Střední průmyslová škola elektrotechnická
Informační technologie
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Bongo Beats Bonanza

Rytmická hra

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Contents

Project Goal

The objective of this project was to create a rhythm game with the following Features

- Loading music from a MIDI audio file (= entire stage)
- Graphically representing musical notes and UI on the screen
- Score system for evaluating player performance
- Possible loss
- Streak system

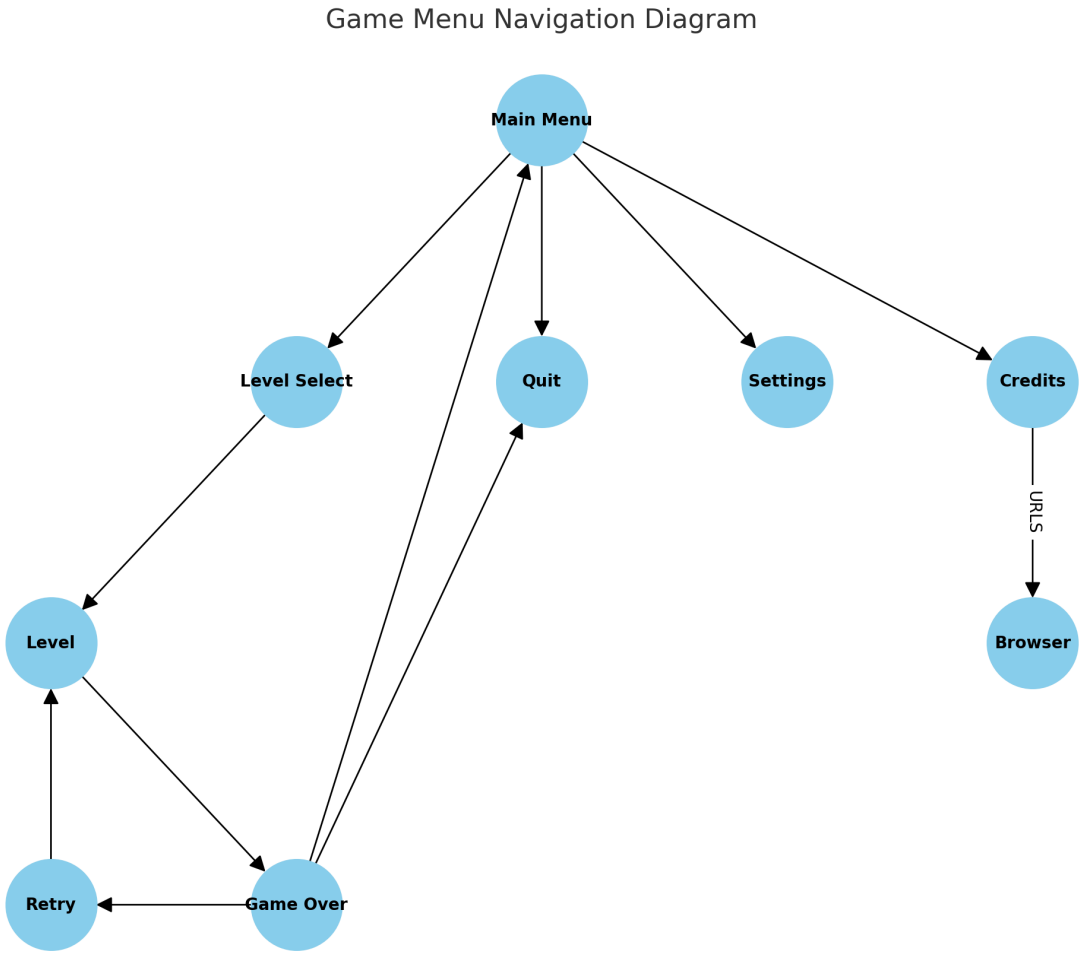
Manual

1. Introduction

Welcome to Bongo Beats Bonanza! This document will guide you through the gameplay, controls, and other important aspects of the game.

