LAB FILE

DEPARTMENT: COMPUTER SCIENCE & ENGINEERING

SUBJECT: VIRTUAL AND AUGMENTED REALITY IN IOS

SUBJECT CODE: BTMACS601

SUBMITTED BY:
RAVNISH SINGH
19100BTCSEMA05495

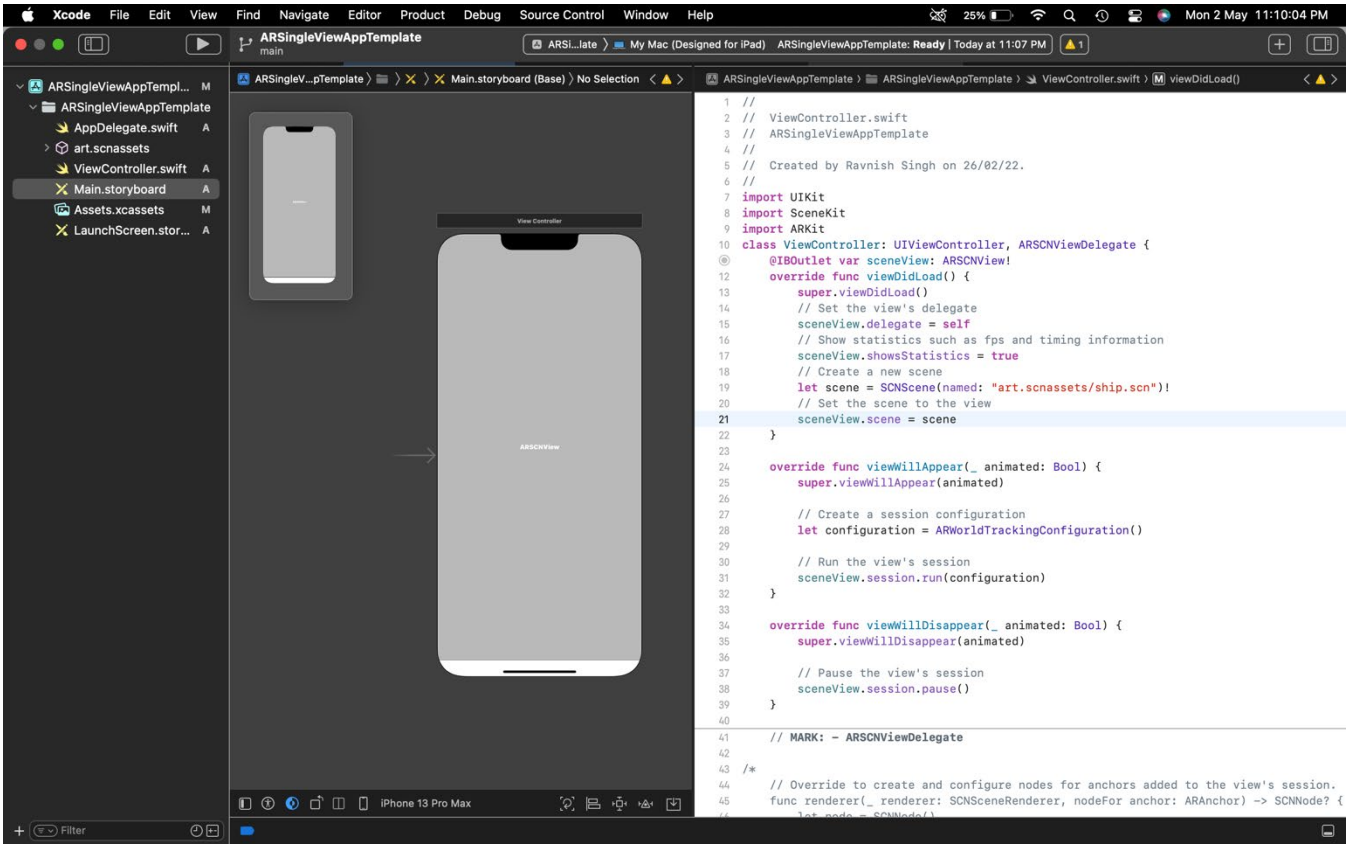
SUBMITTED TO:
RAHUL CHOUDHARY SIR

LIST OF PRACTICALS

PRACTICAL – 1

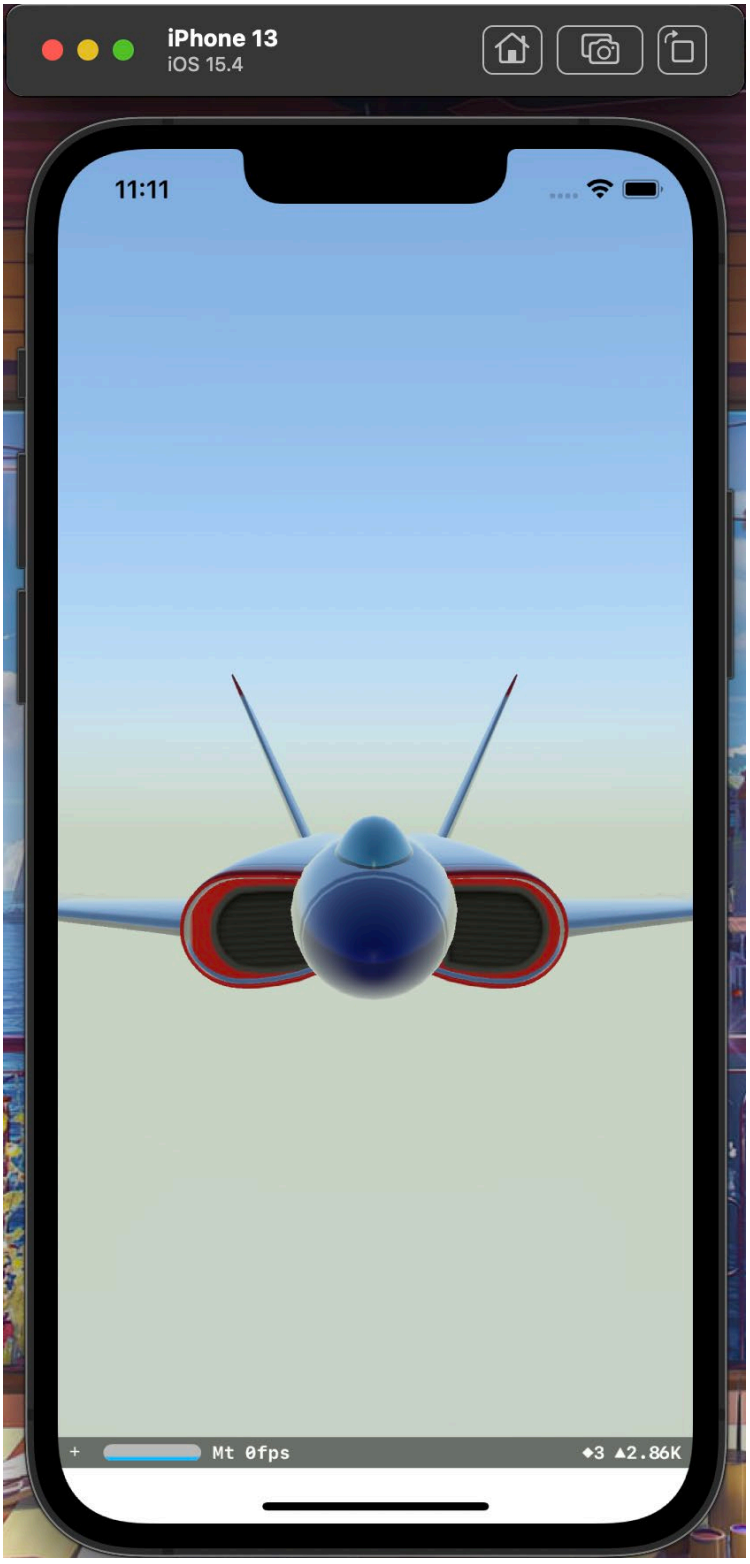
Create an app using the Augmented Reality Template.

