card is revealed:



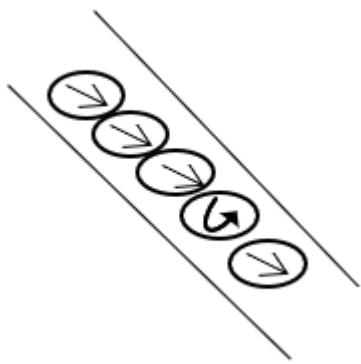
Jerome says: 6

July says: 5

Emma says: 4

After two minutes are up, Emma has to show how to solve the task with four track pieces. For that, a timer of thirty seconds is set. This, however, does not work in this case.

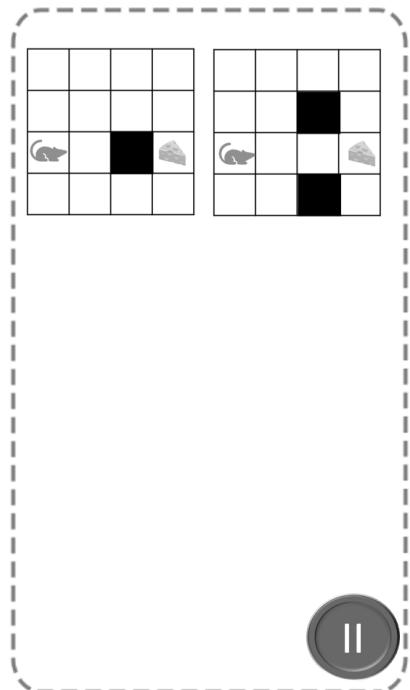
July now tries it with five pieces and manages to solve the task. She draws the following picture:



The group now goes through the actions step by step and sees that it solves the task. That means, she gets one points and the next round starts.

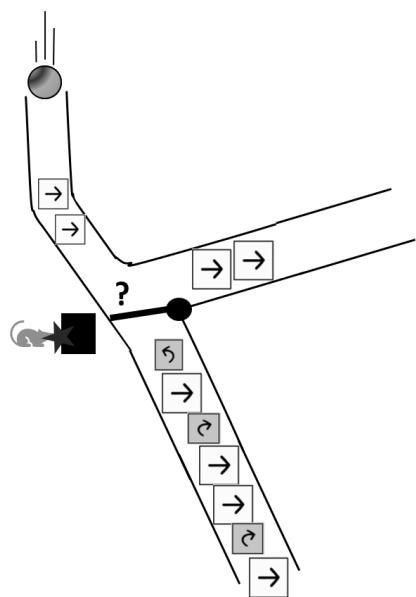
Before we look at how the game ends, here are some more exemplary tasks and how the game play could look like:

Example 1:



In this case, the marble run has to lead the mice to the cheese for both mazes.

Solution:

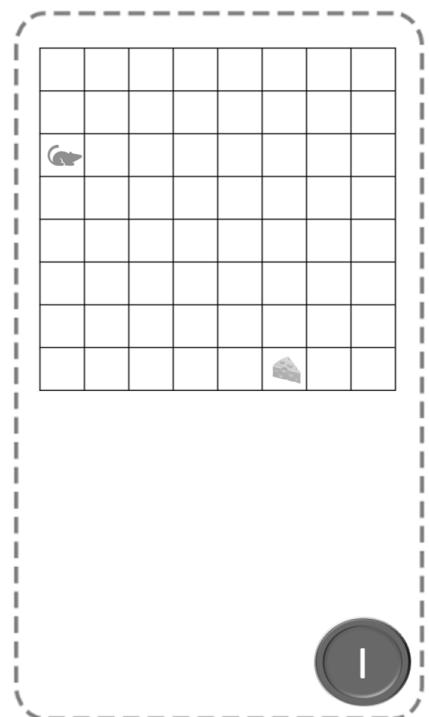


(15 pieces)

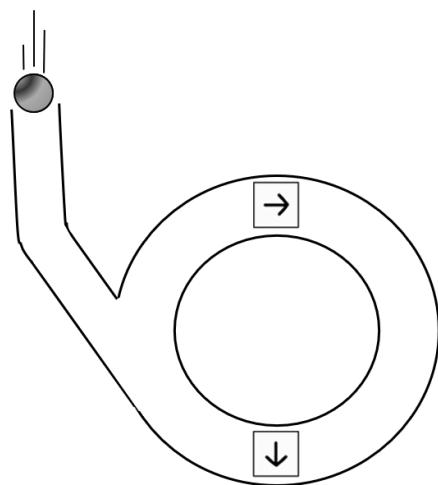
Game play: Mia says "18!", Mike says "15!", Eve says "12!"

After two minutes, Eve cannot give a solution with 12 pieces in 30 seconds for the given task. Mike, however, manages to find a solution with 15 pieces. He receives two points, and the next round starts.