2. Menus

Here's an in-depth look at the various menus available in the game:



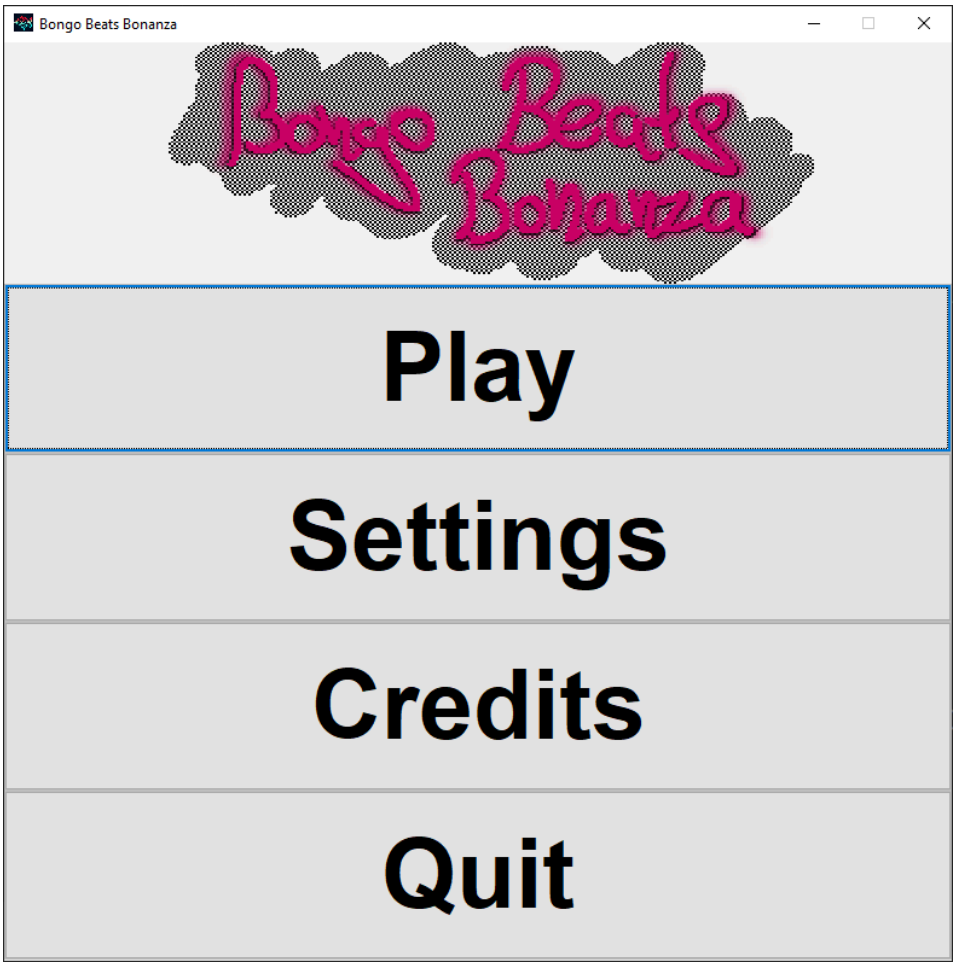
A diagram featuring all menus of the game and their relationships

Main Menu

The Main Menu is the first screen the player encounters upon launching the game. It serves as the central hub from which players get to other parts of the program.

Features

- **Play**: Begins the game and takes the player to the Level Selection Menu.
- **Settings**: Opens the Settings Menu where players can adjust game options.
- **Credits**: Displays the Credits Screen, showing acknowledgments for music, sound effects, artwork, and development.
- **Quit**: Closes the game.



Screenshot of the Main Menu as seen in game

Settings Menu

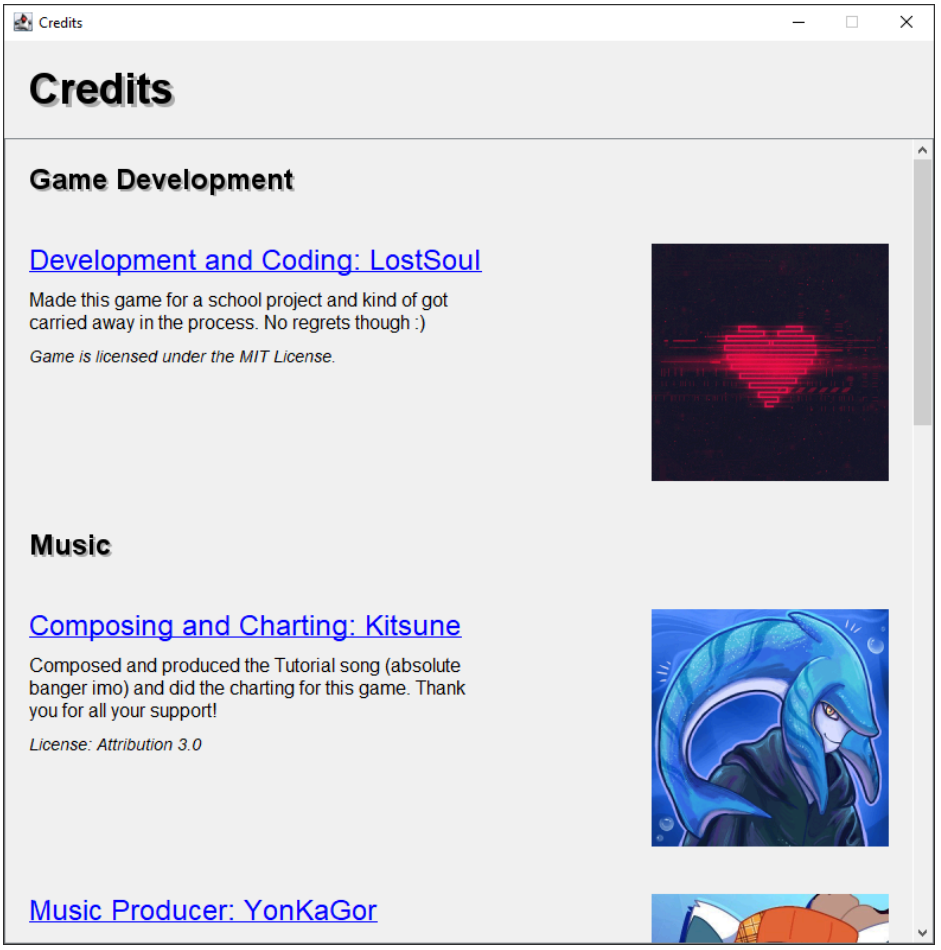
The Settings Menu provides options for customizing the game to the player's preferences. Players can adjust various settings related to audio, controls, and gameplay.