ViewController.swift:




```swift
//
//  ViewController.swift
//  ARSingleViewAppTemplate
//
//  Created by Ravnish Singh on 26/02/22.
//
import UIKit
import SceneKit
import ARKit
class ViewController: UIViewController, ARSCNViewDelegate {
    @IBOutlet var sceneView: ARSCNView!
    override func viewDidLoad() {
        super.viewDidLoad()
        // Set the view's delegate
        sceneView.delegate = self
        // Show statistics such as fps and timing information
        sceneView.showsStatistics = true
        // Create a new scene
        let scene = SCNScene(named: "art.scnassets/ship.scn")!
        // Set the scene to the view
        sceneView.scene = scene
    }

    override func viewWillAppear(_ animated: Bool) {
        super.viewWillAppear(animated)

        // Create a session configuration
        let configuration = ARWorldTrackingConfiguration()

        // Run the view's session
        sceneView.session.run(configuration)
    }

    override func viewWillDisappear(_ animated: Bool) {
        super.viewWillDisappear(animated)

        // Pause the view's session
        sceneView.session.pause()
    }

    // MARK: - ARSCNViewDelegate

/*
    // Override to create and configure nodes for anchors added to the view's session.
    func renderer(_ renderer: SCNSceneRenderer, nodeFor anchor: ARAnchor) -> SCNNode? {
```

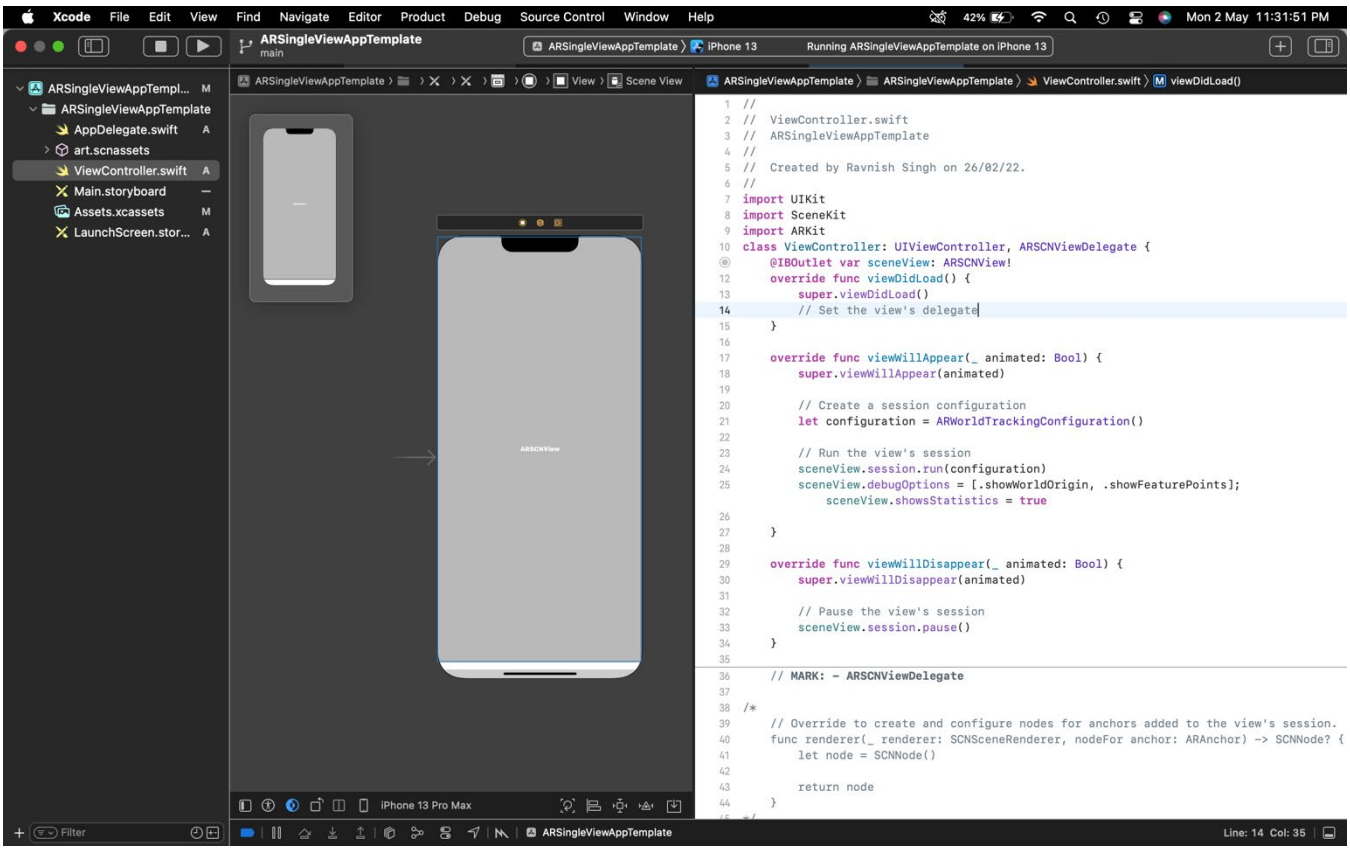
Simulator Output:



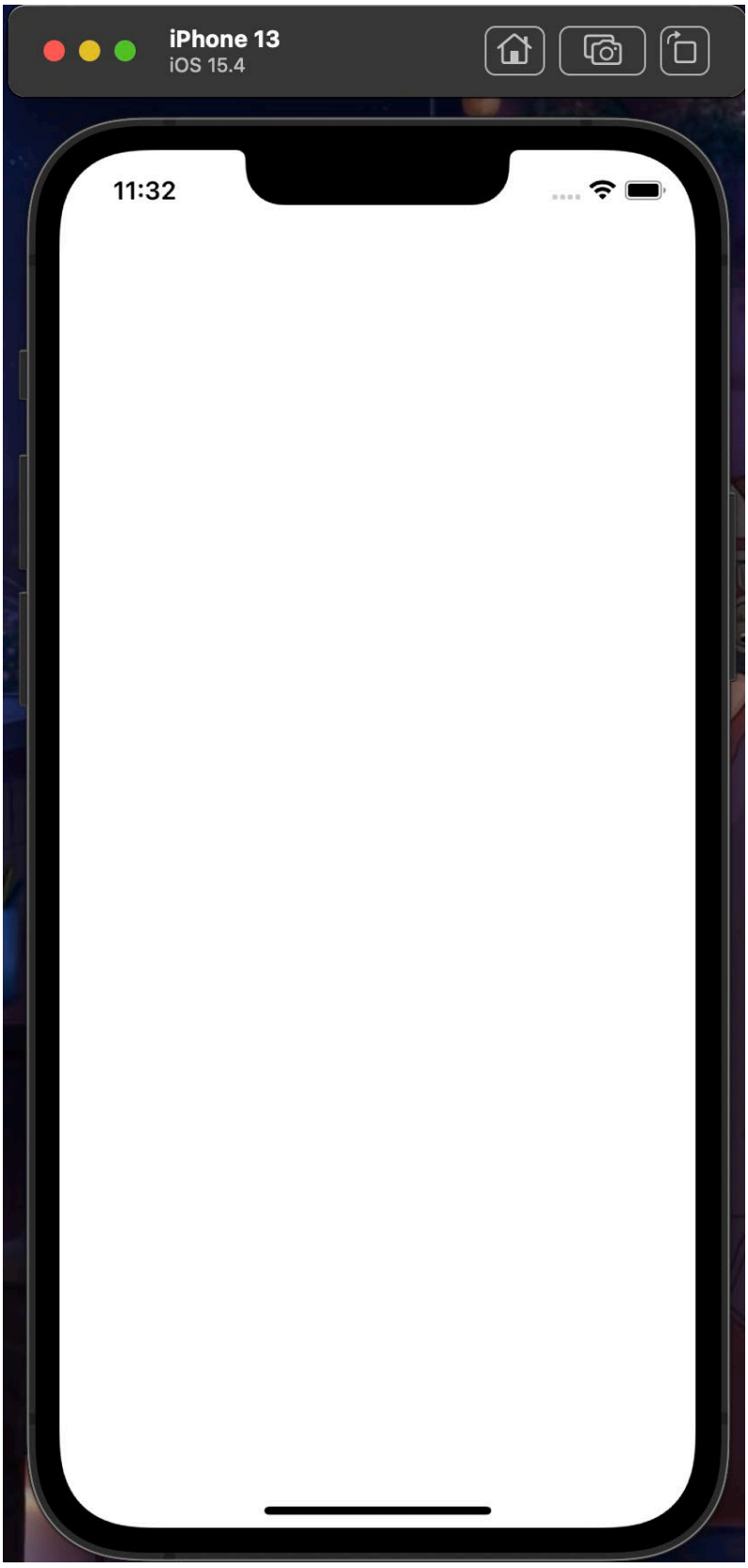
PRACTICAL – 2

Create an app with the Single View App Template.

