Sculpting App Final Project

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Outline

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- Proposal
- Technology
- Business Logic
- Project Timeline
- Challenges
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- Business Development
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Introduction

- Title
  - Sculpting app implemented in iOS using OpenGL
- Abstract
  - Build an app using OpenGL
  - Present a 3D object to user
  - Allow user to sculpt 3D object
  - Allow user to save image of sculpted object
  - Allow user to share image to friends on social media

Proposal - 1

- This app will be a universal application.
- This app with run on devices iOS 9 & iOS 10.
- This app will implement CoreData to store information regarding sculpting object.
- This app should use EventKit to schedule a time to sculpt as sculpting is an artistic and creative process that requires time.
- This app will use a TabBarController to present a tab for sculptin and a tab to review, share and send sculpt.
- This app will use a type of GestureRecogniser to sculpt a 3D rendered object.
- This app will use email to allow user to email sculpted image.
- This app will use SocialFramework to allow user to email to post sculpted image to friends on facebook.
- This app will use AddressBook to allow user to select email to search for emails.
- This app will use Settings Bundle to allow user customise color of app background.
- This app will use NSFileManager to save rendered images to phone.
- This app will use WebService to fetch latest OpenGL version.
- This app will use OpenGLES as a third party framework to produce 3D objects.

Proposal - 2

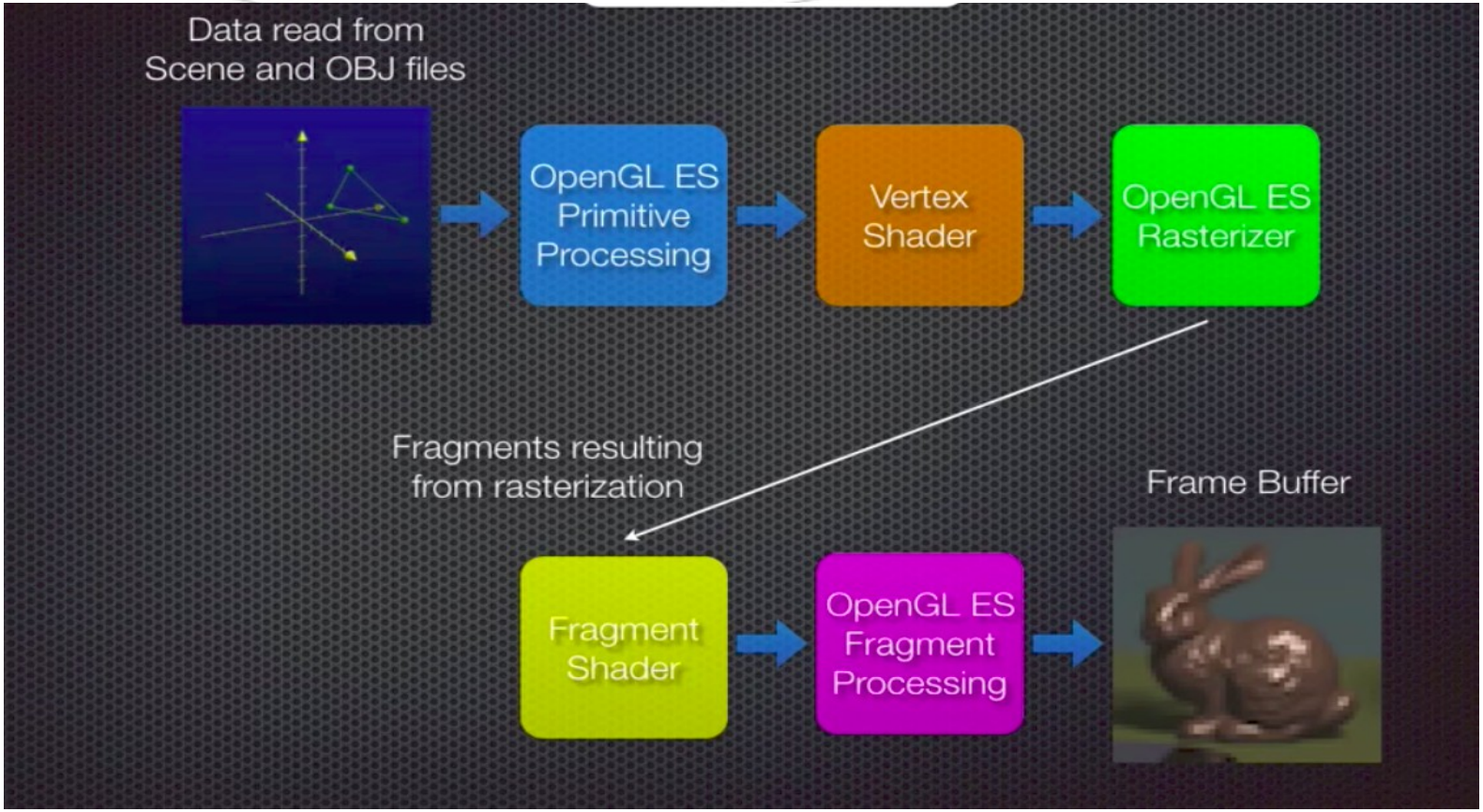
- This app will use GLKit as a third party framework to produce 3D objects.
- This app will use the new feature in iOS 9 class: *UIImage* that is *imageFlippedForRightToLeftLayoutDirection.*
    - This is to view the image from an mirrored angle for creative assessment of artistic merit.
- This app will use the new feature in iOS 10 class: UIFont that is *preferredFontForTextStyle:compatibleWithTraitCollection.*
    - This is to add support for Dynamic Type in labels, text fields, and other text areas.
- This app will never crash or become unresponsive through expertly written code.
- This app will use Autolayout on orientation change.
- This app will use Autolayout throughout to scale on different iOS models.