Features

- **Audio Settings**: Adjustment of volume for music and sound effects.
- **Control Settings:** Customization of controls for playing the game.
- **Gameplay Settings:** Options for adjusting difficulty and note speed.

Credits Screen

The Credits Screen acknowledges the contributions of individuals and resources used in the development of the game.



Screenshot of the Credits Screen as seen in game

Features

- **Acknowledgments**: List of individuals who had their work featured in the game.
- **Logos and Images:** Profile pictures of featured individuals.
- **Hyperlinks:** Hyperlinks leading to contact info.
- **Licenses:** Shows licenses under which media is to be distributed.

Level Selection Menu

The Level Selection Menu allows players to choose the level they want to play. Levels are verified before starting.

Features

- **Background image**
- **2 tracks:** Lines where the notes move on.
- **Health bar:** Changes color with damage.
- **Progress bar:** Fills as the game progresses.
- **Note hitting effects:** Tracks change color and rings appear defending on accuracy.
- **Stats:** UI shows numbers updated in real time
    - **Accuracy:** Calculates the current note hitting accuracy in %.
    - **Streak:** Shows the current streak.
    - **Score:** Shows the current score.

Level Screen

Displays and runs the level specified by the player.

Features

- **Level List:** A list of available levels, showing their names.
- **Play:** Begins the selected level.

Game Over Screen

The Game Over Screen appears when a level ends. It provides information about the player's performance and options for what to do next.

Features

- **Grading:** The player is graded depending on how well they played.
- **Stats:** Shows how many times each notetype was hit and the longest streak.
- **Retry Level**: Restarts the level to try again.
- **Quit to Menu**: Returns to the Main Menu.
- **Quit to Desktop**: Quits the Game.