ViewController.swift:



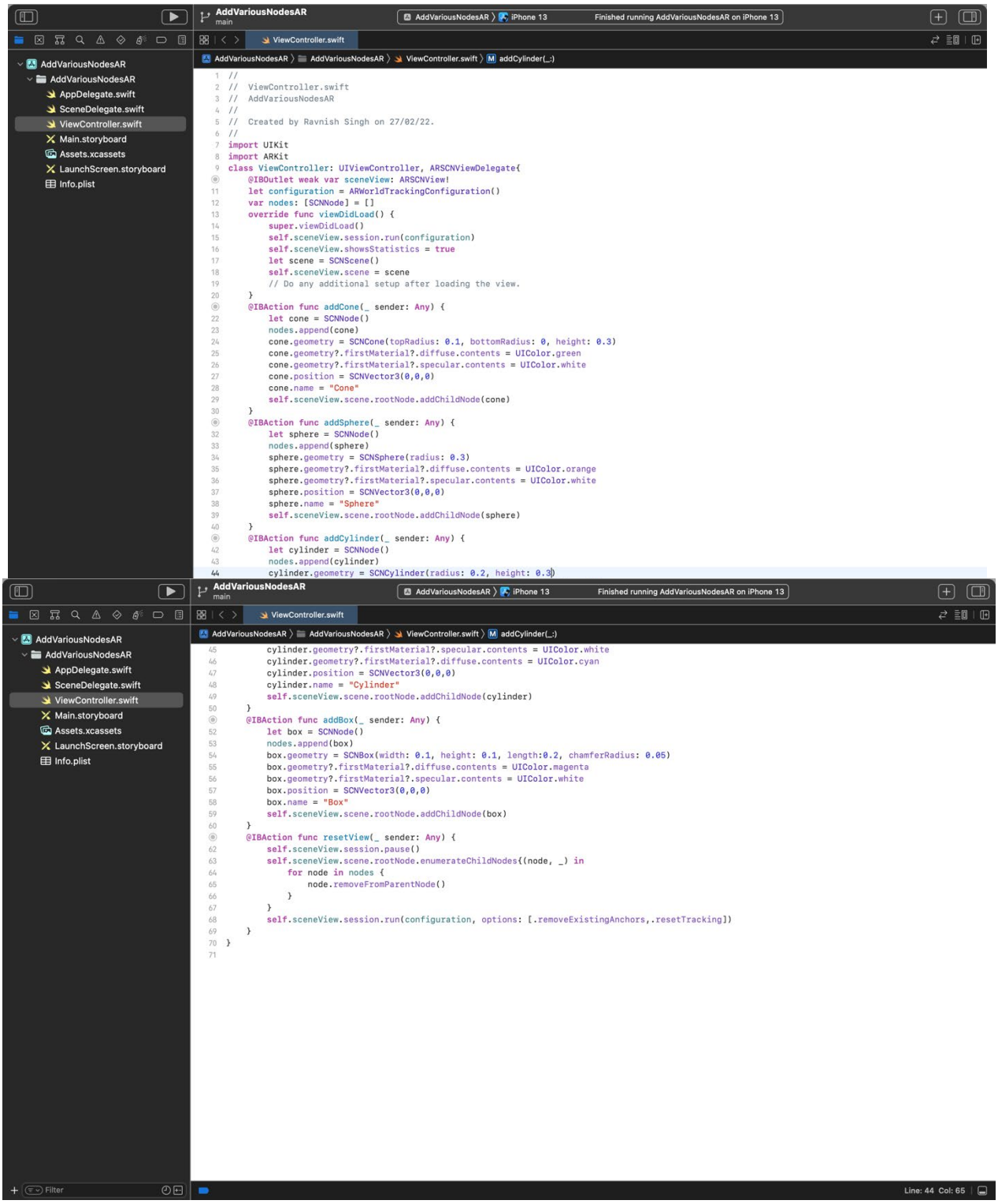
Simulator Output:

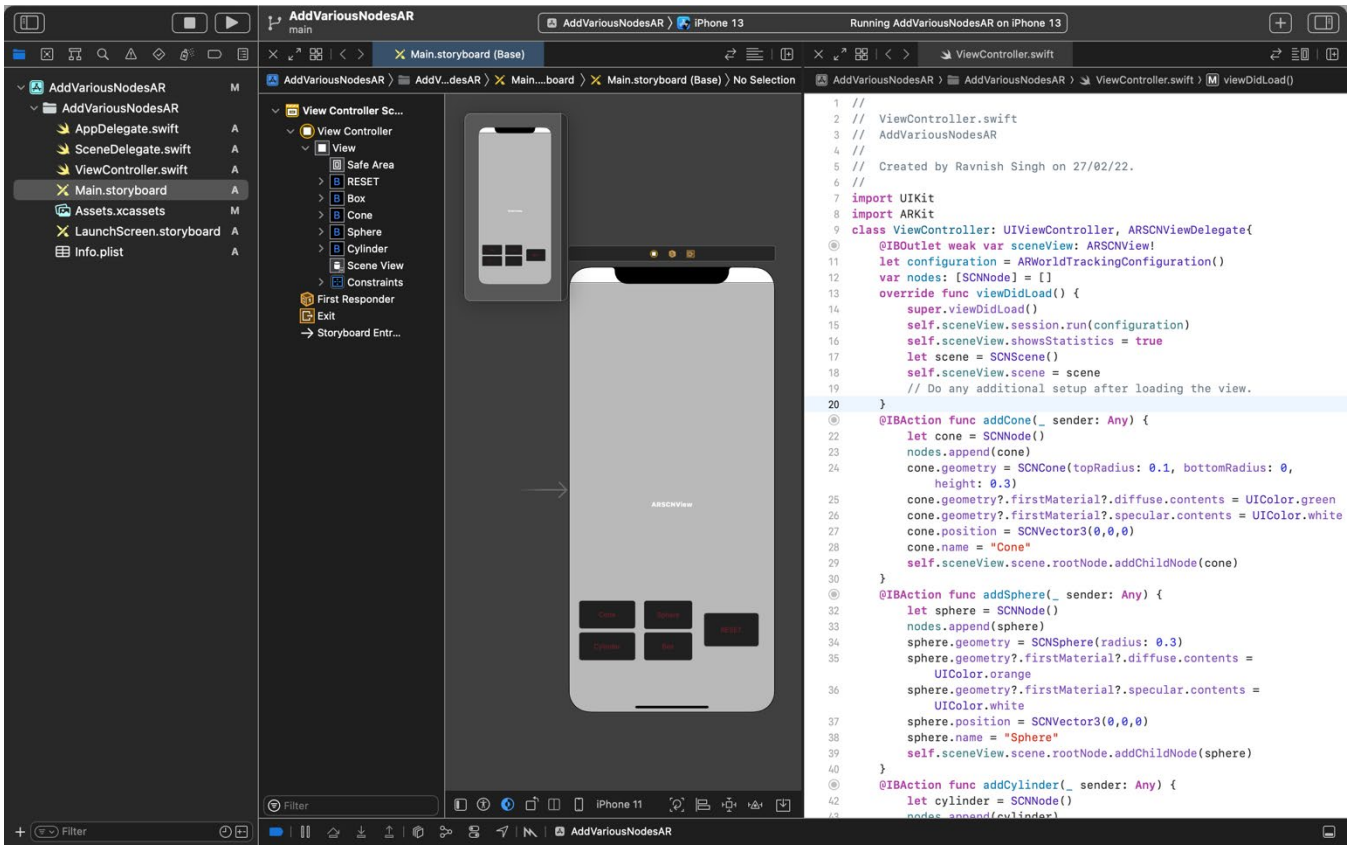


PRACTICAL – 3

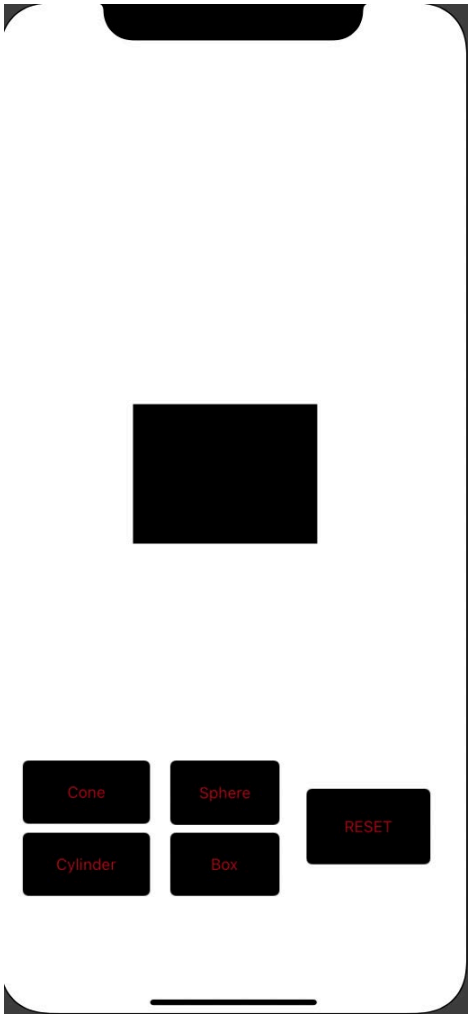
Create an AR app to Add Various Nodes.

