Computació Gràfica i Multimèdia

Màster en Enginyeria Informàtica

Curs 2022/23

Project description

This year we will develop a project devoted to the creation of a "Pacman"-type videogame.

The project is composed of four work packages. This document describes the forth one.

Work plan for the forth work package

The forth work package is composed of the following tasks:

- Inclusion of lighting effects
- Implement a logic for the end of a game
- Optional parts

Task 1. Inclusion of lighting effects

We will add lighting effects to our game. Some requirements and tips are given next:

- **Requirement.** Include a light source providing ambient light. The intensity of this light source has to be low. This light source is required to avoid polygons not lighted by some other light source from appearing completely black.

- **Requirement.** Include a directional light source in front of the main character. In this way we will simulate it carries a flashlight.

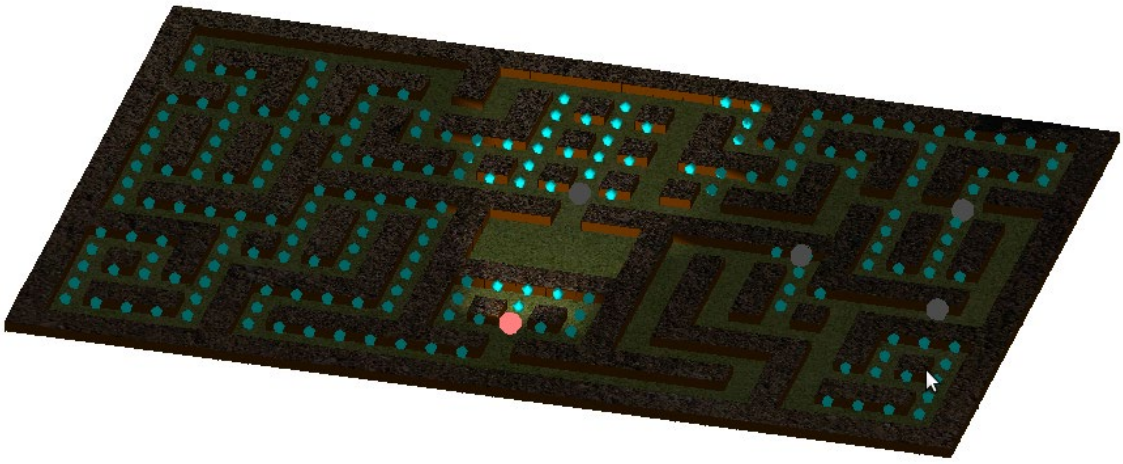
- **Optional:** add a (small) flashlight to each of the enemy characters.

- So as to mix texture mapping and lighting effects, the texture mode has to be changed from GL_REPLACE to GL_MODULATE. You are recommended to consult an OpenGL reference to learn the difference between both modes.

- When drawing textured polygons in lighting mode, set the material (procedure “glMaterialfv”) to (1.0,1.0,1.0,1.0).

- When implementing lighting effects, remember to carefully set the normal vector at polygon vertices.

An example is next shown:



Task 2. Implement the logic for the end of a game

Add the required code so that the game ends properly. For instance, if the main character succeeds in eating all the food elements, you can display a "You win message", otherwise a "You lose" text can be printed.

Task 3. Optional parts

The following items are optional, but are mandatory for those students aiming to opt to a "with honors" mark (matrícula d'honor). Recall that, from university rules, in our subject, only one student can receive that mark. Each item provides an extra point to work package 4 (so it may sum up to 12 points).

- Provide advanced intelligence to the enemies. You must use some of the techniques studied in the "Intelligent systems" subject.

- Make a joystick employing the technology studied in the "Embedded and ubiquitous systems" subject, so that the main character can be managed by means of it.

The project including the optional tasks will be presented during the January-February exams period. You will receive an e-mail indicating the place, date and time.

These optional parts will be developed and handed in individually.

Deadline

Tasks 1 and 2 of this activity have to be handed in before **December 19th, at 18.00h (strict deadline)**, by uploading a **zipped file** containing the source code through the corresponding activity of the virtual campus.

Include **only** “.c”, “.cpp”, “jpg” and “.h” files together with a “Makefile” script which compiles the project in a Linux console.

All members of each group will be interviewed about the uploaded activity.