- This app will use Version control through the development process
- This app will be accompanied with appropriate commenting.
- This app will be accompanied with appropriate documentation.

Business Logic

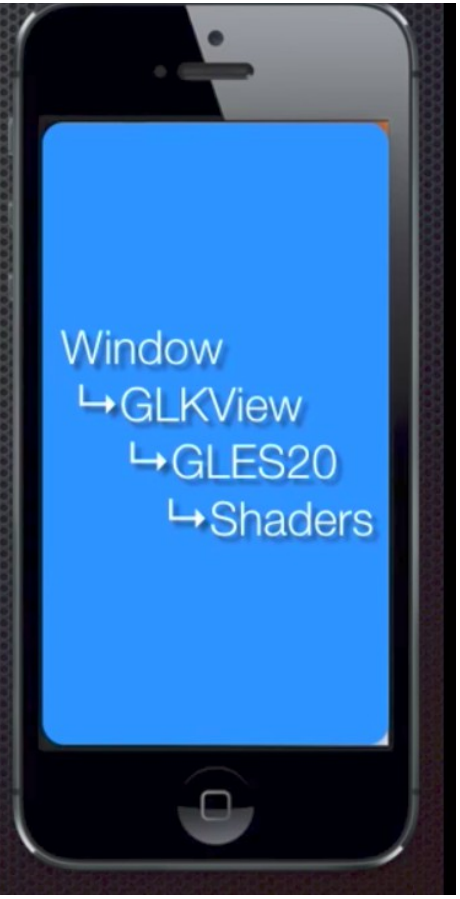
- User opens app.
- User is presented with view on first tab.
- User is presented with 3D object
- User is invited to sculpt 3D object with finger screen touches.
- User is invited to save image of sculpt
- User selects second tab.
- User is presented with saved image of sculpt
- User is invited to share sculpt image on Facebook
- User is invited to return to sculpt another 3D object
- User is invited to schedule another day to use app to sculpt

