Vlad Atamanchuk

Major Project Proposal (Fruit Game)

*Premise*

I am designing basically a fruit game, this game is about dropping fruit and getting them to merge into bigger fruit. So, for example, we have a strawberry that if collided with another strawberry will become a banana for say. Now this may not be the exact fruits I use but you get the concept. So, the goal of the game is to use your mouse to drop the randomly picked fruits (from a preset height) in a strategical way to get to the biggest fruit possible which may be something like a watermelon and you must do this without crossing the top line, which if you do you lose. Then the game would record the score you have, and you could play again trying to merge all the fruits together to get the highest score possible. The challenge of this game is it involves physics and interaction between other objects and tracking these interactions within a group of objects, so to help me with that I am using p5. play library which is a unique library specifically designed for games and has some useful physics methods and group implementations that I am considering using. I got this idea from a phone game called the Watermelon Game which can be seen below. My plan is to create something like this but put my own twist to it, maybe play with the different images, make my own images, implement a leaderboard, give the user choice of what fruit they can choose to make it easier, etc.

I think this would be an interesting major project to pursue as while it seems easy and simple, I believe there are a lot of factors that may make this a difficult and challenging project that will test my abilities and make me learn. Especially considering the physics aspect and the interaction between balls, I will have to somehow keep track of each ball and see the interaction between each one and see if they are able to merge or not. That alone I think will be quite a challenge, and so far, I have been testing it seems super difficult to accomplish. I also think this could be a fun project to pursue as I can play around with quite a bit of factors I can add animation, sound, make my own visuals. So, there is quite a bit of freedom as to what I can do and play around with. Now the timeline for this project is to take a few days to implement the p5. play library and test it out and see what methods I can use in my game and whether they are worth keeping, while also building a small demo version of my final game using balls instead of images. Then once I have the base requirements done (like the merging of the balls) I can start implementing visuals and substituting fruits for balls which I think may take a while as the images do not have the same collider as the balls. Then after that I can start implementing some sound and possibly animations, I would probably prefer animations over sound in case I run out of time, then a leaderboard to keep track of each player that has played the game and see who gets the highest score would be nice given I have enough time. But overall, I think this is quite an interesting and somewhat challenging project even though it may not seem like it there are a lot of small details and code that I need to figure out to create this game and have it function properly. So far from all the testing I’ve done, it seems rather difficult as testing of it is also difficult since the p5. The play library is completely new to me and there are some errors that I don’t know how to resolve, so it’s taking me quite some time to learn it and figure out how to properly use it and implement it into my game. But I think in the end it will be all worth it to look back and see what I have created, I hope this will turn out the way I am envisioning It and that everything works the way I intend it to.

*Demonstration (more or less what I’m aiming for)*



*Features (Required)*

With this project there are a variety of different features I need to implement and a lot of features I would like to complete. So, for the features I NEED to implement into my code to have a functioning game I have:

* **Physics**: I need to implement physical interaction between the balls(fruit) and canvas, have them collide with each other and implement gravity so that they fall when being spawned. and rotation so that the balls can rotate among their axes and basically roll.
* **Input**: I need to implement a method where I can use the mouse to spawn the random balls(fruit) on the canvas and have it interact with the previous fruit.
* **Merging**: I need to implement a method where collision amongst the balls can be detected and if a collision between the same balls(fruits) they merge and create a new ball(fruit).
* **Borders**: I need to have borders for the play area and make sure the balls cannot escape the canvas.
* **Losing Line**: I need a line on top of the play area and check that if any fruit crosses it the player loses, and his score is recorded.

(*Desired)*

Now for the features I would like to add into my code if time allows to make the game more personal and challenge my coding ability I have:

* **Cheating:** I would like to implement a method where the user can choose the fruit they start with, rather than it being random.
* **Animation:** I would like to add an animation between the fruits so that each time the fruit is merged there is perhaps like a splatted across the screen of the fruits merging.
* **Sound:** I would like to add a sound during the merging and maybe have background music.
* **Personal Drawings:** I would like to draw my own fruits or have someone draw them which would take some time especially to draw them differently each frame for the animations.
* **Leaderboard:** I would like to have a leaderboard where users can see the highest score and then input their nickname to have their name be put into the leaderboard. This leaderboard would be global and can be seen by every player – which means I might have to implement a filter that blocks any inappropriate text.

*Milestone Timeline*

There are a lot of features I need to and want to implement thus I need to do my best to try and stay organized while trying to progress. So,