Example 2:



Solution:

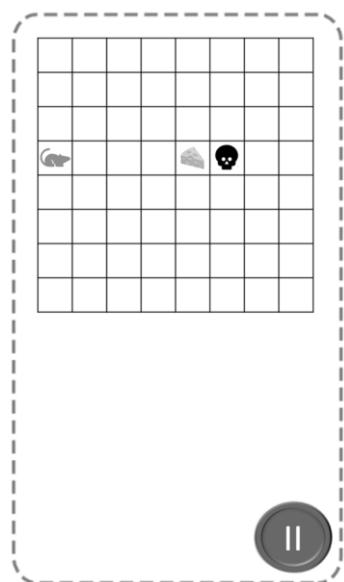


(5 pieces)

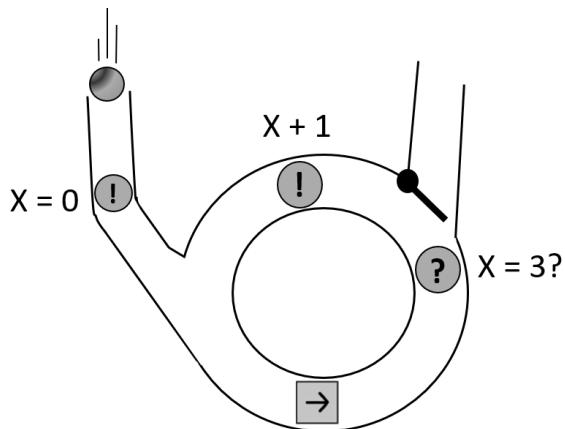
Game play: AI says “5!”, Rebecca says “4!”

After two minutes, Rebecca cannot give a solution with 4 pieces in 30 seconds for the given task. Mike, however, also doesn't manage to find a solution with 5 pieces. Therefore, no one gets points in this round and the next round starts.

Example 3:



In this case, the mice should never touch the skull! That means that cheese needs to be reached on point!



(8 pieces)

Game play: Nina says "9!", Rebecca says "4!"

After two minutes, Rebecca cannot give a solution with four pieces in 30 seconds for the given task. Nina, however, manages to find a solution with 9 pieces. She receives two points, and the next round starts.

A more elaborate explanation of how marble runs can be constructed and solution for specific tasks are given after the next section.

End of the Game

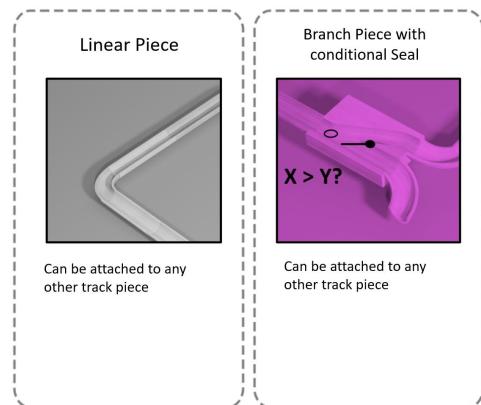
The games after eight rounds. The player that has the most points, wins and is the head marble runner.

A Guide to how Marble Runs can be constructed

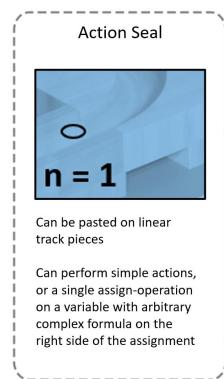
The important question remains, how marble runs can be constructed. For that, the cards with the available track pieces can be used as a reminder. In general, there exist three different components, which can all be used in any combination and in any individual amount. These are:

- Linear track pieces
- Branch track pieces (with conditional seal)

Visually depicted as follows:



- Action seals



The linear track pieces are the most basic pieces. The marble enters the track piece, rolls over it and leaves it without any alteration of its course. This can only be achieved with the next piece: the branch track piece can change the course of the marble based on a condition. If the condition is true, the switch is activated, and the marble takes the other course, if the condition is not true, the marble takes the other course.

The condition on a branch piece can either check the value of a variable, for example, if the variable "x" has a value of five, or some condition related to the given task, for example, if the agent stands against a wall.

Following task-related conditions are possible currently: "stand against?"

The last type of piece are action seals, which, if the marble runs over them, trigger certain actions, for example, moving the agent in a certain direction or assigning a new value to a variable. It is not possible to do multiple assignments and calculations in the same action, just as it is not possible to perform multiple actions in the same action seal.

The following three types of action are available:

- Init variable
- Assign new value to variable
- Perform action (move forward, turn left, turn right)

Based on these rules, the marble run may be constructed.

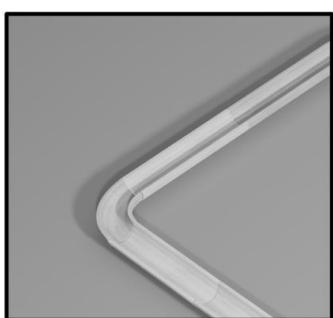
Resources

On the following pages are the resources, which need to be printed and cut-out to serve as material for the game.

They include the track pieces cards and the task cards. The numbers on the cards describe the difficulty of the task, which has no actual relevance in the game.

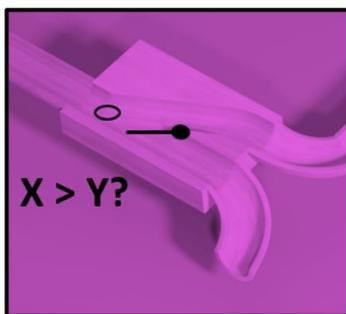
Available Track Pieces

Linear Piece



Can be attached to any other track piece

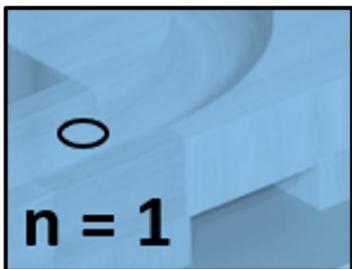
Branch Piece with conditional Seal



Can be attached to any other track piece

Available Seals (can be pasted on the track pieces)

Action Seal



Can be pasted on linear track pieces

Can perform simple actions, or a single assign-operation on a variable with arbitrary complex formula on the right side of the assignment

Tasks