Technology - 1

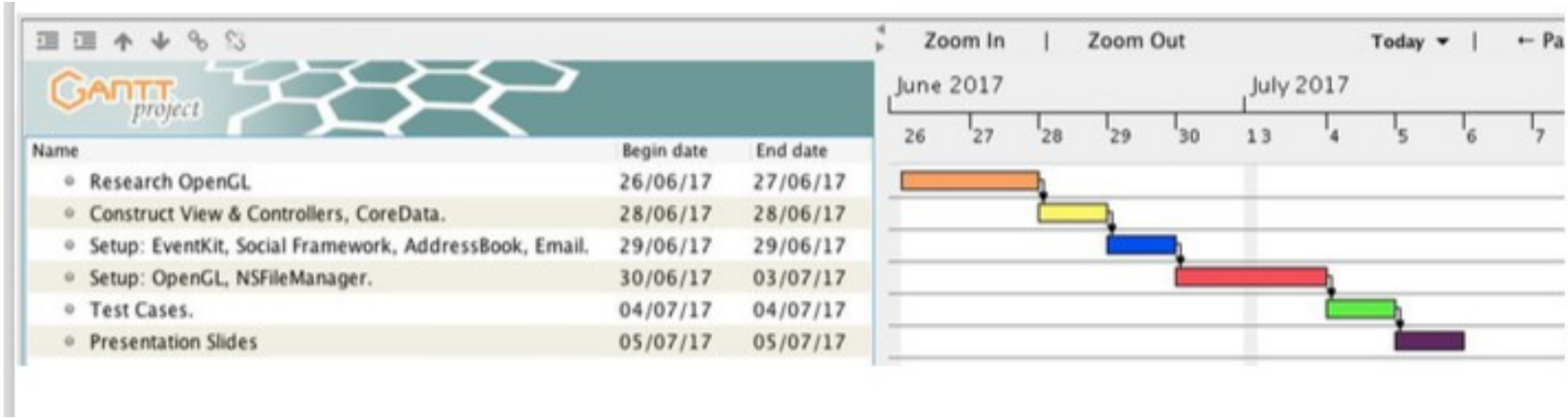


Technology - 2

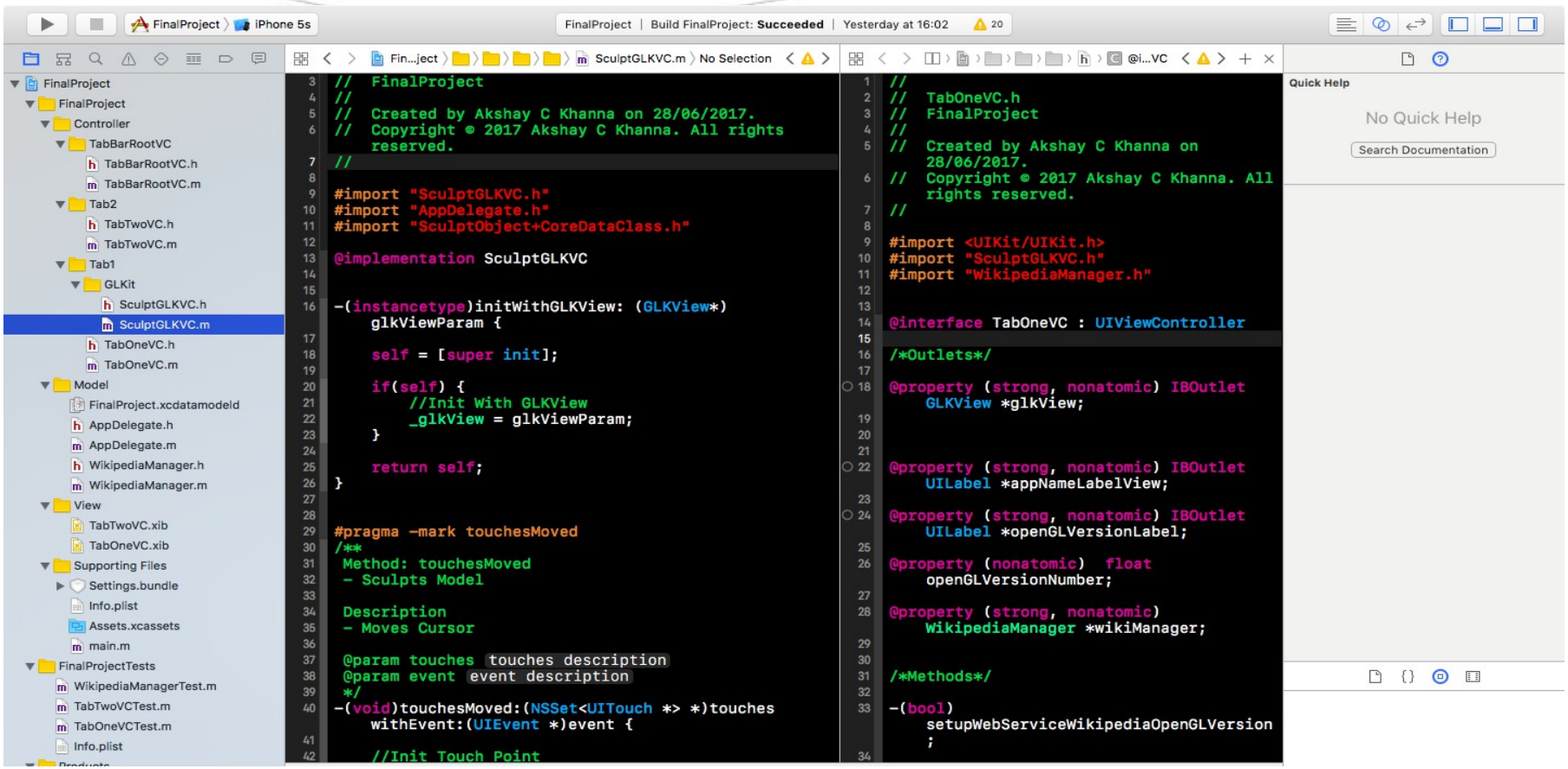
- UIWindow
  - Root VC - GLKViewController
    - GLKView
      - Vertex Shader
      - Fragment Shader
      - Program
        - Uniform Variables
        - Attribute Arrays



