Tetris Project for AOS

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

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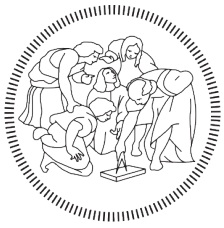

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1 Introduction

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

2.1 Interfaces Diagram

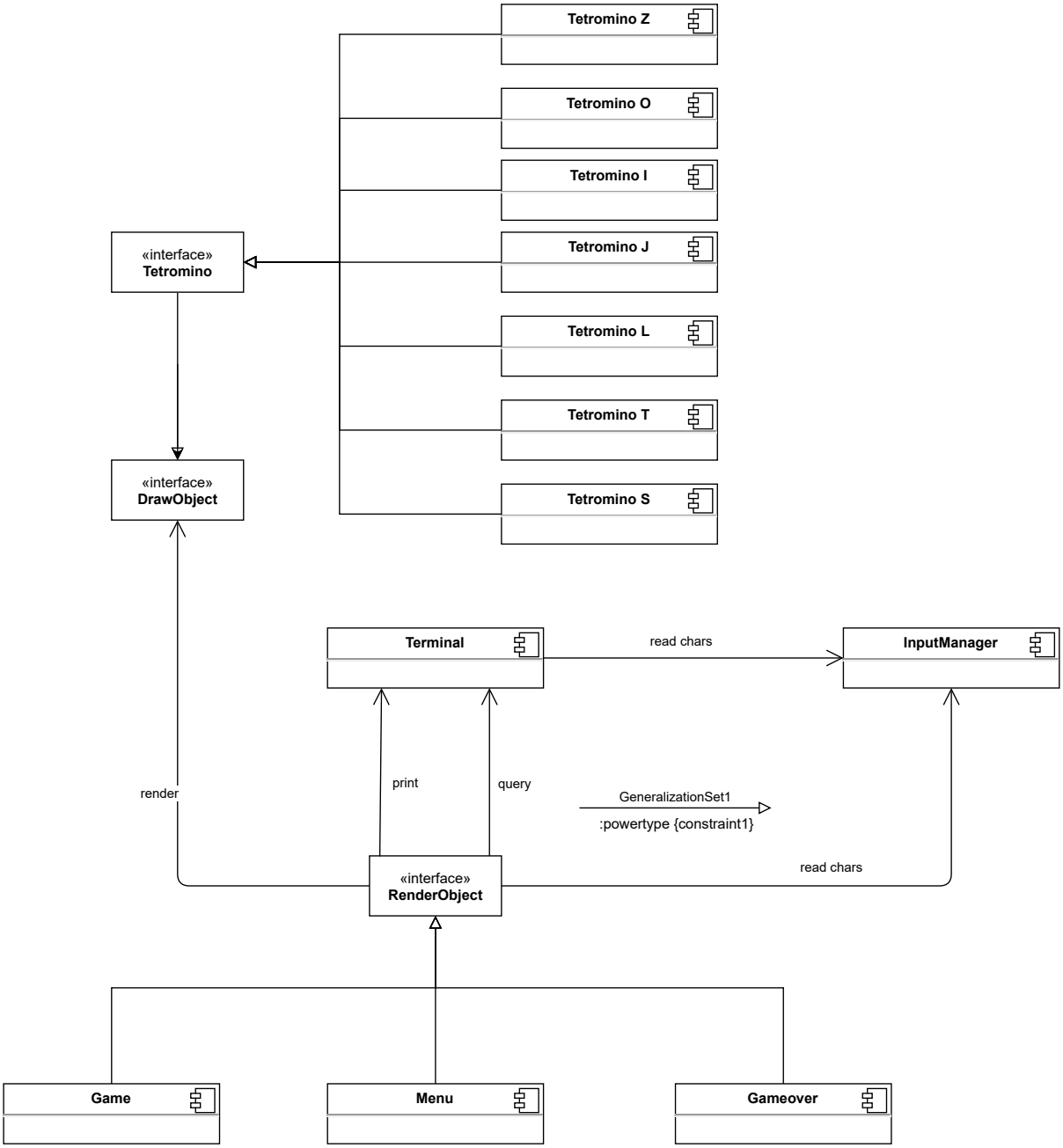

Figure 1: Interfaces Diagram of the project.

2.2 Sequence Diagram

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.

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