



# **C++ ARITHMETIC DDR!:**

## **Final Project Presentation**

**IBEAUCHI ANOKAM, IKE AKUJOBI, UCHENNA NDOLO**



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

# 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

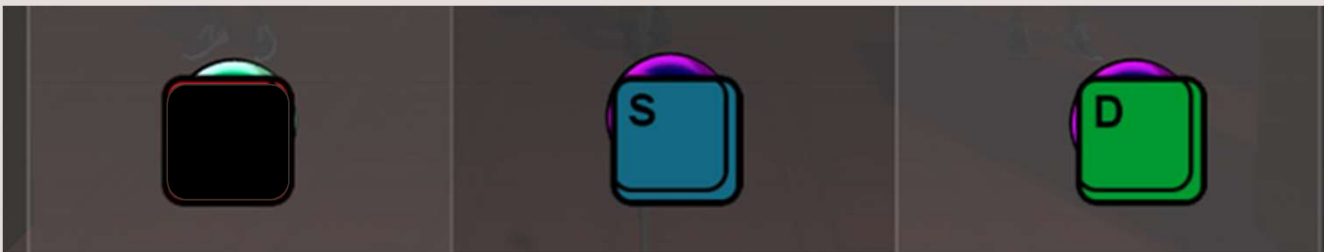
- The gameplay will be very similar to that of a **Project Diva** and a **Guitar Hero** game, in which, by using the A, S, D keys on the keyboard, the player must press the corresponding keys in time to the correct one out of three multiple choices given.
- If the player loses enough points, they lose 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:**
  - SOLVE:** A smiley face icon followed by the text "SOLVE:" and the equation  $SO = (22+3)\%2$ .
  - Timer:** A clock icon followed by the text "02 : 28".
  - Life Points:** A "LIFE" meter with a green bar.
- Gameplay Area:**
  - Choices:** Three buttons labeled "bad choice" (purple), "good choice" (green), and "bad choice" (purple).
  - Keyboard Keys:** Three buttons labeled "key 'A'" (red), "key 'S'" (blue), and "key 'D'" (green).
- Bottom Bar:** A black bar with a yellow icon 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 choice buttons.
- life points:** Points to the "LIFE" meter.
- gameplay / song timer:** Points to the timer.
- Player keyboard button choices:** Points to the three keyboard key 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, abstract pattern of overlapping, light gray geometric shapes, primarily triangles and parallelograms, creating a sense of depth and movement. A dark, wavy line runs vertically along the left edge, separating the patterned area from a solid black vertical strip. A solid yellow vertical strip is located on the far right edge.

**DEMO!**



# SECTION 4

## **Future Recommendations**

The background features a complex, repeating geometric pattern of light gray lines on a white field, creating a sense of depth and movement. A solid yellow vertical bar is positioned on the right side. On the left, a dark gray, wavy-edged shape partially obscures the pattern.

**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](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>

The background features a complex, repeating geometric pattern of light gray lines on a darker gray field, creating a sense of depth and movement. A solid yellow vertical bar is positioned on the right side of the image. On the left, there is a dark, wavy, organic shape that resembles a torn edge or a shadow.

**ANY QUESTIONS?**

The background features a complex, repeating geometric pattern of light gray lines forming a series of interconnected, angular shapes that create a sense of depth and movement. On the far left, there is a dark, almost black, wavy, organic shape that contrasts with the geometric pattern. On the far right, there is a solid, bright yellow vertical bar.

**THANK YOU!**