



# LAB 09:

## Complex Movement & Collision Maps

### Provided Files

- Example.gba
- main.c
- myLib.c
- myLib.h
- game.c
- game.h
- background.bmp
- background.c
- background.h
- spritesheet.bmp
- spritesheet.c
- spritesheet.h
- collisionmap.bmp

### Files to Edit/Add

- game.c
- collisionmap.c
- collisionmap.h
- Makefile
- .vscode
  - tasks.json

### Instructions

In this lab, you will be completing several different TODOs, which will, piece by piece, add complex sprite movement. Your code may not compile until you complete an entire TODO block, at which point the game should compile with a new component of the final outcome (unless otherwise specified).

#### **TODO 1 - Complex Camera Movement**

We want our jigglypuff to walk only on the screen, and have the camera follow it without showing something outside of the world.

- TODO 1.0



- In game.c, in the updatePlayer() function, add in the sprite and camera movement.
- TODO 1.1
  - In game.c in the drawPlayer() function, set jigglypuff's *screen* row and column in the shadowOAM
    - Hint: the screen row is the world row minus the background vertical offset; the screen col is the world col minus the background horizontal offset

Your jigglypuff should now be able to walk around and see the entire map, but not off of the edge. The jigglypuff should always be in the middle of the screen unless at the edge of the map (see the example.gba).

### TODO 2.0 - Collision Map

Now we want our jigglypuff to treat the visuals of the map as if they were actual barriers to movement.

- TODO 2.0
  - The collision map has been created for you. Open collisionmap.bmp in Usenti and export it. Remember that we want to check the colors of each pixel, so take that into account when choosing export settings. As such, export the collision map as bitmap(GBA) and select 16 bpp. Uncheck the Pal box.
- TODO 2.1
  - Include collisionmap.h in game.c.
- TODO 2.2
  - Update your movement code to only allow jigglypuff to move if the collision map allows it (is white) in the areas that you need to check. Your jigglypuff should not be able to walk over the fences, trees, bushes, and flowers.

### You will know if it runs correctly if you:

- Your Project.gba has the same behavior as the Example.gba provided for you. The Example.gba jigglypuff is purple, but Project.gba jigglypuff should be pink.

### Tips

- Review recitation materials: Canvas > Recitation Materials
  - Complex movement
  - Collision maps



## Submission Instructions

Zip up your entire project folder, including all source files, the Makefile, and everything produced during compilation **(including the .gba file)**. Submit this zip on Canvas. Name your submission Lab09\_FirstnameLastname, for example: "Lab09\_TeamRocket.zip".