Documentation projet:

Indie Studio

Time to go cross-platform

La documentation suivante est un référencement de l'ensemble des choses à savoir lorsque vous voulez utiliser le programme "Indie Studio".

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I. Installation

1. Install make, gcc and git

Execute the following command in a terminal to install all:

Fedora / Debian:

```
sudo apt install build-essential git
```

Montjaro:

```
sudo pacman -S build-essential git
```

2. Install Cmake

Execute the following command in a terminal to install all:

Fedora / Debian:

```
sudo apt install cmake
```

Montjaro:

```
sudo pacman -S cmake
```

II. Compilation and Launch

In order to compile the program please follow the following steps :

a. Create a new directory called “build”:
   - `mkdir build`

b. Go inside the directory:
   - `cd build`

c. Finally you can compile the program:
   - `cmake ..`
   - `make`
   - `./bomberman`

III. Entity component system

The game is only based on ECS (Entity Component System), we have entities that are like empty shells that will be filled by components and events. Here is an example of what an entity should look like :

```
{"name": "return", "components": [
    {"name": "positionComponent", "x": 20, "y": 20},
    {"name": "textureComponent", "filePath": "assets/return.png"},
    {"name": "rectangleComponent"},
    {"name": "mouseEventComponent"},
    {"name": "buttonComponent", "state": 0}
], "events": [
    {"name": "switchScene", "id": "pauseMenu"}
]},
```

List of components

1. Position Component

That component is useful to place the entity on the screen. In order to use that component, you need to specify a “x” and a “y” where the entity will be placed.

```
    {"name": "positionComponent", "x": 110, "y": 370},
```

2. Texture Component

That component is used to set a texture for the entity. In order to use it you have to specify a path to the texture you want to load.

```
{"name": "textureComponent", "filePath": "assets/MainMenu/play.png"},
```

3. Rectangle Component

If you want an entity with a texture that has collisions, you must add the rectangle component to your entity.ujjhbhbhinj

```
{"name": "rectangleComponent"},
```

4. Button Component

That component is useful to know the state of the entity. There are 3 states : no event, hover and click. In order to use the button component you need to specify a state and a number.

```
{"name": "buttonComponent", "state": 0, "number": 3}
```

5. Mouse Event Component

That component is used if you want to catch a mouse event.

```
{"name": "mouseEventComponent"}
```

6. Camera Component

That component is used to set a camera on the scene. You need to set multiple parameters: positionX, positionY, positionZ, targetX, targetY, targetZ, upX, upY, upZ, fovy.

See more details: https://www.raylib.com/examples.html

```
{"name": "cameraComponent",
    "positionX": 0, "positionY": 1.5, "positionZ": 3.0,
    "targetX": 0, "targetY": 1.5, "targetZ": 0,
    "upX": 0, "upY": 1.0, "upZ": 0,
    "fovy": 45.0
},
```

7. Perso Component

That component is used to set a model 3d of the character. You must set multiple parameters: positionX, positionY, positionZ, iddelmodelpath, actionmodelpath, deathmodelpath and texturepath.

```
{"name": "PersoComponent",
    "positionX": 0.25, "positionY": 0.4, "positionZ": 1.3,
    "iddlemodelpath": "../assets/MainMenu/rumba_2.iqm",
    "actionmodelpath": "../assets/MainMenu/rumba_2.iqm",
    "deathmodelpath": "../assets/MainMenu/rumba_2.iqm",
    "texturepath": "../assets/MainMenu/people_texture_map.png"
},
```

8. Animation Component

If you want to add animation to your entity you need to use the animation component. You need to set some parameters: iddleanimationpath, actionanimationpath, deathanimationpath, actualanimation and type.

```
{"name": "AnimationComponent",
  "iddleanimationpath" : "../assets/MainMenu/rumba_anim_2.iqm",
  "actionanimationpath" : "../assets/MainMenu/rumba_anim_2.iqm",
  "deathanimationpath" : "../assets/MainMenu/rumba_anim_2.iqm",
  "actualanimation" : 0,
  "type": 0}
```

9. Text Component

That component is used to add text to your entity. You need to set some parameters: data, x, y and size.

```
{"name": "textComponent", "data":"Character Selection", "x": 0, "y": 0, "size" : 100}
```

10. Map Component

That component is used to model a 3d map. You need to set some parameters: positionMeshX, positionMeshY, positionMeshZ, positionMapX, positionMapY, positionMapZ, maptype.
See more details: https://www.raylib.com/examples.html

```
{"name": "MapComponent", "positionMeshX": 1,
  "positionMeshY": 1, "positionMeshZ": 1, "positionMapX": 0,
  "positionMapY": 0,"positionMapZ": 0, "maptype": 0}
```

11. Stats Component

That component is used to set stats to the entity, useful when the entity has a Perso Component. You need to set two parameters: maxBombs, actualBombs.

```
{"name": "StatsComponent", "maxBombs": 1, "actualBombs": 1}
```

12. Keyboard Event Component

That component is used to catch a keyboard event. You need to specify a key and a state.

```
{"name": "KeyboardEventComponent", "key": "Q", "state": 0}
```

List of events

1. Switch Scene

That event handles switching between scenes. You need to specify the id of the scene you want to switch in.

```
{"name": "switchScene", "id": "pauseMenu"}
```

2. Choose Player

That event switches between 2 textures for one entity. You need to set some parameters: numPlayer, filepathPlayer and filepathIA.

```
{"name": "choosePlayer", "numPlayer": 0,
  "filepathPlayer": "../assets/img_player_1.png",
  "filepathIA": "../assets/img_ai_2.png"}
```

3. Scrollable

That event makes an entity scrollable.

```
{"name": "scrallable"}
```

4. Quit

That event quit the program.

```
{"name": "quit"}
```

5. Music

That event allows you to change the music volume.

```
{"name": "music", "value": -1}
```

6. Sound

That event allows you to change the sound volume.

```
{"name": "sound", "value": 1}
```

7. Change Button

That event changes the value of the text of the entity, useful when you want to make a key binding.

```
{"name": "changeButton"}
```

If you want to have an entity with collisions, you must set components in order like: position component, texture component and rectangle component.

If you want to use our ECS, you must have at least json files that are named : mainMenu.json, game.json and pauseMenu.json.

All animations that you will use have to be iqm files. Here is the link to the script to generate iqm files: https://github.com/EscherechiaColi/tuto_raylib_animation

IV. Encapsulation

Actual game is based on Raylib which is encapsulated. If you want to change the graphical library, you can check IGraphic.hpp and change the functions in graphical.cpp and in RaylibXxxx.cpp / RaylibXxxx.hpp.