# Bilkent University

### Department of Computer Engineering

# CS 319 – Object Oriented Software Engineering

*CS 319 Project: Catch the Deadline*

# Final Report

**GROUP 2D**
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# 1. Introduction

"Catch The Deadline" is a 2D arcade-style platformer game. This game is designed to entertain its users, hence in order to do this we have included a variety of power-ups to collect and various obstacles to overcome. The game includes three levels (only one implemented until now), so that the user can have different experiences in the game and enjoy it more. To pass the levels, user should take the power-ups, which will help to kill enemies and passing the obstacles. Apart from the ordinary 2D games, "Catch the Deadline" will also be played online so that users can compete with their friends. The purpose of the game is to score the highest scores, and in order to achieve this, the user should finish the game as quick as possible and collect as much power-ups as possible. Before starting the game, a user will decide to either play with an account or play as a guest. If the user creates an account for the "Catch The Deadline" their scores will be saved and they can compete with other users. However, if a player choose to play as a guest their scores will not be saved.

The game is implemented using Java and is designed for PC usage. However the structure of the system that we chose will allow us to easily implement this game also for mobile phones. By only making changes in the User Interface classes, and keeping the same database and game logic we will be able to implement this game even for other platforms.

Overall, "Catch the Deadline" is for all the gamers that love to play arcade games. With different power-ups and weapons, players can get different experiences while playing this game. The idea behind this project is also to provide a message, that catching the deadline will not be a success only for this game, but it will also be a success for our student life.

## 2. Changes in the project

Completing a full project in such a short time, would definitely lead to a not fully complete project design. Hence during our implementation, we have done some changes that we hadn't thought about before. Furthermore we also did some changes in order to increase the performance of the game. We added some private attributes and functions which increased the interaction between classes. Furthermore, since we worked with JFrame and ActionListeners we tried to avoid as much as possible inheritance from our classes. However we tried to follow our object design as much as possible. Detailed explanation will be given in the following sections.

### 2.1 Changes in Implementation

**Game Manager Subsystem:**

New classes have been added to this subsystem, which we found as necessary for the flexibility of the program during the implementation. A Handler class has been added which is responsible for handling the Object events, like adding new objects, removing objects, etc. Since this game has many objects, it would be inefficient if we manually created instances of all the objects that we needed, therefore we created the Handler class. The Handler class, has a level() method added for creating the levels.

In order to get in a better project organization, we separate the gamemanager and gameobjects packages. However they are still in the same layer. Furthermore we also added an enum ObjectType which keeps track of all Object ID's.

## 2.2    Changes in UI

UI of our game is almost identical to the mockup that we provided in our previous reports. In this layer we only made some minor changes by adding some classes which we had forgotten to add in the Design Report. These classes are classes responsible for all the options of the main menu. Also, in difference to the Design Report we added some private methods and attributes in these classes. Furthermore, we also added a private class in these classes which extends the MouseListener class, which we used as a listener for all the JLabel that we provided in our Menu UIs.

## 2.3    Changes in Database

Since the ".jar" file cannot easily interact with an embedded database, we decided to make the database online. Beside this change, we didn't change the structure of the DBInterface class. However, as mentioned above, due to the very limited time, we couldn't implement this change yet. However all the queries are ready, so we only need to make a connection to the online database. The database will be stored in an online server, hence this will also provide users to compete with their friends. However, the "play as guest" option, will still provide the possibility to play this game offline.

# 3. Status of the Project

Until now, we have implemented almost a full level of the game. The major kinetics work and the system seems to be on the right track. Within a very short time the game will be completed and will provide all the functionalities that we have mentioned in our previous reports.

### 3.1 What's Left

There will be several thing that will add in the project.

- Firstly, the sounding and music's of the system is not implemented yet. Sounding will be added to make the game experience more enjoyable.

- Secondly, database of the system needs to be connected to an online server to work correctly.

- Thirdly, we will work on creating new levels of our game and also finishing with the design and scenario of each game. For the moment the game provides only the basic functionalities, which where all what we could implement during this time. All functionalities will hopefully be implemented until the final deadline of this project. Until then, we will try to catch the deadlines.

