COMP 4280 Project Presentation

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Presentation Layout:

- Discuss original concept of my project (Draw, Produce, Interact)
- The WHY, WHAT, and HOW's
- Limitations on original concept
- Discuss changed concept of my project due to limitations (Spawn, Switch, Interact)
- Limitations on change concept
- Show Result + Hitting a Wall
- Future Work

FINAL PROJECT = INCOMPLETE

Original Concept Idea: Draw, Produce, Interact (WHAT)

- Draw, Produce, Interact: AR has become more common, attempt to create an app which uses AR where users can interact with shapes using a real life environment.
- AR camera is on, user use a paintbrush and draw 2D shapes. Once the shape is drawn, app should be able to identify drawn shape and turn it into 3D in real-time. Then user can Interact with the shapes.
- Following Interactions: 1. Double tap to drop shape, 2. Touch, hold and drag for moving objects, 3. Change colors of shape, 4. Change size of shape (increase/decrease size by expanding and squeezing fingers).
- Think Pokemon GO but without the pokemon stuff and having the ability to draw and interact with shapes in a real environment (immersion).

Android Studio Tool: Create Unique Apps (HOW)

- Android Studio: Can create mobile apps that can do many things.
- Has OpenGL API included so can apply 3D shapes into my app.
- Has a Camera feature, Map feature, Drawing feature, almost everything to create a really good app.
- Can upload app work on actual Android play store! If my work ends up functioning and working correctly, I have the ability to upload it on the real play store for real users to use!

Increase In Mobile AR apps: Good for Interactive Learning (WHY)

- Originally made just for fun and allow users to experience what I build
- No real goal and problem in mind at first.
- As time goes on, notice that my interactive AR shape app can potentially be used to help young audiences learn about shapes in an engaging way.
- Interactions = more engaging = more fun and learn better.
- Every child has some sort of tablet or mobile devices, essential to make the app on mobile phone rather than desktop (less engaging).

Limitations of Draw, Produce, and Interact

1. AR Camera and Drawing function not possible together
   - No way of running both functions together during execution in Android Studio
   - Prevents original Idea from being possible, can't create an interactive AR shape drawing app
2. Can't convert 2D Shape to 3D in Real Time
   - Android Studio has no way of converting shape dimension in real time.
   - Can only execute one type of shape in the app, so app can only contain either 2D shapes or 3D shapes, can't have both. Maybe can find a way to program 3D shapes to only have 2 dimension?

New Concept Idea: Spawn,Switch, Interact

- Change original concept to fit with what Android Studio might be able to do.
- Spawn, Switch, Interact: Users can choose what shape they want to spawn and will be able to interact with them. Can switch Interaction between 2D and 3D shapes with a “switch” button option.
- No AR, no camera function, just a simple app that allows users to switch between spawning 2D or 3D shapes and interacting with them (same interactions as original concept).

Limitations of Spawn, Produce, and Interact

3. Android Studio Custom Drawing Features = Limited

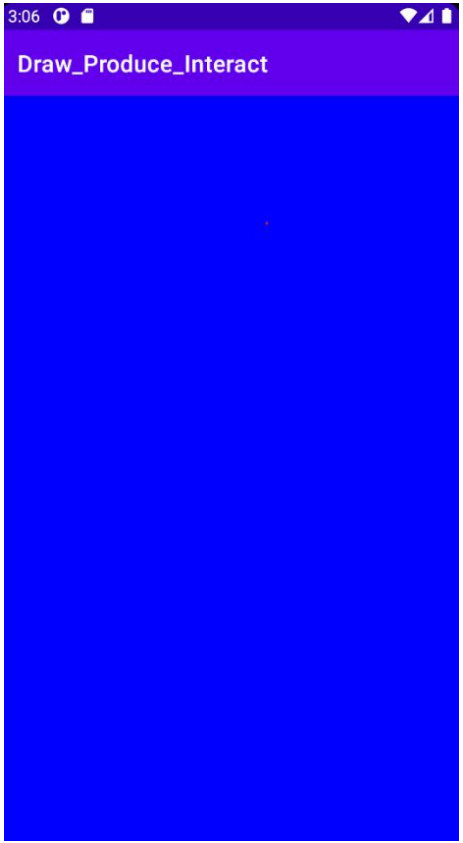
- Android Studio not able to define shapes that are drawn in real time if a workable drawing app was produced
- Can only define shapes that is already set and drawn
- drawRect(20,20,20,20) = a premade function that draws a rectangle.

4. Adding Buttons and Text in App Works Differently with OpenGL API

- When OpenGL API is implemented, adding simple properties to app becomes more complicated.
- Won’t show up in regular app, need to create new OpenGL object for each properties, did not understand too well and official website did not provide guidance.

Results + Hit A Wall

- Previous limitations prevent me from progressing any further.
- Focused too much on the small stuff, forgot about the main stuff. Example, focused on implementing a working button on my app that I forgot to create functions that drew 2D shapes.
- Why do buttons matter so much? Because if I don’t have a working button, I can’t switch between 2D and 3D shape which defeats my whole project purpose



Future Work

- Switch to another tool that can actually execute most things I wanted it to do (do better and deeper analysis on tools before sticking to them).
- Continue the project on own time with new tool and attempt to have it work
- If not, continue project work on Android Studio, do better research and understanding the OpenGL API more to be able to progress my app work.