



C++ ARITHMETIC DDR!:

Final Project Presentation

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SECTION 1

PROJECT OVERVIEW

Goals & Objectives

- From our experience, many students have had an issue learning and implementing different rules for C++.
- One particular concept that students struggle with is understanding the C++ arithmetic precedence rules.
- This project will focus on developing a Unity application.
- The purpose of the application is to teach students how to apply the C++ arithmetic precedence rule with the use of an arcade-style Dance Dance Revolution (DDR) game template.

Group Member roles

Ibeawuchi Anokam	Ike Akujobi	Uchenna Ndolo
<ul style="list-style-type: none">▪ Illustrator / Sprite Artist▪ Scene Programmer:<ul style="list-style-type: none">○ Gameplay scripting○ Input processing scripting○ Mathematics mechanics scripting○ UI scripting▪ Lead, Sound Engineer	<ul style="list-style-type: none">▪ Model designer▪ Scene, Level Designer▪ Scene / Model Animator▪ Sound Engineer▪ technical tester	<ul style="list-style-type: none">▪ Scene, Level Scripting▪ Lead, Quality assurance tester▪ Lead, technical tester

MODELING

Environment:

The game environment will be set up as a Karaoke bar where the main player will be placed on stage to perform a dance routine.

Models:

The player and other agent models were imported with the use of the **Unity Asset Store** and **SketchFab.com**



SECTION 2

PROJECT SCOPE

Avatars and Animations

- For animations, all avatars will be dancing as the player dances in front of them.
- Music will be playing in the background as the avatars are dancing.



Sound / Music

All music that was utilized in the game was imported from YouTube as an mp3 file. The two songs playing are listed below:

- The Title scene music of choice was:
 - *Justice - Genesis*
- The gameplay music of choice was:
 - *The Mama's and Papa's - California Dreaming*

Gameplay and Inputs

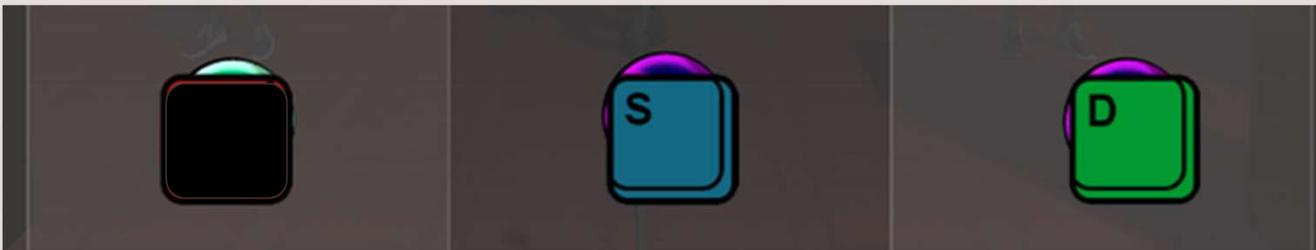
- The gameplay will be very similar to that of a **Project Diva** and a **Guitar Hero** game, in which, by using the A, S, D keys on the keyboard, the player must press the corresponding keys in time to the correct one out of three multiple choices given.
- If the player loses enough points, they lose the game and if they do well, then they beat the game!

Sensors

Proximity sensors :



These on-screen keys correspond to your keyboard keys **A**, **S**, and **D**



When a keyboard key is pressed, the on-screen key turns black, returning some form of feedback to the user so that they know their key press was registered by the game.

Impediments

- Time constraint
- Implementation of the multiple choice algorithm that displays each step of the precedence rules was not accomplished
- The next slide shows the algorithm that was not implemented

Impediments

Example

- Given: $((5+2)*2)\%7 / 3 + (5-2)$
- Then using the precedence rules, the Steps would be:

– $S_0 = ((5+2)*2)\%7 / 3 + (5-2)$; Step 0

– $S_1 = (7*2)\%7 / 3 + (5-2)$; Step 1

– $S_2 = (14\%7) / 3 + (5-2)$; Step 2

– $S_3 = 0 / 3 + (5-2)$; Step 3

– $S_4 = 0 / 3 + 3$; Step 4

– $S_5 = 0 + 3$; Step 5

– $S_6 = 3$; Step 6 – Final Answer

  PRESS THE SPACEBAR TO CONTINUE . . .



SECTION 3

DEMO

Picture of the Environment



Picture of the Environment

The screenshot shows a game interface with several elements and annotations:

- Top Bar:** Contains a smiley face icon, the word "SOLVE:", a math problem $SO = (22+3) \times 2$, a clock icon, a timer showing "02 : 28", and a "LIFE" meter with a green bar.
- Choice Grid:** A 2x3 grid of buttons. The top row has three buttons with colored spheres (purple, green, purple) and labels "bad choice", "good choice", and "bad choice". The bottom row has three buttons with keyboard keys (red 'A', blue 'S', green 'D') and labels "key 'A'", "key 'S'", and "key 'D'".
- Bottom Bar:** Displays a logo and the text "The Mamas & the Papas - California Dreaming".

