**DMP Project Documentation**

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For my project I decided to implement a mini game on the Arduino mega board. This idea came up when I was trying to find a solution for the project that will use either wifi or Bluetooth that has representation on the screen, works well with music in the background and gives user control.

Another thing that I wished to implement was randomness in order for the project to feel new at each step and not dull. Moreover the score presented at the end of the game makes it more interesting for the user as it can be well used for entertainment.

For the controller we used an app that lets the user write into a console to our app via Bluetooth. With the user input the player can move up, left, down, right and even reset the game. When the move is registered the player icon will move via animation to the next location. If the next location was previously populated by a coin the coin respawns at a different location and the score is incremented. To note that the coins have animations on them to make the game more enjoyable and more pleasing to the eye. The animations are done with keyframes both for the player and the coins, after a specific time period the coin frame is updated with the next frame (loops after the end of the defined frames). The animation of the player is controlled by the user input so it is not dependent on time.

The music is done with the help of a timer interrupt called at a specific time interval. Here we can make an improvement because the music doesn’t loop, it just plays 4 times as it is hard coded. The music is implemented with the help of pitcher.h file that holds the notes with an array of duration for the notes. By calling tone and noTone we generate our music.

For the used components we have the Arduino mega board with the lcd shield, Bluetooth module, buzzer. Lcd shield is used for viewing our actual game, here we have the animations on our object and can actually see in real time how the user’s input impacts the game. Bluetooth module is the one responsible for making the connection between our board and the user. With the help of an app on our mobile we can send strings to the Arduino. These strings are interpreted and the projects gets updated. The buzzer generates the tones of our music.