ViewController.swift:




AddVariousNodesAR
main
AddVariousNodesAR 〉 iPhone 13
Running AddVariousNodesAR on iPhone 13
Main.storyboard (Base)
ViewController.swift
AddVariousNodesAR
AppDelegate.swift
SceneDelegate.swift
ViewController.swift
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
View Controller Sc...
View Controller
View
Safe Area
RESET
Box
Cone
Sphere
Cylinder
Scene View
Constraints
First Responder
Exit
Storyboard Entr...
ARSCNView
iPhone 11
AddVariousNodesAR
// ViewController.swift
// AddVariousNodesAR
// Created by Ravnish Singh on 27/02/22.
import UIKit
import ARKit
class ViewController: UIViewController, ARSCNViewDelegate{
@IBOutlet weak var sceneView: ARSCNView!
let configuration = ARWorldTrackingConfiguration()
var nodes: [SCNNode] = []
override func viewDidLoad() {
super.viewDidLoad()
self.sceneView.session.run(configuration)
self.sceneView.showsStatistics = true
let scene = SCNScene()
self.sceneView.scene = scene
// Do any additional setup after loading the view.
}
@IBAction func addCone(_ sender: Any) {
let cone = SCNNode()
nodes.append(cone)
cone.geometry = SCNCone(topRadius: 0.1, bottomRadius: 0,
height: 0.3)
cone.geometry?.firstMaterial?.diffuse.contents = UIColor.green
cone.geometry?.firstMaterial?.specular.contents = UIColor.white
cone.position = SCNVector3(0,0,0)
cone.name = "Cone"
self.sceneView.scene.rootNode.addChildNode(cone)
}
@IBAction func addSphere(_ sender: Any) {
let sphere = SCNNode()
nodes.append(sphere)
sphere.geometry = SCNSphere(radius: 0.3)
sphere.geometry?.firstMaterial?.diffuse.contents =
UIColor.orange
sphere.geometry?.firstMaterial?.specular.contents =
UIColor.white
sphere.position = SCNVector3(0,0,0)
sphere.name = "Sphere"
self.sceneView.scene.rootNode.addChildNode(sphere)
}
@IBAction func addCylinder(_ sender: Any) {
let cylinder = SCNNode()

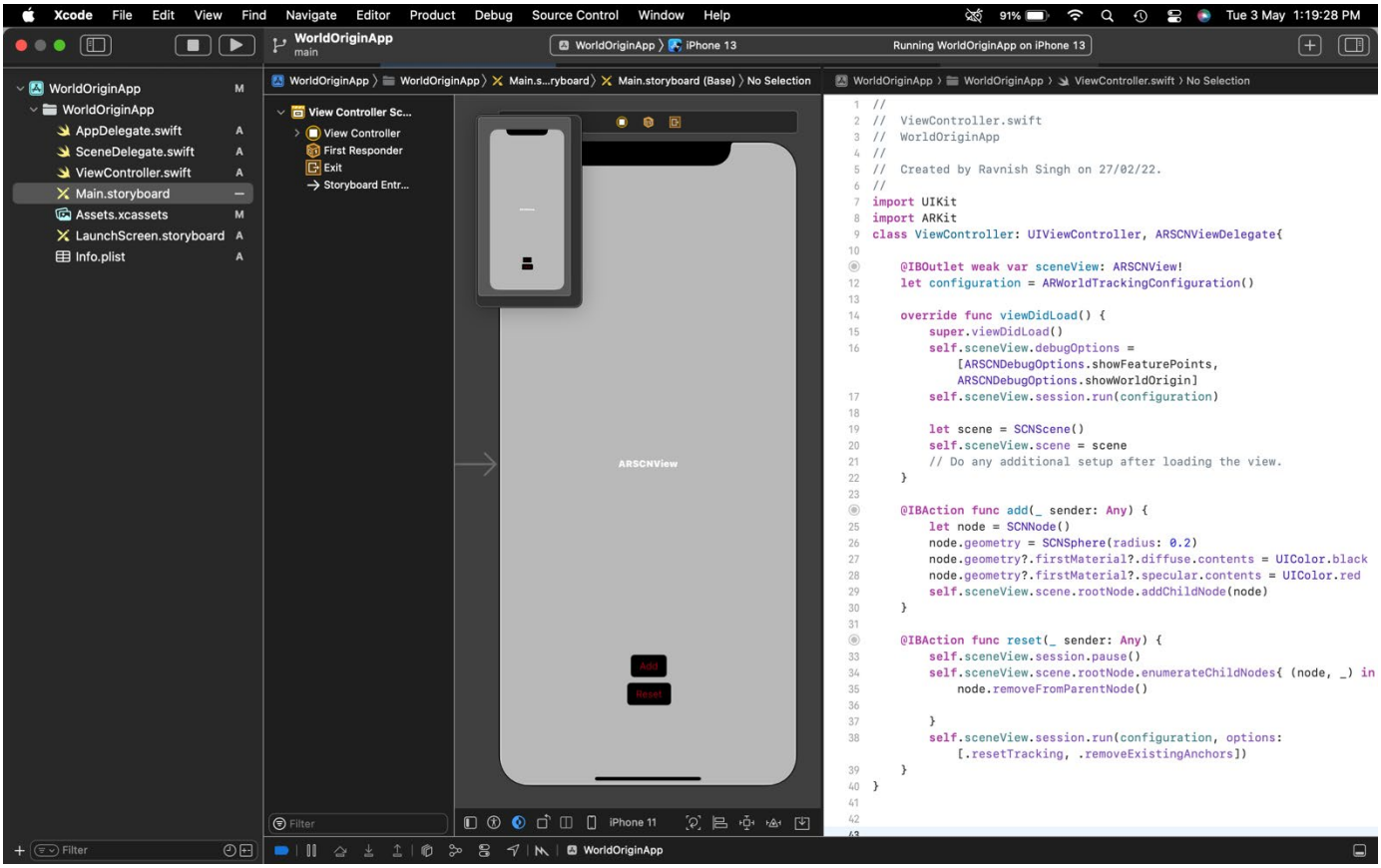
OUTPUT-


Cone
Sphere
RESET
Cylinder
Box

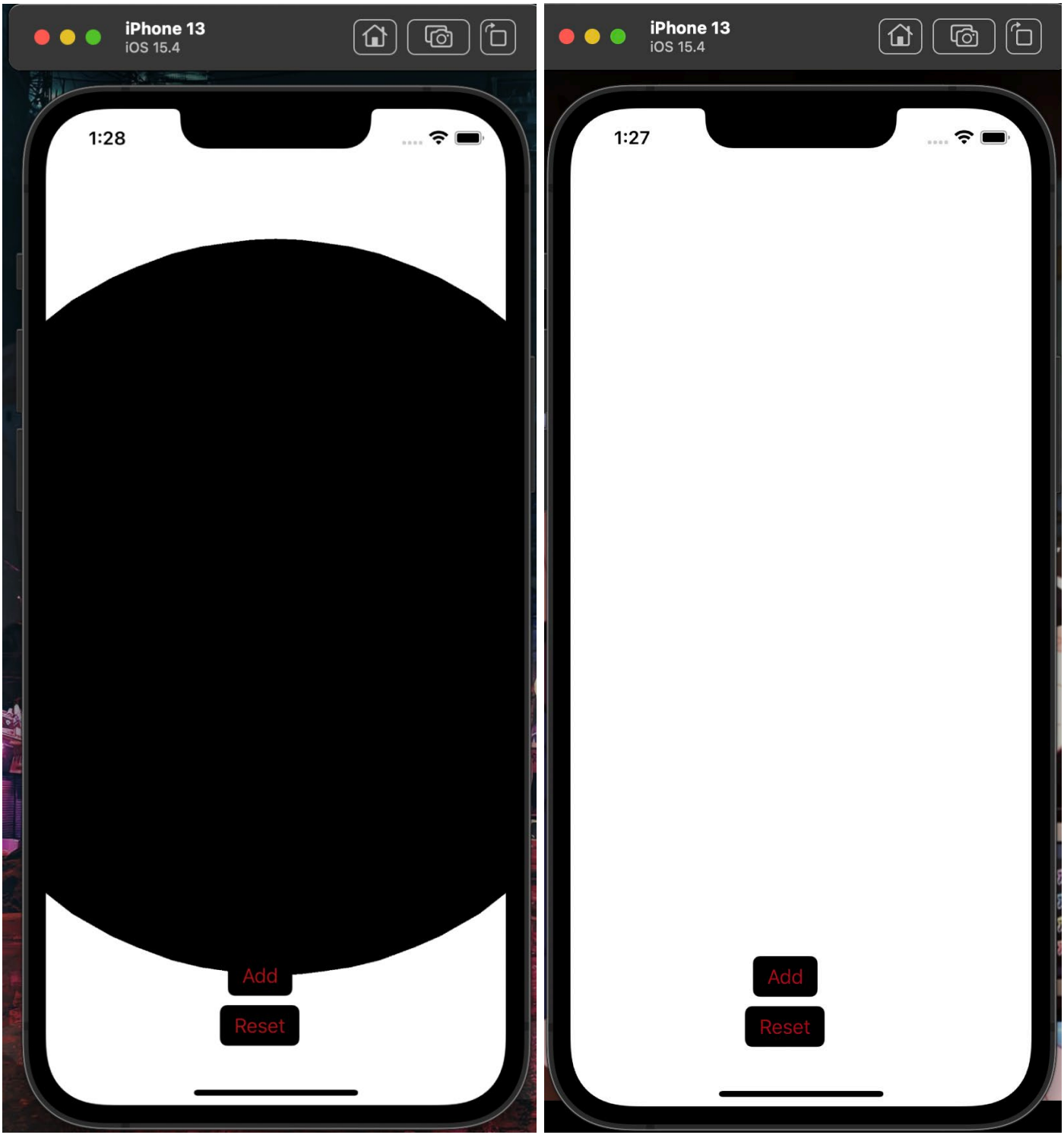
PRACTICAL – 4

Create an AR app to display and reset the World Origin.