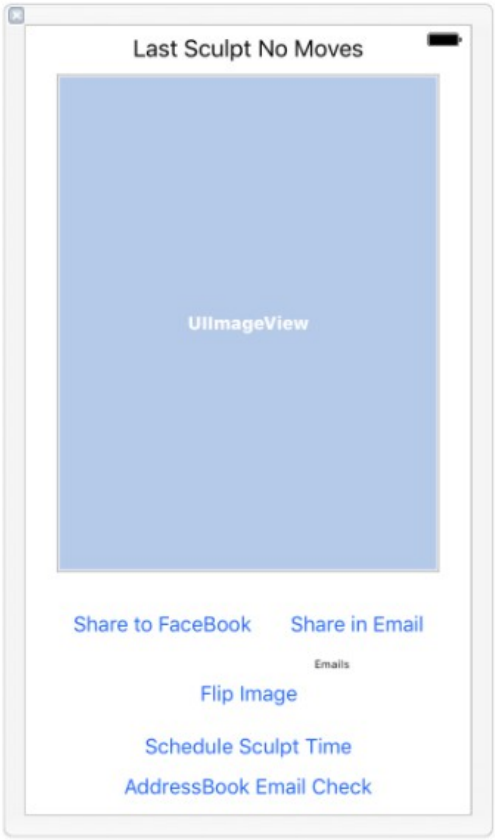
Project Timeline



Screenshot - Code

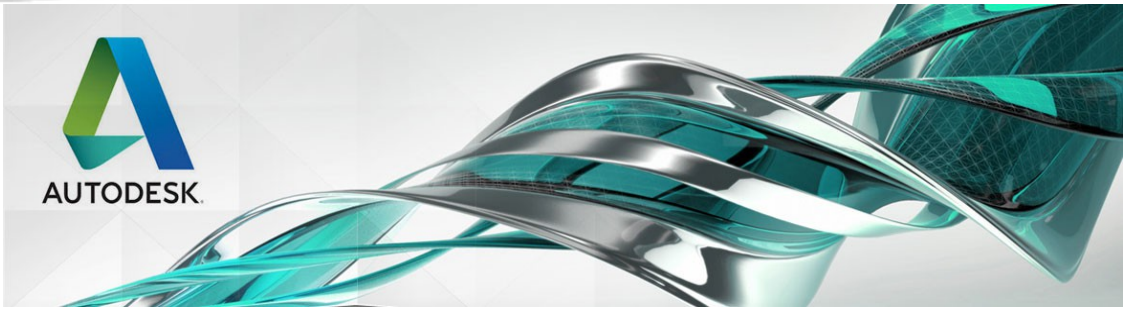


Screenshot - UI



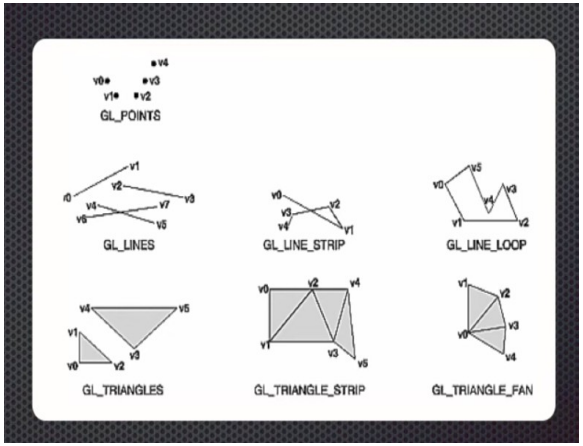
Business Development

- Commerical Uses
  - Autodesk
  - Pixologic



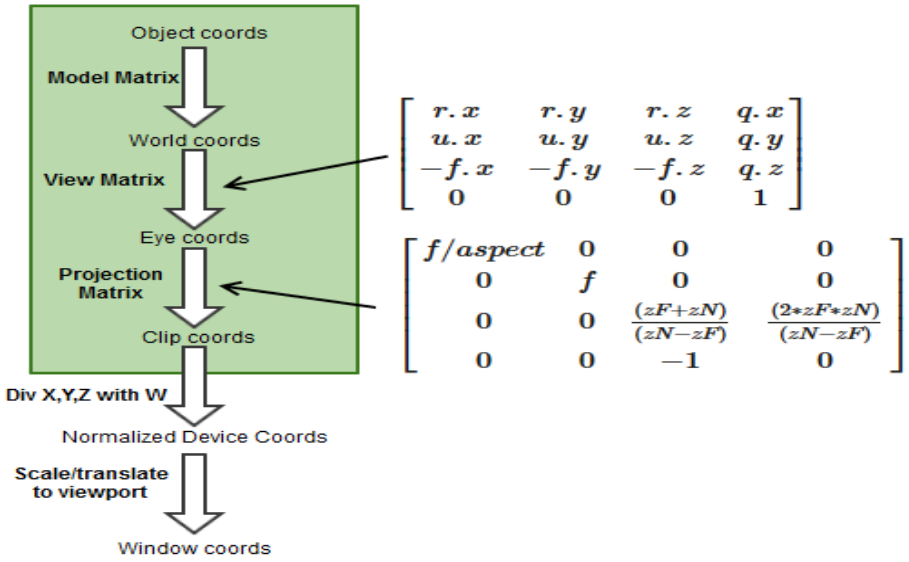
Challenges - 1

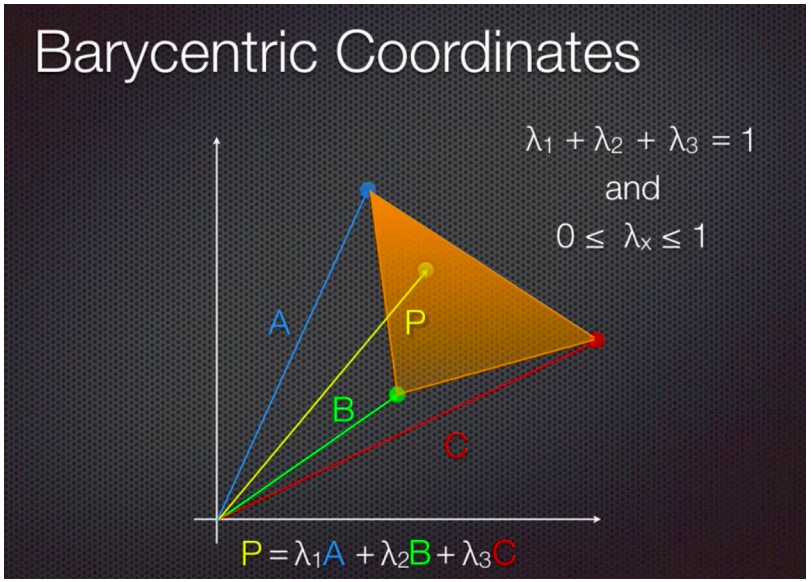
- OpenGL ES 2.0
  - OpenGL GLUT methods don't apply
  - OpenGL ES doesn't use QUADS, only TRIS.
    - Models need conversion
  - OpenGL ES 2.0 iOS documentation is scarce
- Wikipedia Mediawiki API
  - Infobox information parsing is difficult
  - Infobox data is NOT structured as of 2017
  - Manual String matching parsing required.



Challenges - 2

- Sculpting
  - Math required to triangulate user touch to 3D space model
  - Identifying methods in OpenGL that facilitate sculpting
  - Identifying data that is to be changed on model.





Summary

- Sculpting App implemented in iOS using OpenGL
- WIP

References

- OpenGL ES
- Kronos Group
- Apple Development Guide, Apple Inc

Q&A