SUPINFO Academic Dept.

SUPINFO International University

INSTITUTE OF INFORMATION TECHNOLOGY

Group Projects
A.Sc.1 - Development

Contents

2018-2019

Version 1.0
Last update: 24/10/2018
Use: Students/Staff
Author: Laurent GODEFROY

TABLE OF CONTENTS

1. Project Overview

"Early Days" is an entertainment company specialized in in all times video games classic revivals. It wants now to rewrite the famous PlayStation game "Mr Driller". This game was originally developed and published by **Namco company**.

Your team is in competition with several subcontractors to do the development, the best project will win the contract.

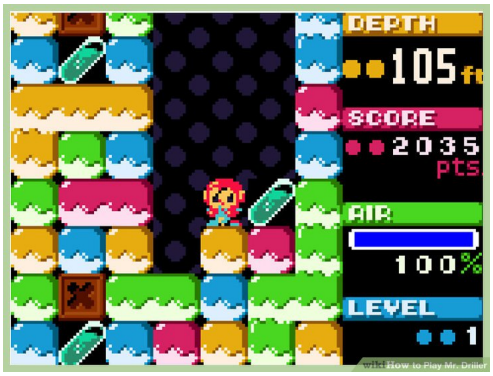
You are free to use whichever language/library you want, such as Python/Pygame or C/SDL, and your game must run on the three major platforms: Linux, Windows and Mac OS X.

2. Functional Expression

2.1. The game

Mr Driller is a 2D puzzle game. The player controls a driller and has several levels to achieve. The main goal of each level is to dig untill its depth without lacking air or being crashed by a falling block.

Here is an example of a level:



2.1.1. Moves and actions of the driller

The driller can move left or right at the same elevation or in climbing one block. He can also drill a block located leftward, rightward or downward. If there are no blocks anymore under his feet, he falls down by gravity.

2.1.2. Blocks

There are regular blocks colored in red, blue, green or yellow. When the player drills one of this blocks, he simultaneously drill the adjacent blocks of the same color. All blocks above them fall down by gravity.

When regular blocks fall down after some drilling, they merge with adjacent blocks of the same color and stop their falling. If at least four blocks merge, they disappear.

There are also special blocks:

- The brown ones need five drill hits to disappear and must be drilled one by one. However, they merge after falling with the same property of disappearance that the regular blocks.
- The white ones don't merge with other blocks of the same color.
- The crystal ones have a short lifetime before disappearing.

2.1.3. Air

The player has an air supply which decreases by one percent by second. Drilling a brown block costs twenty percent all of a sudden.

The player can collect air capsules which increase his supply by twenty percent.

2.1.4. Score

Each block drilled or disappeared after merging brings points. The player also increases his score by collecting air capsules. He finally has a bonus after completing a level.

2.1.5. Lives, win/lose

If the air supply falls to zero percent or if the driller is crashed by a falling block, the player loses a life and restarts at the same depth with a full air supply.

When the player loses his three lives the game is over. He wins if he achieves all the levels.

2.1.6. Resources

Here are some videos of what the game should look like:

- A version
- Another version

Here is an online playable version of this game:

- Mr Driller on playR

2.2. Features to implement

Your implementation of the game must provide the following features.

2.2.1. Levels

The game must have at least 10 non trivial levels. All the elements described in the previous part must be present.

The depth of each level will increase progressively, and at the same time the number of air capsules will decrease.

The different kinds of blocks will be generated randomly.

2.2.2. Graphic rendering

You are free to design your game in the way you want, insofar as all game features are present, including the depth, the level, the number of lives, the remaining air supply and the score.

2.2.3. Score

In addition to compute and display the current score of a player, you have to implement a high score table for players who finish the game.

2.2.4. Pause

Players should be able to make a pause during a game.

3. Deliverables

Students should include the following elements in their final delivery:

- A zip archive with the project source code. The source code must also come with the build system used (Project file, autotools...), if any.
- Project documentation, based on the template.
    - Technical documentation explaining your choices and/or implementation choices/details on the following items (at least):
        - Graphic engine
        - Algorithmic choices (data structures, movements, drilling, merge of blocks, etc.)
    - Game manual

The first document is an academic document. Address the reader as a teacher, not a client. The last one (game manual) should address the reader as a user.

These documents can be in French or in English, as you wish.

4. Graded Items

The project will be graded as follows, on a 180/170 scale:

- Technical documentation: 10 points
  - User documentation (5 points)
  - Technical documentation (5 points)
- Core game engine: 60 points
  - General design: 20 points
  - Display of all parameters (air supply, depth, etc.): 10 points
  - Ten levels are implemented with increasing difficulty and all kind of elements: 20 points
  - When a level is completed, the player passes to the next one: 5 points
  - The player can make a pause: 5 points
- Gameplay : 75 points
  - Driller movements: 15 points
  - The player can drill a block (including brown blocks): 10 points
  - The drilling is propagating to adjacent blocks of the same color: 15 points
  - Blocks fall by gravity: 5 points
  - Blocks merge (if conditions are satisfied): 10 points
  - Blocks disappear (if conditions are satisfied): 5 points
  - Air supply management (including increasing and decreasing): 15 points
- Score handling: 10 points
  - The current score is computed and displayed: 5 points.
  - A high score table is implemented: 5 points
- Win/lose: 15 points
  - Player wins if he beat all levels: 5 points
  - Player loses a life (if conditions are satisfied): 5 points

    - Player loses if he hasn't anymore lives: 5 points

- Bonus features done by students: 10 points