Break / IT

🕐 Date du sujet	@September 22, 2022 5:40 PM
↗ Module	
⊙ Type	Projet
⋅⋅⋅ État	Prêt

Introduction

You work for `Game Unleashed` , a tech company specialized in Game development for PC, MacOS and Linux which exist since 1978 !

According to Market analysis, the retro gaming universe market is growing up and will probably continue to 2023 !

According to their strategy, they want to bring back some "retro game" also known as "the game i used to play when i was a kid !".

The company release in 1979, their first video game: `Break/IT !` which was a brick breaker video game running under Fairchild Channel F (https://en.wikipedia.org/wiki/Fairchild_Channel_F)
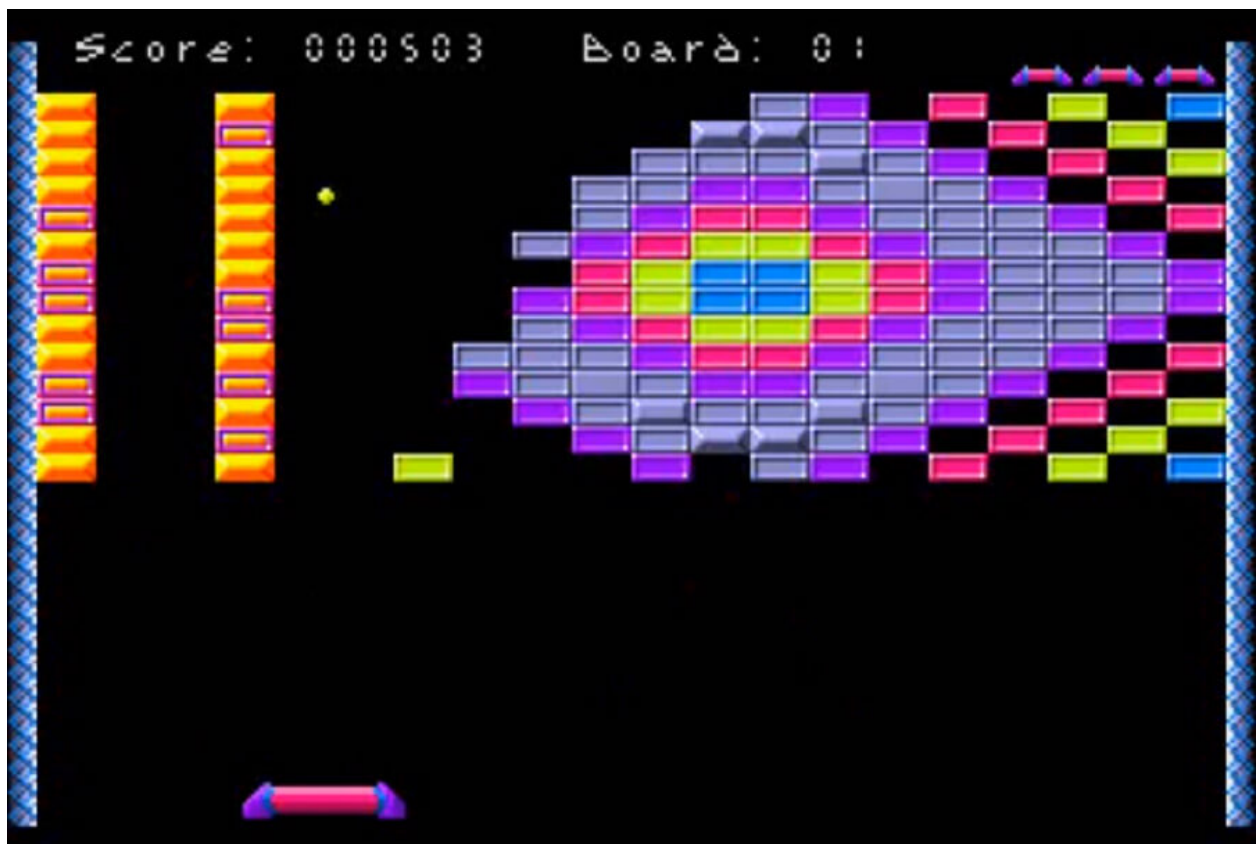
Subject

Game (7 points)

The game window should be in fullscreen.

No windowed mode are allowed.

Board generation (0.5 points)

At each game starts, you must generate all bricks randomly on the screen, but keep in mind to keep a space between the paddle and the "generated bricks".

> 💡 You can also store in a file the "game board" depending on the level

The Paddle (0.5 point)

The paddle should be able to move between the 2 screens's extremity only in X axis, the paddle is stuck on the bottom on the screen and permit to bounce the balls.

You must be able to move the Paddle with the Keyboard Arrow ← and →

The Walls (1 point)

Walls are unbreakable, they are just present to permit to the ball to stay inside the "window".

There is 3 walls, one at left, one on the top, and one on the right side.

Bricks (2 points)

Bricks are one the main component of the game. When a ball hit the bricks, the brick loose one "life", when the brick has no longer life, the brick is destroyed.

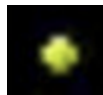The color of the bricks changes depending on the life's number of the bricks.

Color	Number of life
Blue	5

Green	4
Pink	3
Purple	2
Yellow	1

> 💡 You can choose the color you want as long as you can make the difference between bricks level

Balls (1 points)

The ball is one of the main component of the game, his role is the break the bricks.

