

ME3241/ME3241E/TME3241 Microprocessor Applications

Assignment 3: GBA Game (**Extended version**)

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Due: **21/04/2023**

1 Goal

The goal of this assignment is to program your very own GameBoy Advance (GBA) video game!

2 Assignment

You can choose your game, or (even better) invent your own game. Existing game include: Space Invaders, Snake, Sudoku, Arkanoid, Zelda.

At the minimum, your game must include the following features:

- **The game must have a simple menu to start a session, and return to at the end (win/loss).**
- The game must use sprites.
- You must use interrupts/timers.
- You must use the console buttons.
- You can code the game in the language of your choice (Assembly/C). **You need to have at least a small portion in assembly, which can be called from C (like in CA1).**
- **You must create several levels (at least 2). At each level, the difficulty level should increase (e.g., more enemies, enemies are faster/more powerful).**

2.1 Additional Information

- Please **comment your code** appropriately (C code and especially assembly portion). Any code that is hard to understand and not well-commented will be penalized in the final grade.
- The website <https://www.gbadev.org/tools.php> has a lot of great tools to help, including tools to help you design sprites and palettes, which can be very useful when completing your project!

3 Deliverables

1. **Every single student needs to submit his project archive** (a single zip file containing the source code and compiled game, and the student's individual report). I will not allow group submissions (see below as to why).
2. The source code of the game is the same for all team members.
3. The report is **100% individual**. Any copy-paste in the report will be seen as plagiarism and will result in the team members receiving a 0 for this portion of the final project grade (50% of the grade).
4. Your individual report should contain the following sections:
 - (a) A brief (one paragraph) description of your game: what am I playing, how do I play it, how do I win/lose?
 - (b) A mid-level description of the technical aspects behind your game (main code structure and logic, GBA capabilities used and how, etc.)
 - (c) A more in-depth description of your role/contribution to the project, and of the specific technical part(s) you were involved in.
 - (d) A discussion of the key lessons/skills you have learned in this project, challenges **encountered (and how you solved them)**, as well as future works/developments you would like to do on this game (not to be actually done, just discuss what you'd love to see or what you wanted to do but didn't have time to complete/do).

All of this is to be submitted by the deadline on CANVAS **by each student**, as a zip file containing the source code, the compiled game, and the student's individual report.

Good luck, and enjoy the assignment! Get creative (bonus points)!