ViewController.swift:



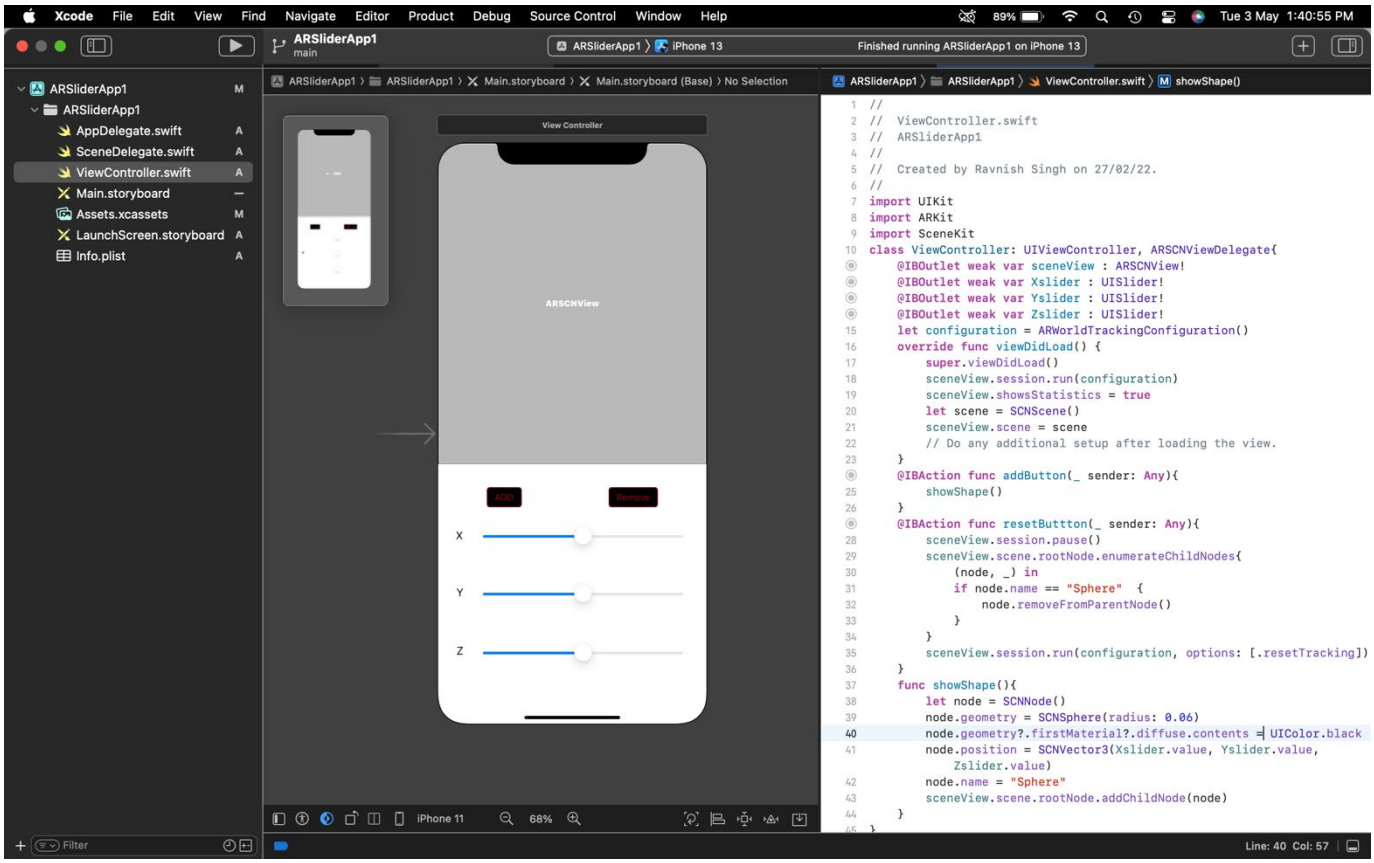
Simulator Output:



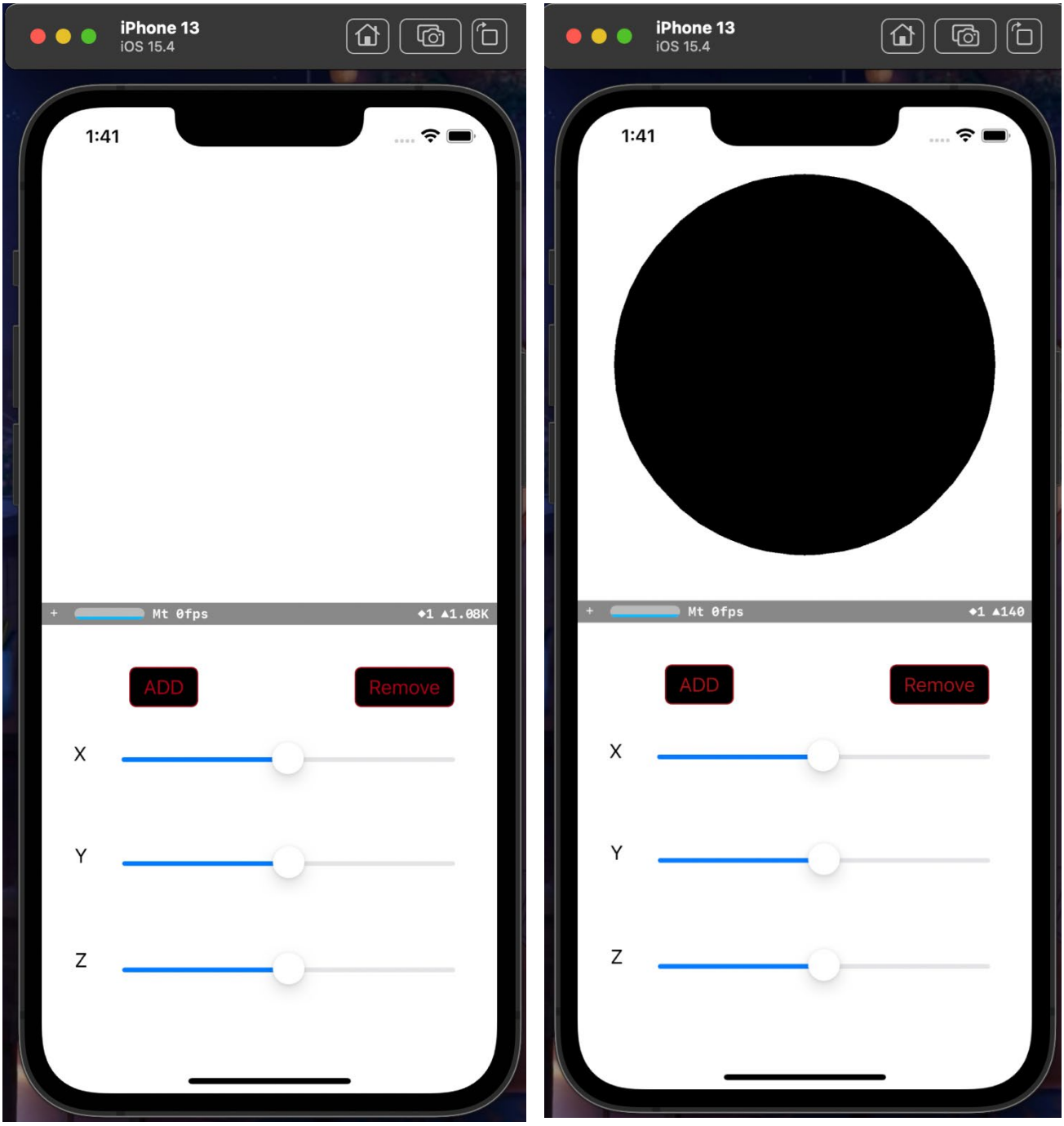
PRACTICAL – 5

Create an app to change position of object using Slider.