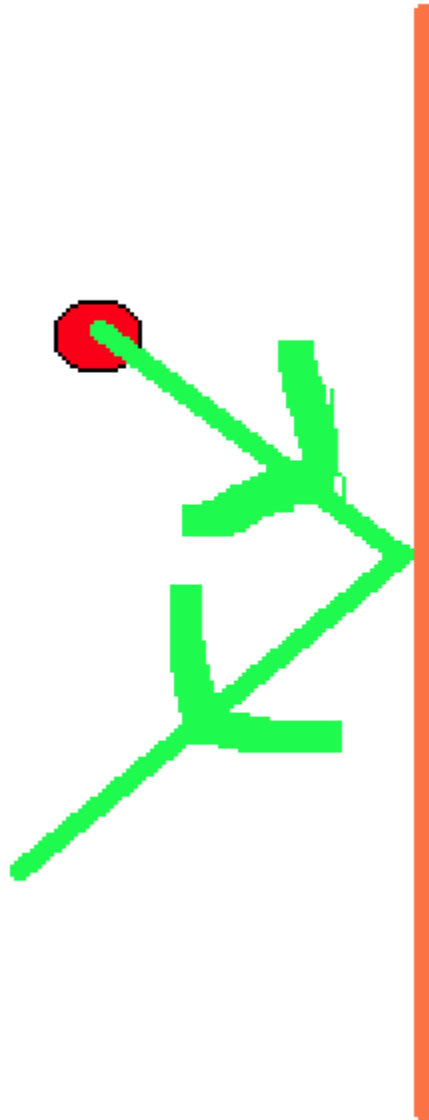The game navigate on the screen following a vector

> 💡 A vector is also known as a "linear trajectory"

When the balls hit one the following elements:

- Bricks
- Wall
- Paddle

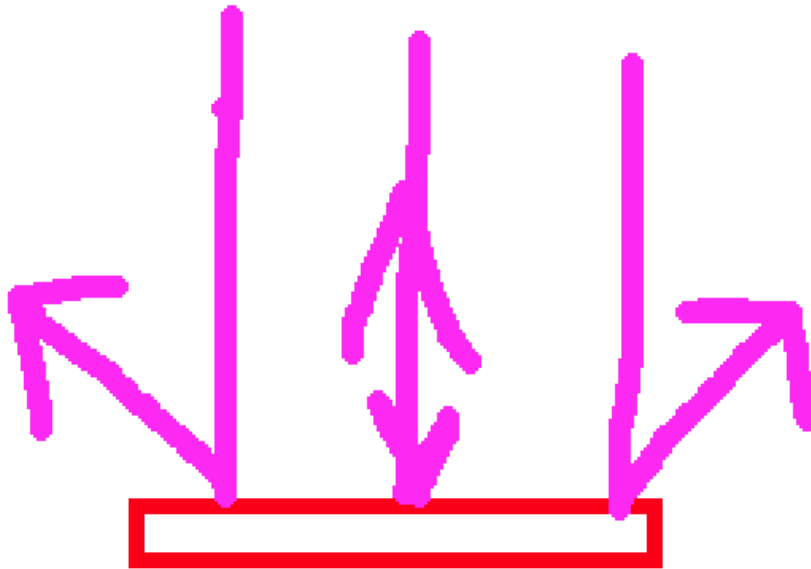The direction is adjusted depending on the angle.

Example:

On the game start the ball is stick to the paddle, the user must press `space` to release the ball.

The initial trajectory is oriented to the top.

One exception is the during hit to the paddle, the repulsion angle depend on the position of the hit on the paddle as show on the following draw:

If the ball hit the paddle on extremity, the angle is adjusted.

Bonus Boxes (0.5 points)

Their is 3 bonus/malus which can be dropped by destroying a Brick.

- Multiply bullet by 3
- Glue the paddle (block the ball on the paddle until the player decide to throw the ball (like on the game start)
- Fire Bullet
  - The ball become unstoppable and destroy any bricks without be bounce
- Slow the balls
  - The speed of balls is reduced of 33%
- Increase ball speed
  - The Speed of balls is increased of 50%

Theses bonus must be catch by the paddle during their fall.

Score (0.5 points)

Each time you hit a brick, you win 5 points.

Each time you pick a bonus, you win 7 points points.

The bonus should be print on the top the window.

Life management (1 points)

On game starts, you have 3 life as presented in the previous screenshot

During the game, if ALL the ball are under the paddle, the player loose 1 life.

When the user loose all his life, the game is over.

When there is no bricks left, the board is **regenerated (see <u>Board generation (0.5 points </u>))**

The Website and Infrastructure (2 points)

Your website should permit to download the game with a documentation of how to run it.

Your website should also contain a clear documentation of the game's rules.

There is no need about high availability, also, you can choose to host the website either on Windows Server or on a Linux server.

Score Synchronisation (3 points)

At the end of the game, you should ask the player for his name or pseudo and store it locally in a file to not ask him at each game.

Once the user give his name / pseudo, you will send to your website the score the the people and store it in a database with the date of the score submission.

On the menu, you should permit to show the top 10 scores of all players which run break/it.

Oral (3 points)

Your presentation must be professional and clear.

the main objective of the presentation is to resume to your manager the final cost of the solution, and a demonstration.

Bonus (5 points)

All is in the title. Free your mind and enjoy the subject ! 🚀

Annexes

- https://en.wikipedia.org/wiki/Breakout_(video_game)
- https://jamiecross.itch.io/breakout-brick-breaker-game-tile-set-free

Rules

This project must be your creation and done by your own. Plagiarism or copy / past are forbidden and will result of a 0.

This is project can be done in group of maximum 2 students.

Each group containing more than 2 members will be discarded and not evaluated.

Delivery

You must deliver a `ZIP` containing:

- Technical Documentation (.pdf)
- Game Project archive (.zip).
- Website archive (.zip)

> ⚠️ File extension should be strictly respected. If you deliver file in a different format than expected, the file will be entirely discarded.