

# **Critical Report: PAC-MAN Project**

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## **Requirements we specified on different levels of priority:**

[SRS-001] The Pac-Man shall move only inside the labyrinth.

[SRS-002] The game shall have 4 ghosts.

[SRS-003] The ghosts shall hunt Pac-Man.

[SRS-101] The game's controls shall be as ergonomic as possible.

[SRS-102] The game shall be responsive and run smoothly.

[SRS-103] Different ghosts shall have different "intelligent" behaviors.

[SRS-104] Pac-Man shall have multiple lives.

[SRS-105] There shall be a score system and collectibles.

[SRS-106] There shall be a phase when Pac-Man chases the ghosts.

[SRS-107] Every level shall have an end.

[SRS-201] The game shall have custom graphics and animations.

[SRS-202] The game shall have sound effects and music.

[SRS-203] There shall be a boss level in the game.

[SRS-204] There shall be a generalized method to create and display a new labyrinth.  
(So that multiple levels with different layouts could be added)

[SRS-205] The game shall have an end.

[SRS-206] It should be pretty easy to adjust the difficulty of the game.

## **Progress we made regarding those requirements:**

As of May 23<sup>rd</sup>, we pretty much did all those requirements although we could have done better on certain points:

[SRS-105] > we could not add fruits as collectibles;

[SRS-201] > we could not create as many sprites as we may have wished;

[SRS-203] > there is one rare bug regarding the boss movement we did not fix;

[SRS-204] > we did not have the time to create multiple layouts to have multiple levels.

We thought most of these issues don't harm the player's experience and we just needed a little more time to fix them.

## **History of what we did:**

We first specified the requirements we wanted for our game, then as Liam had some experience creating small games using C++ and SDL, we decided to use them.

We then started designing our program:

An MVC pattern (Model View Controller),  
What structure we were going to use for the entities, the stage,...  
How we would manage the controls and the ghosts' AIs.  
How we would manage the movement, speeds,...

We used some code Liam had previously done to simplify the use of SDL to display images. He adapted and gathered some bits of code from lazyfoo.net tutorials.

We started to implement our designs and improving them to simplify them and to fix some issues. At that point we had a playable game with 1 AI and geometrical graphics (squares and circles).

We added the boss level with its phases and the remaining AIs.  
We created sprites and animations for Pac-Man, the ghosts, the boss. Then we added sprites for the wall and a way to display them efficiently the would work with any labyrinth layout.

We finally added sounds, made many exploratory tests, made some adjustments for playability.

### **Success and failure factors:**

Advantages we had:

- + being 3 helped bringing a greater variety of ideas, solutions and skills
- + being 3 helped spreading the work load especially in the end
- + using C++ gave access to useful structures
- + we identified the graph structure very early
- + one of us (Liam) had some experience creating videogames
- + we all agreed on what we wanted for the game really early on
- + we usually found solutions to our issues pretty fast

Difficulties we had:

- being 3 made it harder to organize during the first half of the term
- Arthur had a really difficult time installing SDL and setting up the development environment which made it tough to work for a big part of the term
- in the beginning we did not all have the same work rhythm because Luc and Arthur did not know how to code in C++, although we often searched solutions together
- we had difficulties with the git repository, especially when multiple people worked on the same file simultaneously (merging,...) and because we all used different environments (Windows10 + Code::Blocks, MacOS Sierra + Xcode, Ubuntu18 + Code::Blocks) which lead to issues with the paths for inclusion in the code

### **Link to our repository:**

[https://github.com/Crampon16/IN104\\_PAC-MAN\\_Project](https://github.com/Crampon16/IN104_PAC-MAN_Project)