## 4. User's guide

### 4.1 System Requirements

"Catch the deadline" is implemented in Java platform. Therefore, to play the game an operating system that supports JRE such as Windows, MacOS, Linux and Polaris is required. Additionally, the updated version of Java (Java 8) and JDK will be required to run the game. Furthermore, they should be configured correctly so that the game runs successfully. If the user will play online, a DSL connection is required. Otherwise the user can only play offline.

**Minimum System Requirements:**

- Java is compatible with Windows 7, 8, 10 and Windows server 2008, 2012 Mac OS X 10.8.3+, 10.9+

- A 128 MB RAM is needed

- A 124 MB Disk space is needed for  JRE ( Java Runtime Environments)

- A 2 MB  disk space needed for Java Update

- The computer should have a minimum Pentium 2 266 MHz CPU

## 4.2 Installation

There is no installation required to play our game. Since the game is in ".jar" format, there is no need to make any installation. In order to run the game, the user should only run the ".jar" which is provided in our GitHub folder.

## 4.3 Overview of the game

"Catch the Deadline" is a 2D arcade-style platformer game. After choosing to play either with an account or as a guest, the player will chose the level and then can start the game by clicking the Play button on the main menu. The player can control the student character to collect power-ups, weapons and finish the game within the provided time to catch the deadline. Player has three lives which he can lose in several ways. Firstly, if player runs out of food or sleep stocks, a life will be lost immediately. Secondly, if the user fails to finish the game within the provided time, he will again loose another life. Also the character might get killed by one of the enemies of the game. The aim of the player is to finish all of the levels as quicker as possible to get the highest score.

## 4.4 Game Objects Management System

### 4.4.1. Controls

- Up Arrow: Jump

- Left Arrow: Run left

- Right Arrow: Run right

- A: Attack with pen

- S: Attack with eraser

- D: Attack with paint spray

- Space: Jump

### 4.4.2. Objects
- Homework: It is an enemy.

- Exam: It is an enemy.

- Blank Sheet: It is an enemy.

- Pen: It is a weapon to shoot the enemies.

- Eraser: It is a weapon to shoot the enemies.

- Paint Spray: It is a weapon to shoot the enemies.

- Sleep: It is a power-up. If user runs out of sleep one life will be lost.

- Food: It is a power-up. If user runs out of food one life will be lost.

- Coin: It is a power-up. User can collect these and improve their weapons

## 4.5 Game Screens

**Login Screen:**
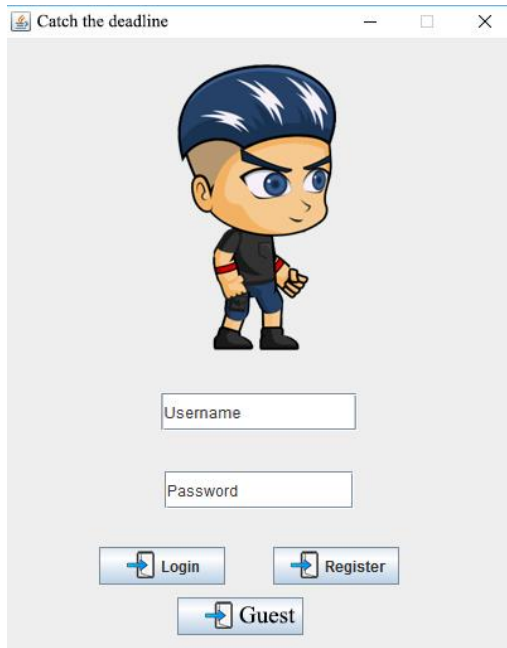


The login screen of the game. The player can choose either to login or play as a guest.

**Main Menu**

The Main Menu provides some different options to go through. Play button lets the user to go through the game and start playing it. Settings button provides user to make their own configurations about the game. In high scores, as the name suggests, the user can see all high scores including other players' scores' if the user is playing online. In credits part, user will see the developers of the game and in the help option there is provided information about the game and guide on how to play it.

