



# Dungeon Battle

A rogue-like game



4 people

## Project Description

Dungeon crawls, or more specifically rogue-likes are turn-based computer games in which a single player evolves through a procedurally generated dungeon, fighting creatures, finding various objects, acquiring experience. The final objective may be to reach the top (or bottom, if the dungeon is a cave) of the dungeon and come back, or to find a special object. Death is typically permanent, and plays can be very short, especially for beginners.

## Skills

Scenario

Real Time programming

GUI

(\*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

### Level 1

You may now pursue to the level 1 of the project.

- \* Board  
The game is played on a series of dungeon levels which are simple square grids. The grid cells may be empty, walls, or floor. Empty cells must never be next to floor cells. Maps can be loaded from and save to a file.
- \*\*\* Graphics  
The graphics can either be 2D or text based. There is a window where the board is displayed.
- \* Controls  
The player is controlled with zqsd and can move through floor cells, but should be blocked by walls.
- \* Monsters  
Monsters appear on the map, and move along some predefined path.
- \*\* Fighting  
The hero can attack monsters, and kill them.
- \* Experience  
The hero can progress and level up doing more and more damages the more monsters he kills.
- \*\* Intelligent Monsters  
Monsters will go towards the hero, without getting stuck. In simple situations without other moving entities, an optimal path is used.

### Level 2

Level 1 must be unlocked to read this section



# Dodge man

A one screen game



3 people

## Project Description

The player is stuck inside the window, and objects are falling from the sky. If the player is touched, he dies, and if a dodges an object, the object disappears after touching the ground. The longest the player stays alive, the highest the score, but the hardest it gets.

## Skills \_\_\_\_\_

GUI

Real time programming

(\*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

**Level 1** You may now pursue to the level 1 of the project.

- \*\* Window  
A character, a background, and objects can be rendered.
- \*\* Objects  
Objects are generated in semi random fashion, and are falling vertically to the ground.
- \*\* Character physics  
The character can move left or right, jump and crouch. Details (e.g. double-jump) are up to game designers but must be documented and tested. The player cannot move through walls and floors.
- \* Death  
When hit, the character dies.
- \* Score  
There is a score system, with high score and leaderboard.
- \*\* Gameplay  
The more the player progresses, the harder the game gets. This implies having the objects falling in a smart way which can support the acceleration. There should always be a winning strategy
- \*\* Animations  
The character is animated, with several images for each actions.

**Level 2** Level 1 must be unlocked to read this section



# Paint is not dead

## Collaborative drawing

 4 people

## Project Description

This software enables the user to draw pictures on its computer. It can be freehand drawing, but the drawing may also be guided by the computer in order to draw specific shapes (circles, squares...). It can contain more advanced features, with for example edge detections and automatic color filling.

## Skills

Image manipulations



GUI



(\*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

### Level 1

You may now pursue to the level 1 of the project.

- \*\* GUI  
A user interface allows to create a new drawing of specified size, select the drawing tool, and display the drawing.
- \* Basic tools  
It should be possible to perform freehand drawing, and draw basic shapes such as squares, circles, etc.
- \* Parameters  
When drawing shapes or lines, different options are available, such as thickness, color, filling,...
- \* Save  
The drawing can be saved and loaded.
- \* Previsualization  
In the GUI, tools assist the creation of shapes with a live pre-visualization.
- \*\* History  
A drawing is equipped with a history of modifications. Undo/redo operations are available.
- \*\*\* Team Effort  
In the spirit of etherpad, a server hosts each drawing, and several people can edit at the same time a drawing. The server must not make any rendering. Modifications in the history are tagged with their author.

### Level 2

Level 1 must be unlocked to read this section



# Click and Run

A canabalt-like game



3 people

## Project Description

In this game, a player-controlled character is constantly running through a world, always in the same direction. The only control that the player has is to make the character jump to avoid various sorts of threats. The objective is to run for as long as possible. The world is generated procedurally and on the fly.

## Skills

Gameplay



Real time



Graphics



(\*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

### Level 1

You may now pursue to the level 1 of the project.

- \*\* Procedural world generation  
Generate an infinite world with a fair amount of variety. The world must consist (at least) of floors and steps and holes.
- \*\*\* World display and start screen  
The game should be able to display (part of) the world. The start screen should be scrolling from left to right through a procedurally generated world.
- \* Player  
A character is running through an empty world, and it can jump and fall; it must not be able to go through walls and floors.
- \* Complete game mechanics  
Put the previous two items together and detect death conditions, at least collision but perhaps also falling out of the screen.
- \* Animation  
Animate the character, its jumps, and perhaps its death(s).
- \* Background  
Generate an infinite background for the world, and display it with a slower scroll, simulating a parallax effect.
- \* Score  
Compute a score during the game, increasing (only) when an obstacle is avoided.
- \* Score UI  
Display the score during the game, and have a leader board which prompts for a player name when a new high-score is reached.

### Level 2

Level 1 must be unlocked to read this section



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## Accounting for friends

 3 people

# Project Description

The software should allow to keep track of money spent between friends, e.g. during a holiday. It should help them to settle their accounts.

## Skills \_\_\_\_\_

Web



Databases



(\*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

### Level 1

You may now pursue to the level 1 of the project.

- \*\* Basic features  
Functions to create a new database; create payers; add a transaction; extract past transactions within a given time range.
- \* Balance  
It should be possible to compute the current balances.
- \*\* Resolution  
The tool should propose solutions to balance the account: optimizing either the total number of transactions, or the maximum number of transaction per user.
- \* CSV report  
Produce a CSV report containing all the transactions and the transaction induced by the resolution.
- \* Import  
It should be possible, within the application, to import a past state of the application. There should be a meaningful notion of equality between saved states.
- \*\*\* Web interface  
All features (above and below) should be usable through a web interface. The web service should require to log in.
- \*\* Groups  
Within a single instance of the application it should be possible to create groups of users hosting group-specific transactions. Each user of a group may have specific permissions: addition/deletion/modification/visualization of transaction items.

### Level 2

Level 1 must be unlocked to read this section