Tetris Project for AOS

Design Document for the Tetris project for the course "Advanced Operating System".

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29/03/2021

Contents

1   Introduction

The scope of this document is to explain the design choice we have have made during the development of our project: a version of Tetris working from a terminal console, that is executed on an external microcontroller integrated circuit. It will also contains all the reference to better understand the structure of the code.
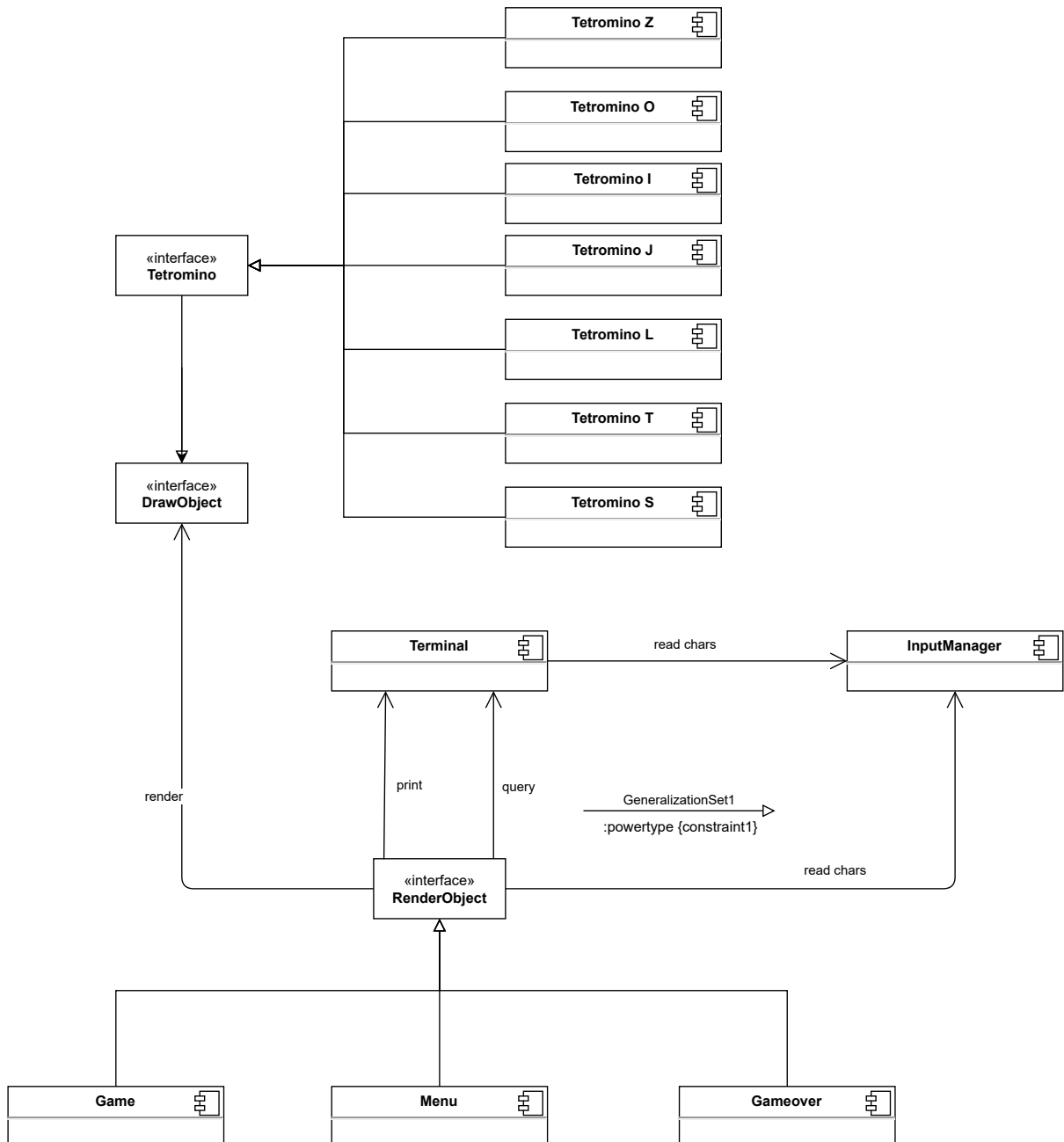
2   Design and Interfaces

Figure 1: Interfaces Diagram of the project.

3　Target Platform

4　Implementation

This part of the document better highlight what hwo we have proceed in the implementation of our project from a more technical perspective.

4.1　Packages

Our project has been developed by using C++[1], in order to be compliant with the miosix-kernel[2].

4.2　Terminal Rendering

4.3　Main Loop

Setup of the InputManager and the Terminal;
while *!isDone* **do**
　Synchronized with MPI_Barrier(MPI_COMM_WORLD);
　if *myID==processorID* **then**
　　Allocate enough buffer in order to receive from each processor information about the amount of data it will send;
　else
　　Prepare the information about the amount of data to be sent;
　end
　Perform an MPI_Gather;
　if *myID==processorID* **then**
　　Allocate enough buffer, based on the information received in the previous gather, in order to receive from each processor the data it will send;
　else
　　Prepare the data to be sent;
　end
　Perform an MPI_Gatherv;
end

Algorithm 1: Main loop executed inside the main.cpp.

4.4　Development Note

In order to proceed with the development of our project, we have locally cloned the github repository of the miosix kernel[1]. After removing the *.git* folder, we have also cloned into the same folder our repository[2]. In order to keep our code more parametric as possible we have defined an header file at `terminal/utility.h` that acts as a configuration file

5　Usage and Setup

References

[1] Terraneo Federico. Introduction to c++. 2020.

[2] Alberto Leva ; Martina Maggio ; Alessandro Vittorio Papadopoulos ; Federico Terraneo. An experimental OS: Miosix. In *Control-Based Operating System Design*, pages 151–159. Institution of Engineering and Technology.

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[1]https://github.com/fedetft/miosix-kernel
[2]https://github.com/gianfi12/AOS-Tetris