Annotations with red arrows point to the following elements:

- "The problem you will be solving" points to the "SOLVE:" section.
- "3 multiple choices answers" points to the three "bad choice" buttons.
- "life points" points to the "LIFE" meter.
- "gameplay / song timer" points to the clock and timer.
- "Player keyboard button choices" points to the "key 'A'", "key 'S'", and "key 'D'" buttons.
- "current song playing" points to the bottom bar.

Picture of the Environment: Camera Angle 1



Picture of the Environment: Camera Angle 2



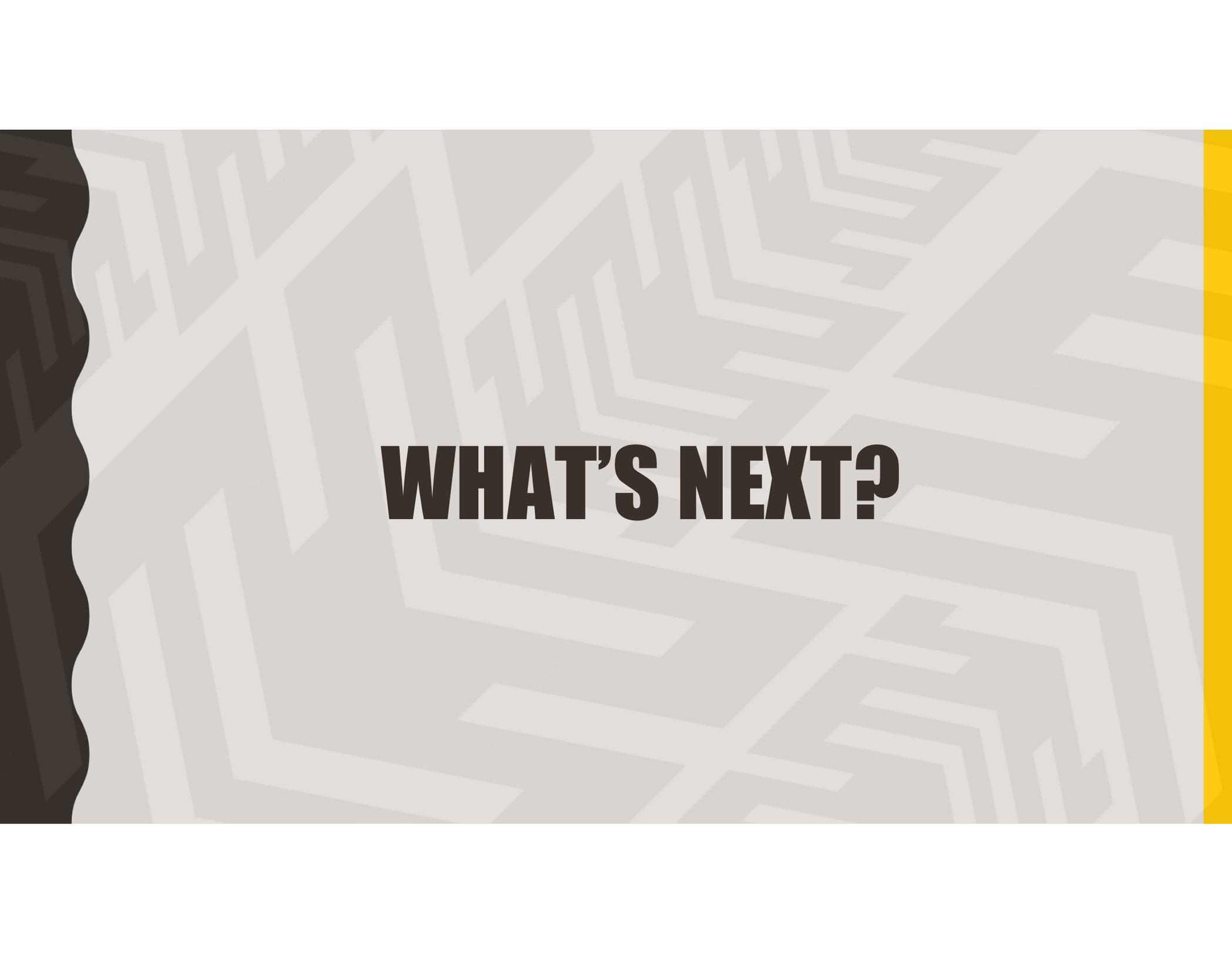
The background features a complex, repeating geometric pattern of interlocking lines in shades of gray, creating a maze-like or circuit-like effect. A solid yellow vertical bar is positioned on the right side of the image. On the left, there is a dark gray, wavy-edged shape that appears to be a torn edge or a shadow.

DEMO!



SECTION 4

Future Recommendations



WHAT'S NEXT?

References

guitarheroROXS. (2019, September 3). *Guitar Hero World Tour- “Crazy Train” Expert Guitar 100% FC (458,274)*. YouTube.

https://www.youtube.com/watch?v=I170UI_qdGE&ab_channel=guitarheroROXS

Sketchfab. (2021). *Log in to your Sketchfab account*.

<https://sketchfab.com/login?next=/feed>



ANY QUESTIONS?



THANK YOU!