**GamePlay Screen:**
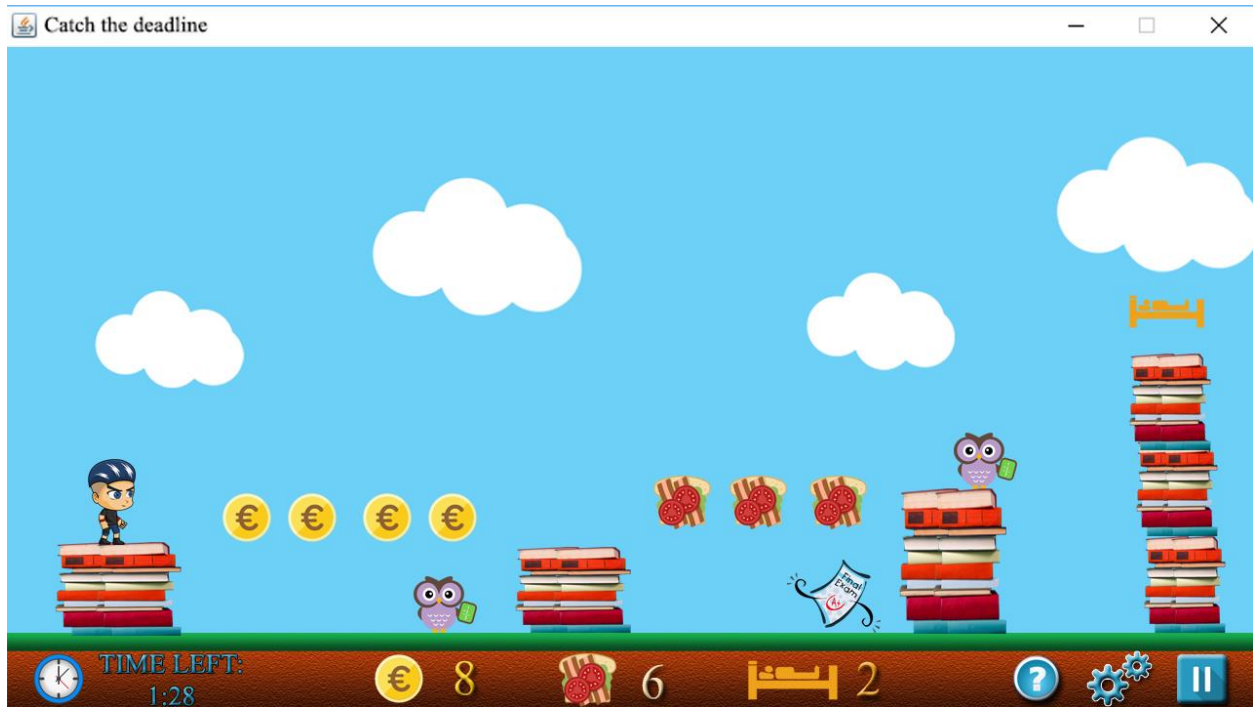


After the player pushes the play button the gameplay screen will appears. In our gameplay screen there are coins to collect which can be used to improve the weapons. Foods and sleeps are the other power-ups provided. User can go to the setting, pause game and help screens by clicking the buttons at the bottom right corner.