3. Gameplay

Objective

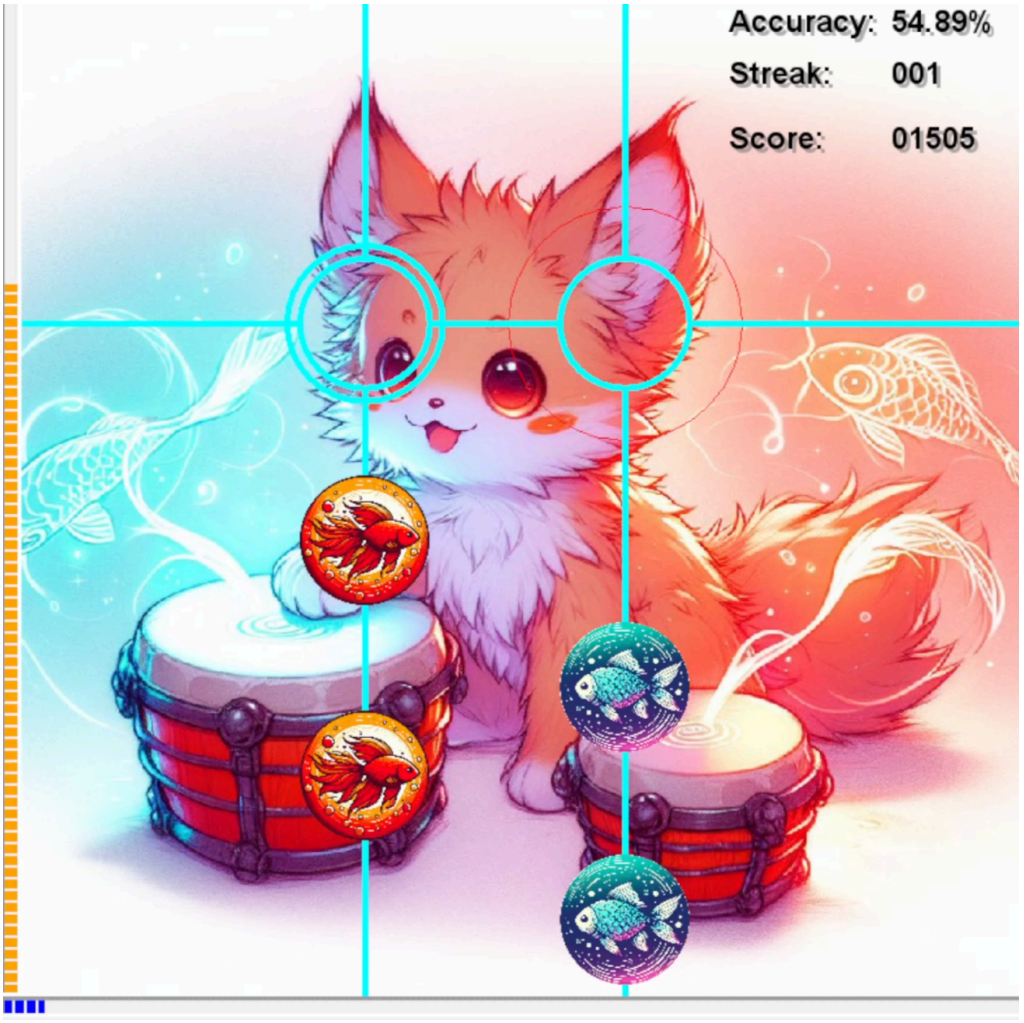
The objective of each level is the same. Complete each with the highest score possible.

Score

Players earn score points by successfully hitting notes. A note is considered hit when the player presses the corresponding Bongo key for the track at the precise moment. The proximity of the notes to the bongos (represented by circles in the middle of the screen) influences the score; the closer the notes are to the bongos, the higher the score. Failing to hit notes incurs a score penalty.

Hit Types

NoteType	Color	Score Value	Interrupts Streak	Removes Note
Great	Blue	80	No	Yes
Good	Green	50	No	Yes
Bad	Red	25	Yes	Yes
Miss	Gray	-100	Yes	No



