LINGI1131 - Computer Language Concepts Bomberman

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Abstract—This document describes the *Bombermane* game coded in *Oz*. Implementation strategies will be explained for the *GUI* and *Main* files.

I. INTRODUCTION

The **Bomberman** game is a famous game where players have to defeat the other players by placing bombs on the field.

II. OBJECTS

A. Bombermans

Players have been implemented as objects and do the same actions. They are defined by the following attributes:

name Name entered by the player at the beginning of the game;
pos   Record remembering X and Y position of the player at any time;
power Value between 1 and 4 representing the player's next bomb explosion distance and increased by 1 when eating food;
score Increased by 5 when catching a star, by 1 when the other player dies by bomb explosion, by 4 when the other player dies on a bomb and decreases by 1 when the player is killed by its own bomb.

Player can either decide to place a bomb or move to a selected direction (blocking on map's borders, on walls and on the other player). This will be described more precisely in section III.

B. Bombs

Bombs are the only objects players can use to get points by hurting each other. They are defined by the following attributes:

name Name of the bomberman placing the bomb (reflected on the bomb's color);
pos   Record remembering X and Y position of the bomb;
power Value between 1 and 4 representing the explosion disatance of the bomb if not blocked by a wall or the map's borders;

Bombs explose after a random time chosen between 3 and 20 seconds and doesn't react on another bomb's explosion because it is not vibration-sensitive.

C. Walls

Walls are only defined by their position, randomly chosen at the creation of the map.

D. Food

Food is only defined by its position. It spawns every random time between 2 and 30 seconds and lasts for a random time between 1 and 50 seconds. It only appears on free positions (no other food, no bomb, no wall, no star and no player).

E. Stars

A star is a rare object added as extension. It gives 5 points to the player catching it and is defined by its position. Stars randomly spawn every random time between 30 seconds and 6 minutes and disappears after a fixed time of 20 seconds.

III. GAMEPLAY

After having written the name of each player, commands instructions are shown and the (random-sized) map is generated with a random number of walls placed at random positions. Bombermans are placed at their initial positions and the simultaneous game starts.

A player has only 2 possible choices: move or place a bomb. Moving on food will make the player eat it and reach the next power-level (limited to 4) and moving on a star will make his points increase by 5.

Another extension of the game is the explosion recognition. If a player dies due to its own bomb explosion, he will loose 1 point that will be given to the other player. Moreover, his power is reset to 1.

The last extension is that a player killed on the exact bomb position will make the other player win 4 points.

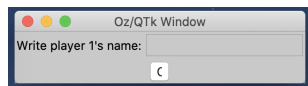## IV. GUI

A. Pictures

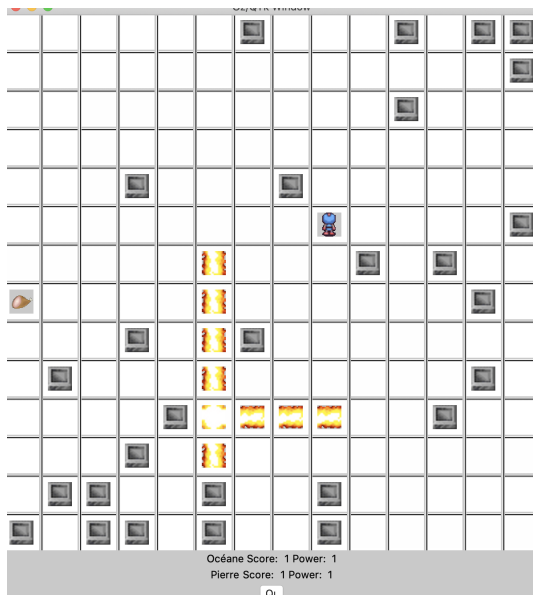

Figure 1. Name entry

Figure 2. Level 4 explosion over a player

Figure 3. Star appearing

V. ISSUES AND LIMITATIONS

A. Issues encountered

No real issues have been encountered but, at the beginning of the project, I thought about locks to protect environments while creating the simultaneous game. This seemed to be useless as the game is running fine without locks.

B. Limitations

The game is limited to the simultaneous mode (the turn-by-turn one having been erased) and only 2 bombermans can play.

Another limitation is the ending of the game. This one never ends so players can reach huge amount of points. An extension could be released with modes allowing the players to choose how the game has to finish. Currently, you can only leave game by using the escape key.