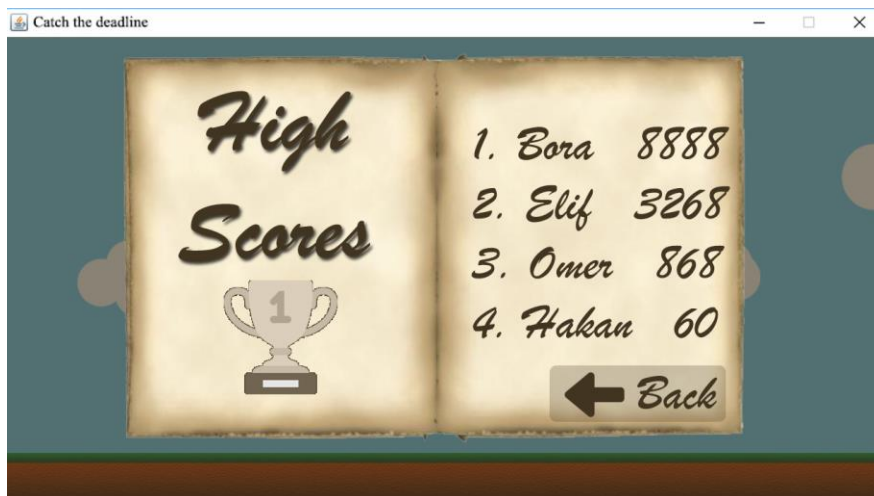
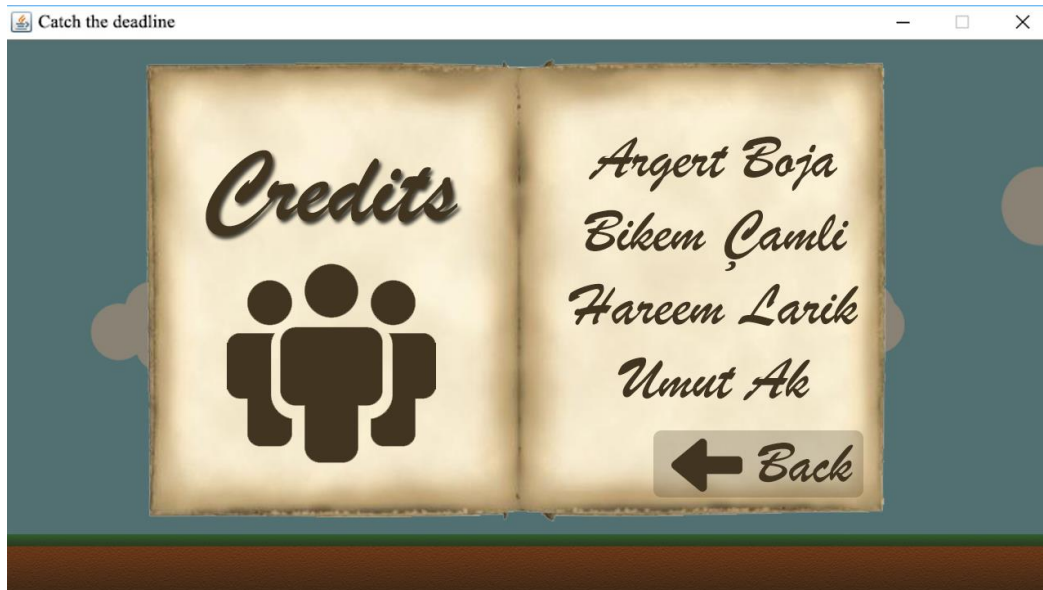**Choose Level Screen:** Player can choose from three difficulty levels.
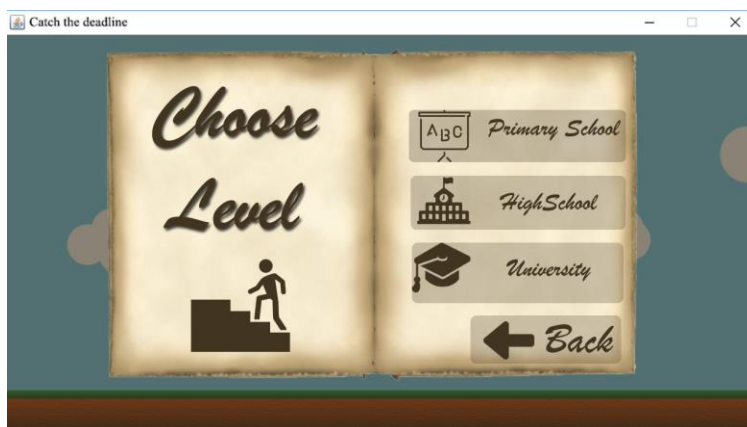
**Help Screen:** Player can use this menu to get the information about how to play the game.
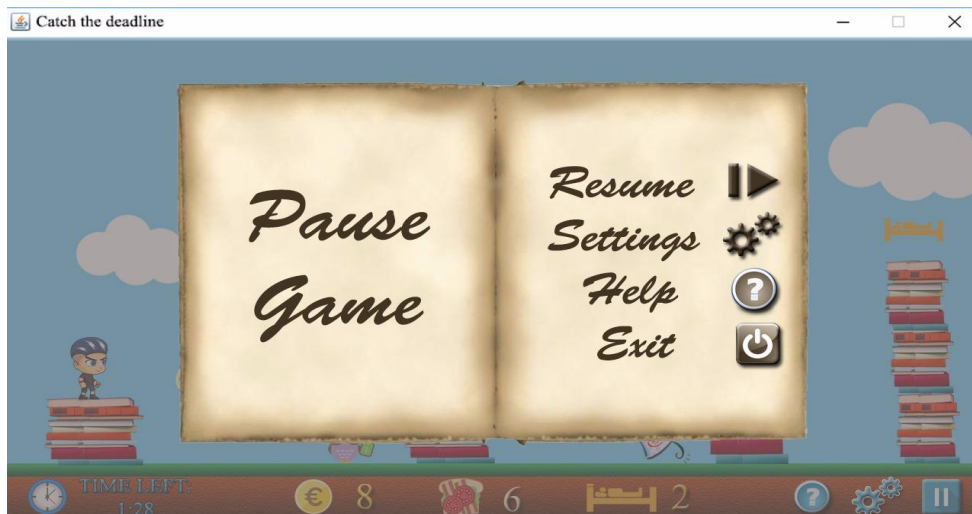