Gameplay Screenshot

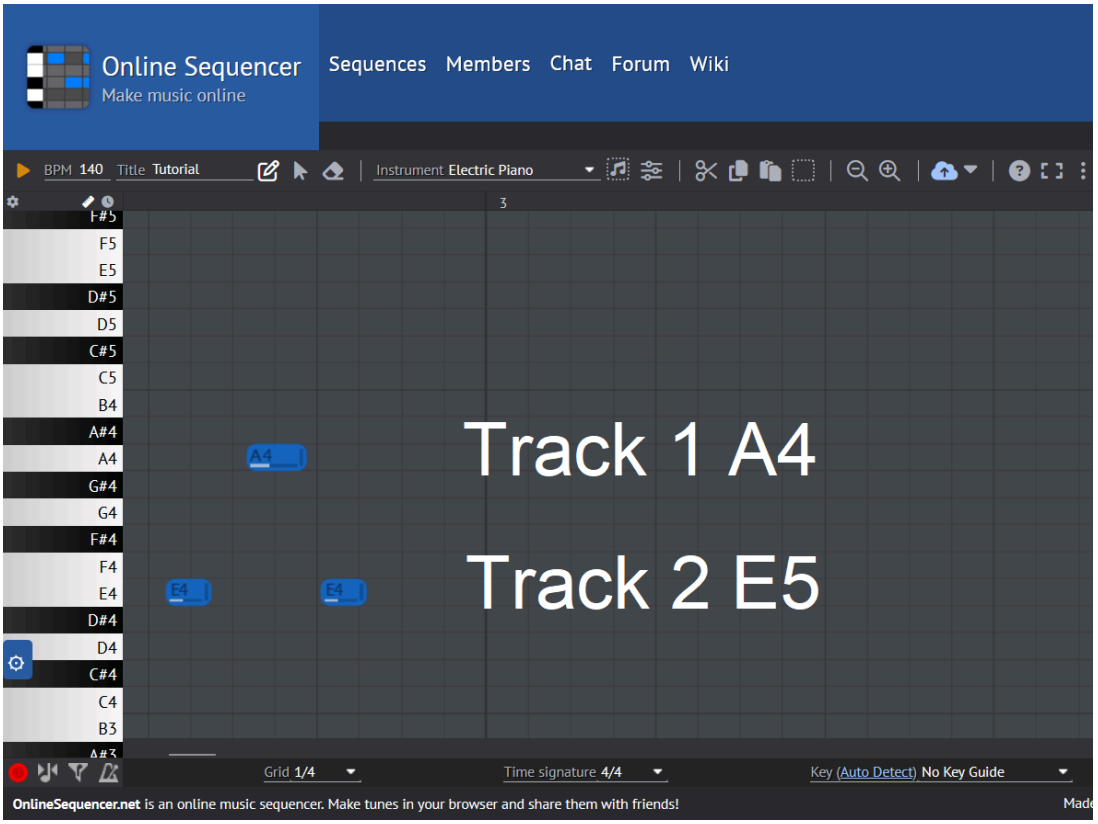
4. How to add your own level

The game allows for the addition of custom levels. This section provides a step-by-step guide on how to create and integrate a new level into the game.

Requirements

Before you start, ensure you have the following:

- **MIDI File**: A MIDI file containing the musical track for your level. The file should be properly formatted and playable. Alternatively you can make your own using a sequencer (view image for more info).
- **WAV File**: A corresponding WAV file for the MIDI track, which will be used for audio playback during the game. At max a 16-bit .wav file, otherwise it won't play.
- To create charting from scratch you can open both at the same time in audio editing software and try to match them up. Watch out for the correct tempo BPM!



Screenshot of the MIDIwith marked note lanes from the [Online Sequencer](#) website

Organize Your Files

- Place your MIDI and WAV files in the resources\levels directory.
- Make sure they have the same file name and with a similar name format to the other levels.

Test Your Level

- Run the game and navigate to the Level Selection Menu.
- If you correctly followed the previous steps, your level should appear on the list
- Select your new level and play through it to ensure that all elements (audio, notes) function as expected.
- See if any issues arise, such as incorrect note timings.
- You can correct it by checking the console for the delay time when the level starts.

Congratulations! You've successfully made your own level in BBB.

5. Controls

Here's all you need to know about controls in BBB:

- **Mouse**: Navigate menus by moving the cursor and clicking options.
- **Left Arrow Key**: Hit notes on the left track.
- **Right Arrow Key:** Hit notes on the right track.
- **Custom Keybinds:** Set secondary keys for hitting notes in the Settings Menu.

Technical implementation

The menus are implemented using Java Swing, a GUI widget toolkit for Java.
Each menu is designed as a separate frame or panel, with buttons and other interactive components to navigate through the game.
Here is an overview of the main classes and components involved in the menu system:

- **TitleFrame.java:** Handles the Main Menu.
- **LevelSelectionFrame.java:** Manages the Level Selection Menu.
- **SettingsFrame.java:** Controls the Settings Menu.
- **GameOverScreen.java:** Displays the Game Over Screen.
- **CreditsFrame.java:** Loads and displays the Credits Screen.
- **FancyJLabel.java:** A custom JLabel class for styled labels used in the menus.
- **GameFrame:** Shows and handles UI overlay. Contains GameJPanel.
- **GameJPanel:** The main place where instances of all level classes create an environment for running and displaying the level.

Testing

To test my game for bugs I made use of the following methods:

- Unit Tests → Testing for issues regarding specific methods
- Integration Tests → Broad check of how components work together
- Manual Testing → Playtesting the game

Unit tests

Audio Verification Tests

The AudioVerificationTest class tests the validity of audio files used in the game. It ensures that both WAV and MIDI files are correctly validated before being loaded into the game.

Music Player Tests

The MusicPlayerTest class verifies the functionality of the music player. That’s playback, pausing, stopping, and volume control of music.

Music Track Tests

The MusicTrackTest class ensures that the game's music track management, including note catching and scoring, works as expected.

How to run the game

1. **Make sure Java is up to date** on your system. You can check this by opening a terminal or command prompt and typing **java -version**.
   If Java is installed, you'll see the version information. If not, you'll need to download and install Java from the official website: https://www.java.com/en/download/

2. **Locate the JAR file:** Navigate to the directory where your JAR file is located (BongoBeatsBonanza) using the command prompt or terminal. Type in CMD in the windows search bar and click on “Run as administrator”. Then write **cd <write location to game here>**

3. **Open the JAR file:** To open the JAR file, you type
   java -jar BongoBeatsBonanza_Slezak.jar and hit the enter key.