# JUSTIFICATION

**PROBLEM:**

The situation corresponding to the problem to be addressed arises from the need to use what we have learned in situations other than the curricular one, thus we are able to implement our programming skills in a context which not only provides a square program but also a dynamic and interactive program, As a result of this we chose as a proposal a mental agility game invented by us which will be able to give the user a glimpse of entertainment and a space to reason; in this way we solve how from a program we can use algorithms to provide innovative answers to new ideas.

**JUSTIFICATION:**

The objective of the project points to a broader vision of how algorithms can be used; in this way we get out of the square plan of using our knowledge to generate equally square programs. Using this as a basis, our goal is to create an interactive program in which the user has a moment to demonstrate her mental agility.

In this order of ideas, the proposal lies in a system which provides the user with a puzzle-style problem, in which their decisions will lead them to complete the problem or give up in the attempt.

The problem consists of an mxn board where m are the number of columns and n the number of rows of which each grid can obtain one of two properties, in this case a numerical value or a hole. The numerical value is a quantifiable quantity which will be used to calculate the user's final score when completing the puzzle; thus, the holes will be objects with the property that they will send the user to the starting point and restart their score.

In this way, the game aims to start from a starting point and reach the end by going through the grids through movements in three directions (forward, left or right). At the end of the game, the players with the lowest scores will be those who will have the top spots on a leaderboard. All this is the basis of the game since the board and the player have certain properties and restrictions explained below:

- The player starts from a pre-established starting point
- There is only one end point, and it will also be preset
- The value of each grid, determining whether it will have a numerical value or will be a hole, is given randomly.
- The player can only go through each square once and will not be able to return to a previously trodden square.
- At the beginning of the game the player will be able to visualize the entire board with its holes and squares with their numerical values for 10 seconds.
- Once the 10 seconds have passed, the entire board will be covered, and the game will begin where the player must start his movements blindly.

- The player has three jokers which will allow him to see the entire board for 5 seconds and after this the board will be covered again.
-Each square that is not a hole will give its numerical value to the player once stepped on by the player and this value will be added to his score.
- Each hole will send the player to the starting point by doing two things: first he will reset his number of points, however, the player will have the opportunity to see what his past score was in order to know if he will take that path again or look for another, second it will mark the last position the player had before falling into the hole to give the player some help.
-At the end of the game the user will be able to see his score and the time it took him to complete the game. Likewise, the game will teach you which was the shortest path, and it will also teach you which path with the lowest score you can take (best path).
-The player will have the opportunity to surrender if he does not feel capable of completing the game and the game will teach him the best way and the shortest way that is not necessarily the best always since he can have a greater number of total points.