**High Score Screen:** This screen shows the highest 5 scores.

**Credits Screen:** From this screen user can see the implementers of the project.



**Pause Game Menu**



During the playtime, the user is able to pause the game. If user wants just a break, he

can pause the game and they can continue from where they left. In addition, user can go to the

settings menu to change configurations. Moreover, user can go through the help menu to check

on how to play the game. By just pressing exit button, user can leave the recent game. The resume option, enables the user to go back to the game.

**Settings Menu**
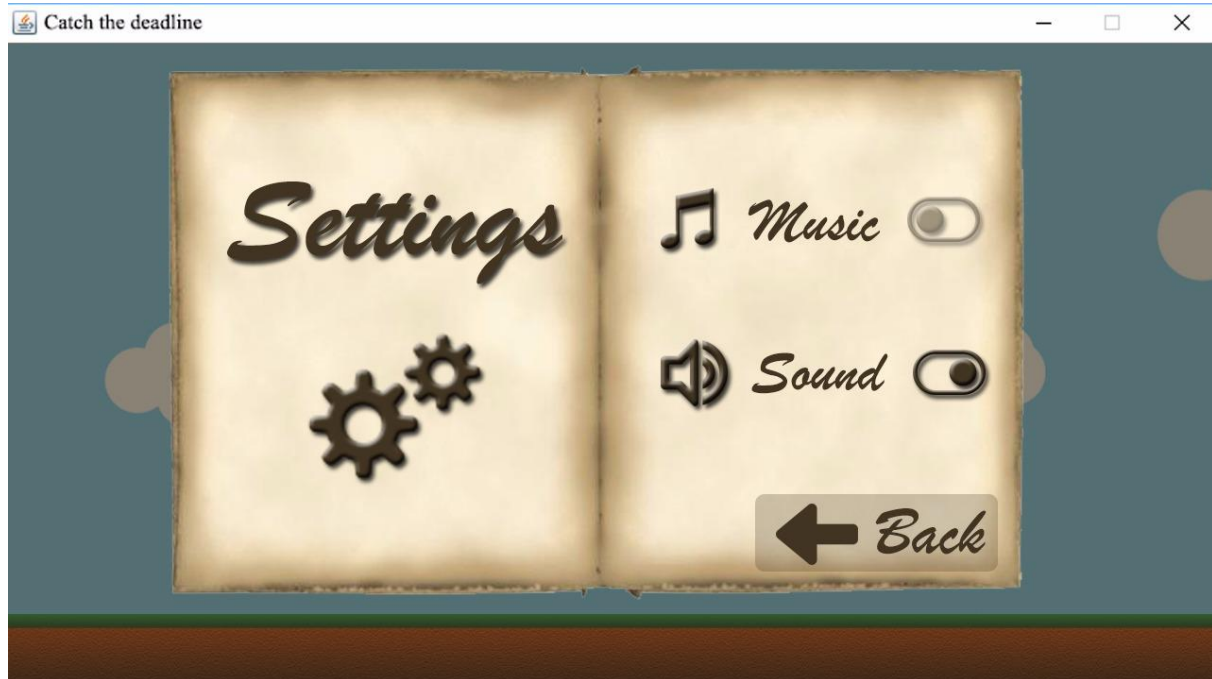


In the settings menu, user can turn off or on both music and the sound effects of the game.