PROJECT DESCRIPTION: Brick breaker

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We made a brick breaker game. In this game, your mission is to break through a wall of bricks using a ball and a paddle. Each brick is assigned a different color, and each color represents a different level of durability. Some bricks may require only one hit to break, while others may require more hits before they shatter.

Firstly, you open a page that introduces the game and explains the rules. After clicking START you are directed to a new page. There you can choose between eight different levels, each one with a different brick configuration or different brick durability.

We specify the name of the function(s) which handle the described feature in the square brackets.

Movements

After choosing a level you need to press SPACE for the ball to start moving [start()]. If the ball hits the paddle near one of its ends, the two components of the ball's velocity (x- and y-component) are changed in a way which preserves the magnitude of the velocity vector, but also mimics the bouncing of a curved surface (to some approximation). This not only contributes to a more realistic behavior, but also enables you to change the direction of the ball somewhat arbitrarily, by deliberately hitting it with one of the ends of the board. The speed of the ball increases gradually. Every 3 seconds, speed increases by an increment proportional to $1/v^{3/2}$ (v – speed). Hitting the walls/blocks results in a horizontal/vertical bounce, where only one component changes its sign. [ball_move()]

Paddle is moved by moving the mouse. [board_move()]

Win/fail

If the ball hits the ground, the game ends and you can choose to try to solve the same level again. If you manage to destroy all the bricks, you can click the next level button to go to the next level (it will pop up as soon as you destroy all the bricks). In case you passed the eight level you managed to finish the game. [gameover(), newLevel(), startAgain(), win()]

At any point, you can return to level choice by clicking "return to level choice" button in the upper left part of the screen. [goback())]

Brick breakage

Whenever you break a brick, the square of its initial durability is added to your score (for example, if it took you 3 hits to break a brick, your score is increased by 9)[one part of ball_move()]. If you manage to hit exactly between two bricks, they both break instantly. Some bricks contain "perks" which will spawn as soon as the brick breaks and will start falling down. Collecting a perk will cause the paddle(board) to widen, which will last for 5 seconds. If you collect another perk while the previous one is still active, it resets the timer. [playing()]

Functions

Setup() – sets the initial values for all the parameters (velocity, positions…), and makes a call to appropriate configuration functions, depending on the level selected.

Configuration functions: simpleconfig(), config1(), config2(), config3() – arrange the bricks in a specific pattern, with specified durability

playing() – manages animation, initiated by the function start()

ball_move(), board_move(), gameover(), newLevel(), startAgain(), win(), goback() – explained above

Design

We used standard CSS command to handle the very simple design of this game.