ViewController.swift:



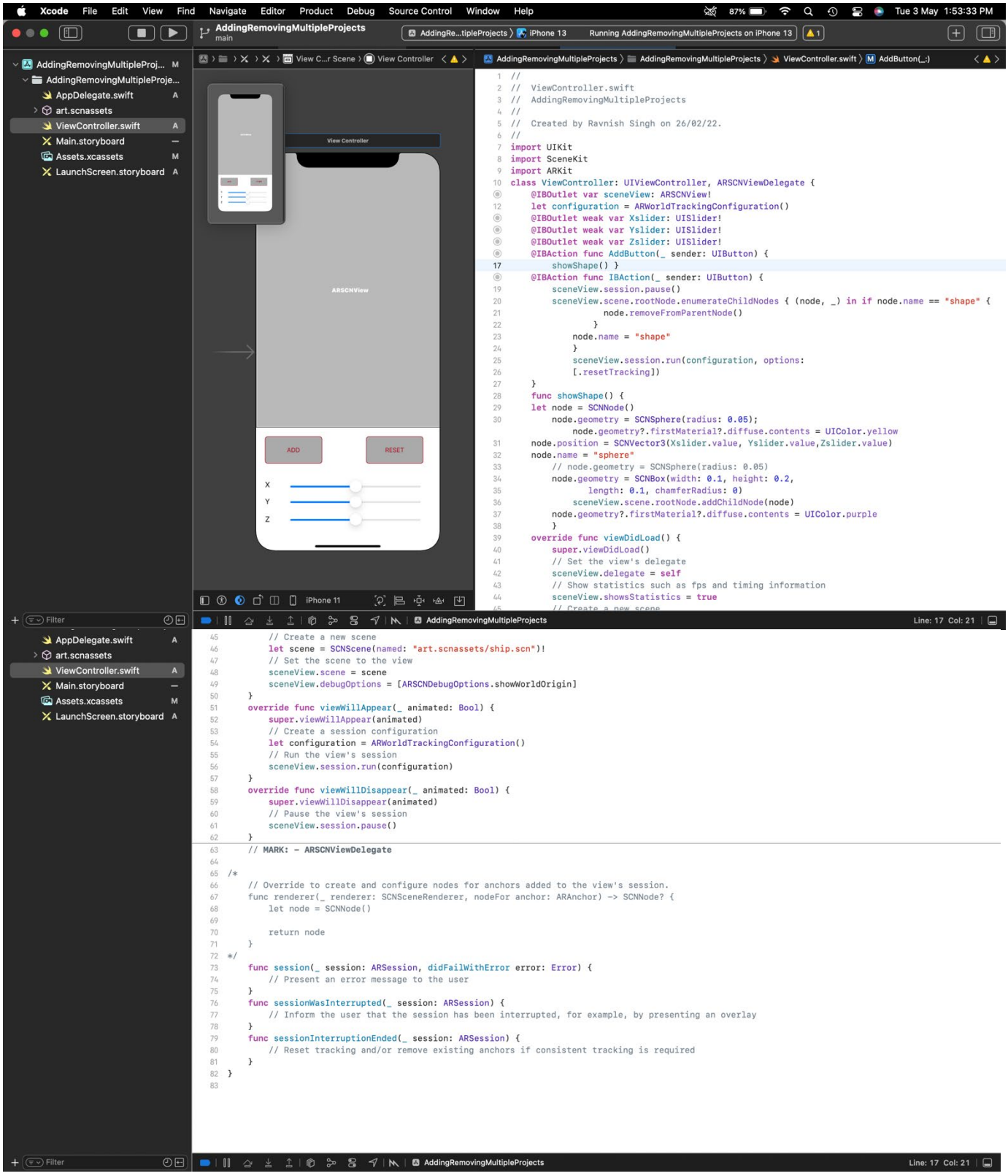
Simulator Output:



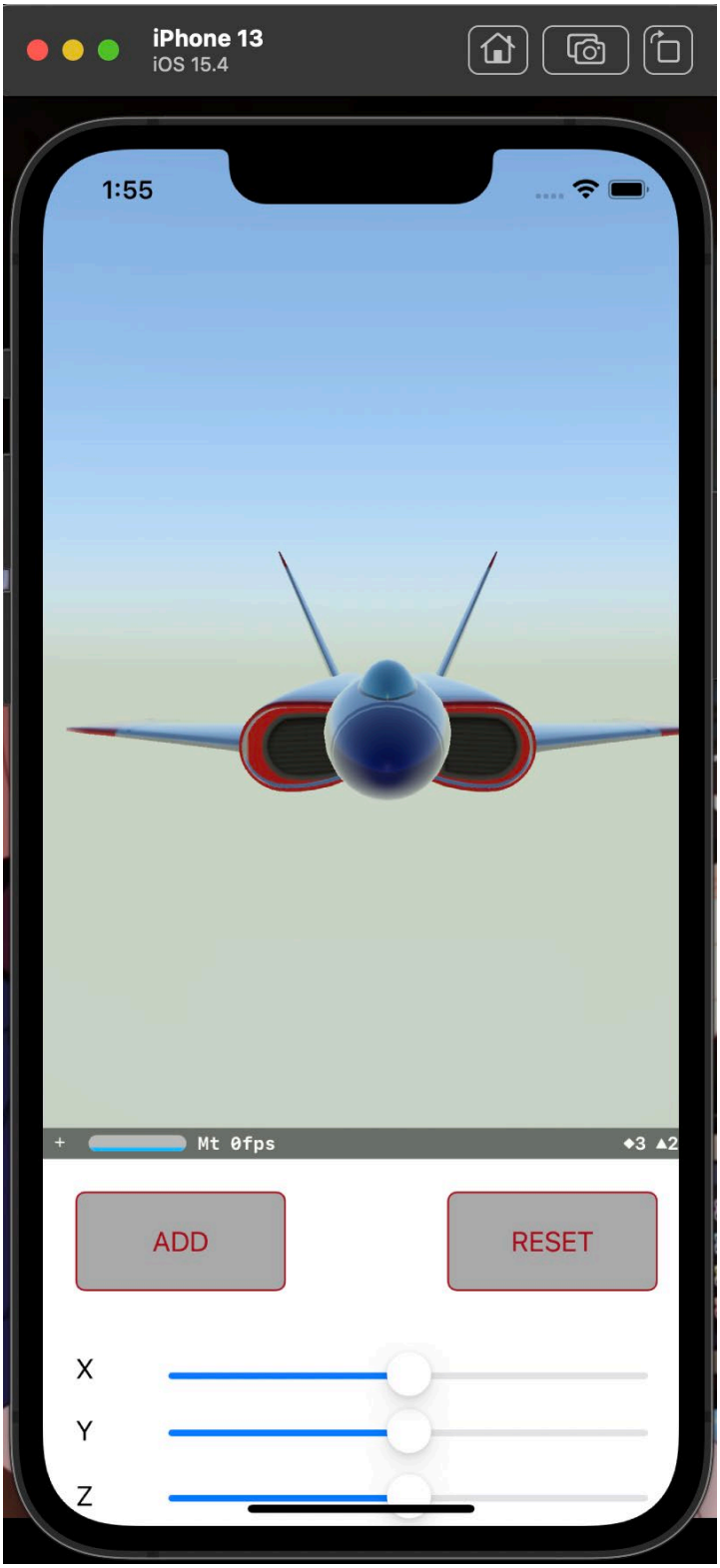
PRACTICAL – 6

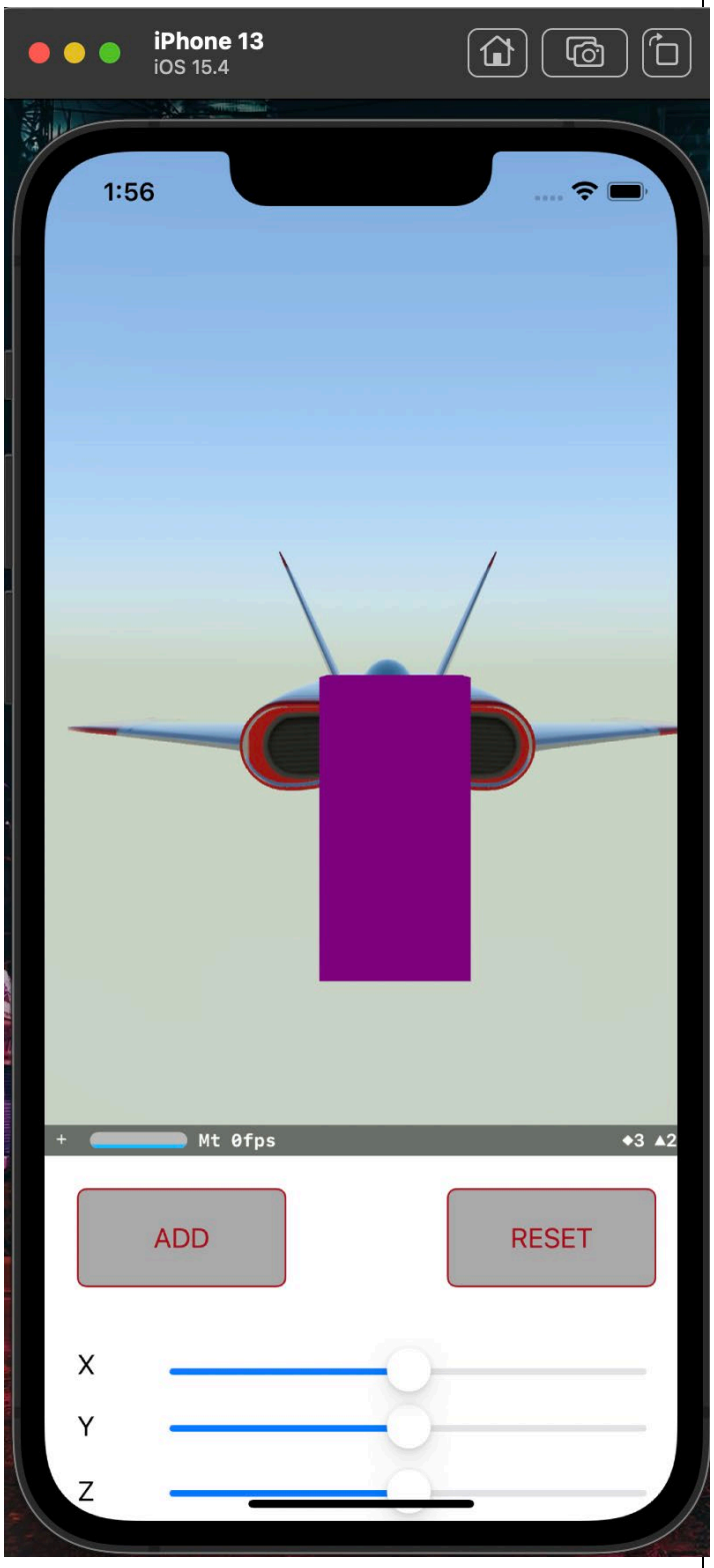
Create an app to add and remove multiple objects.

ViewController.swift:



Simulator Output:

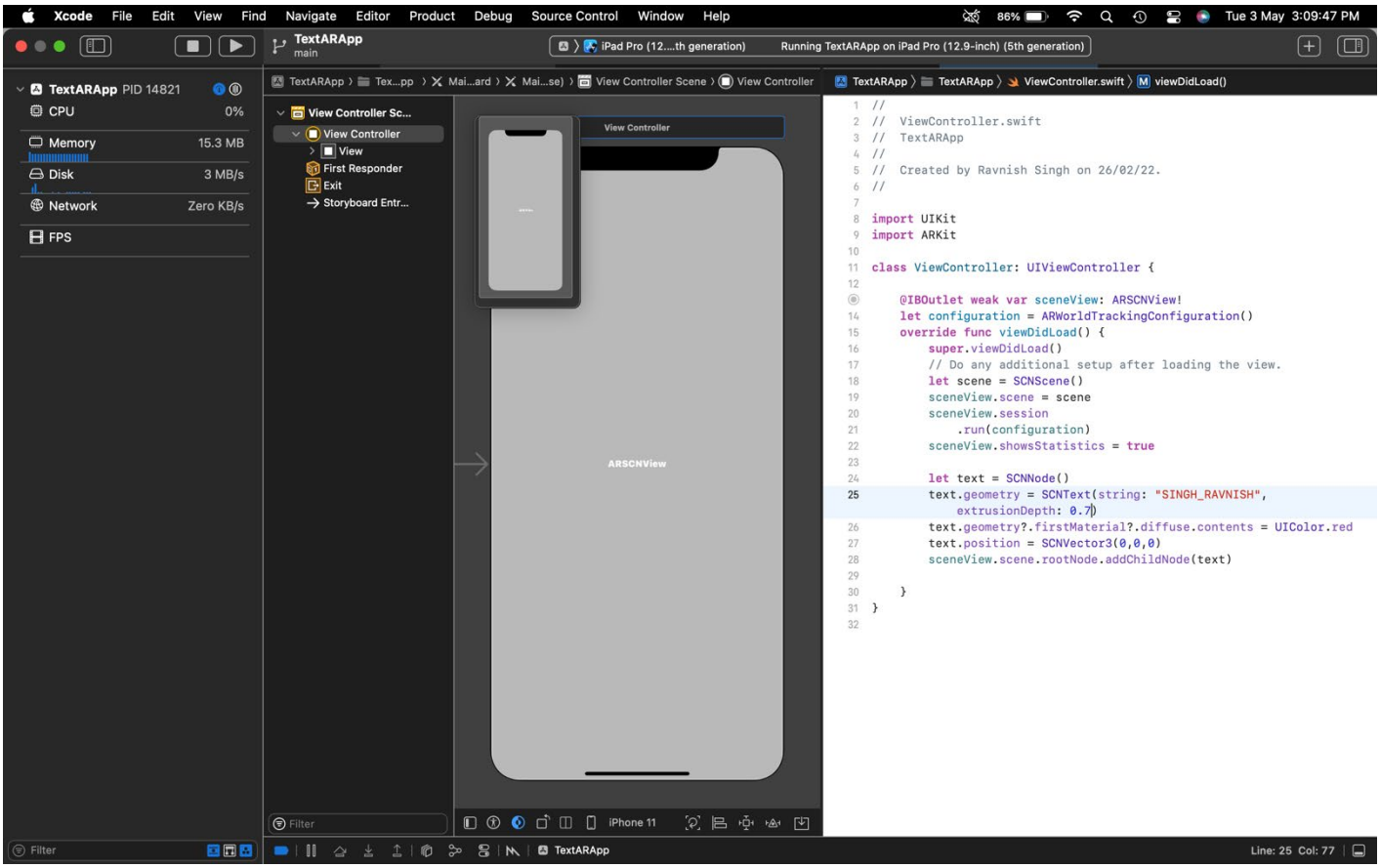




PRACTICAL – 7

Create an app to display Text in AR.

ViewController.swift:

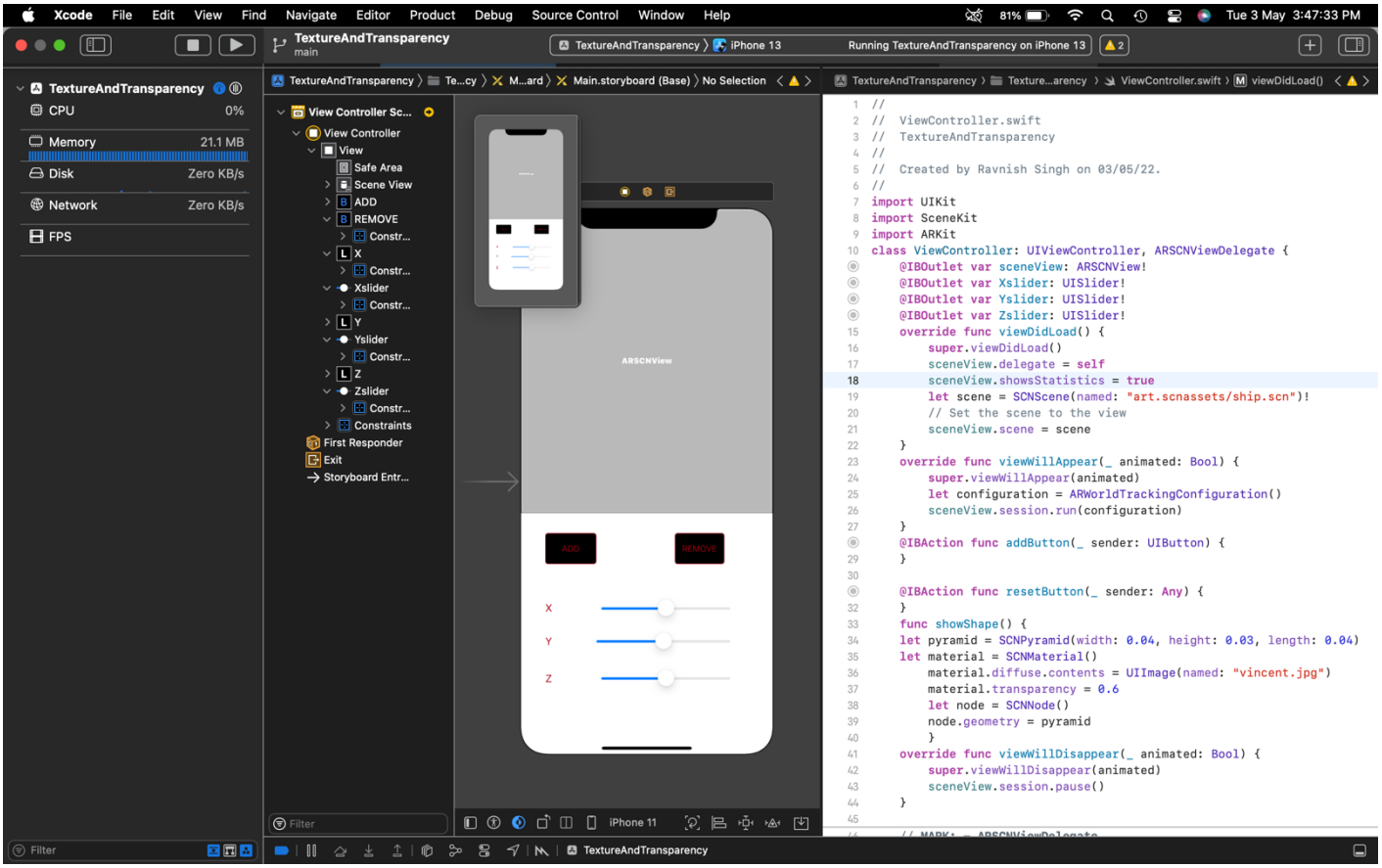


Simulator Output:

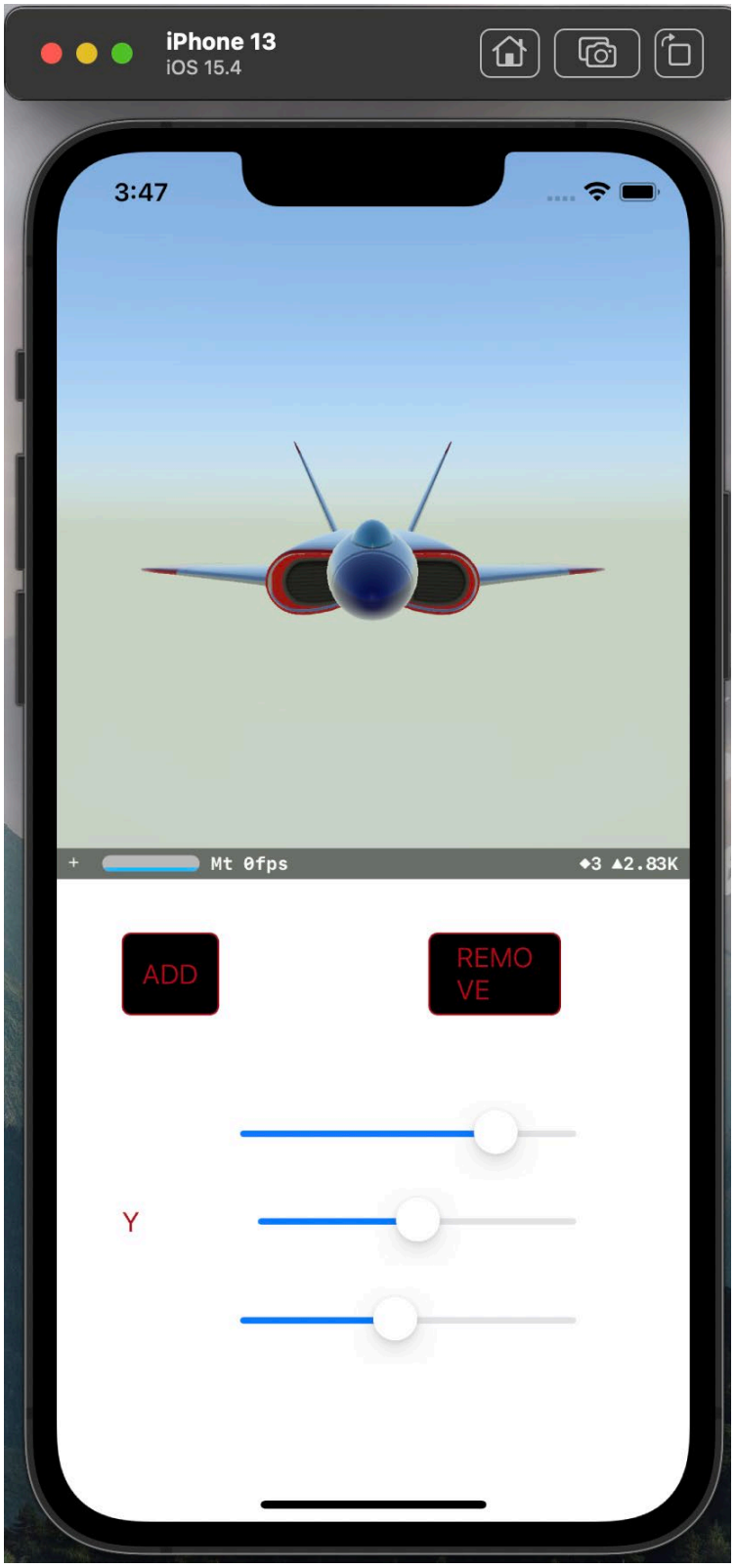
PRACTICAL – 8

Create an app to add textures to shape.

ViewController.swift:



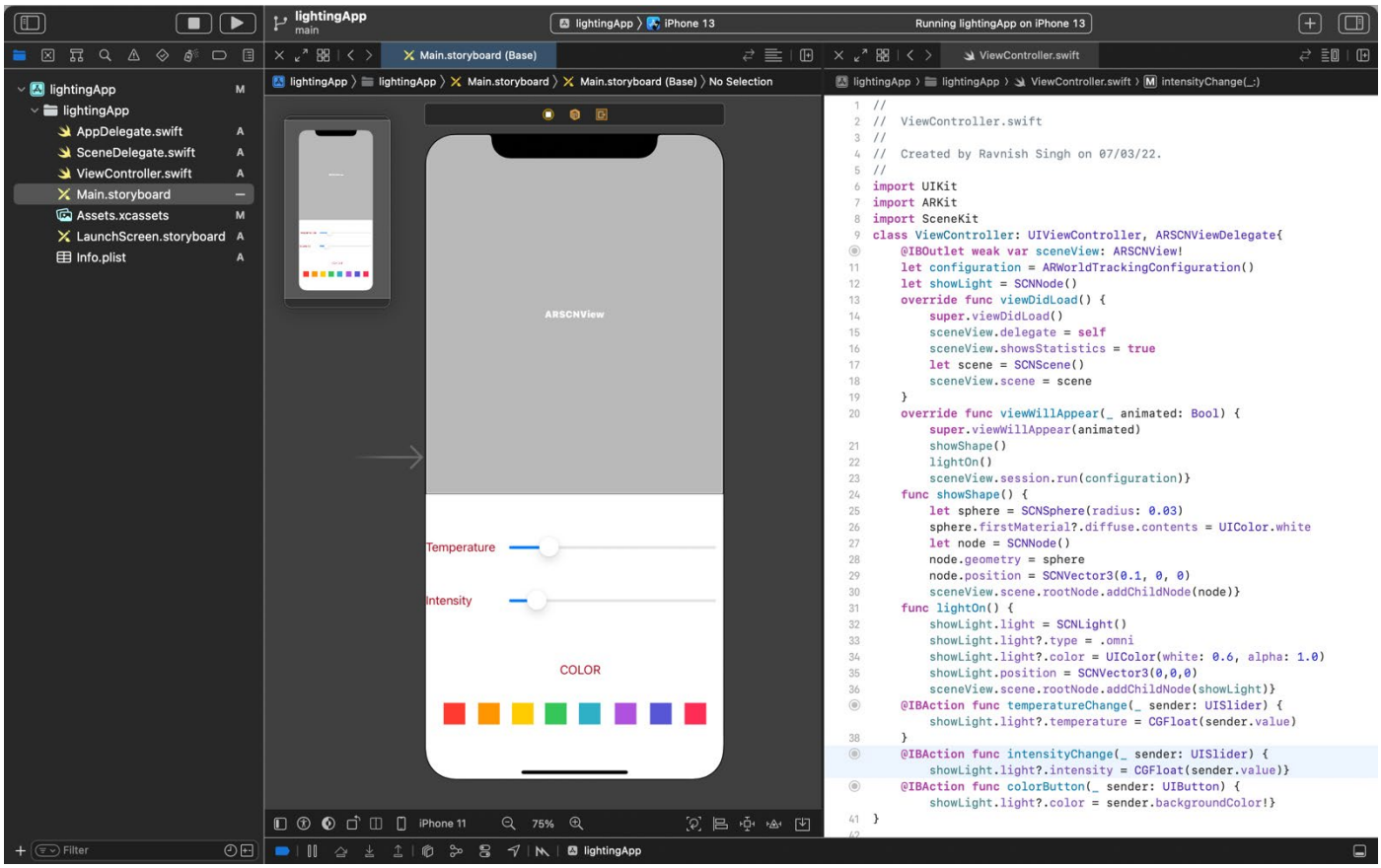
Simulator Output:



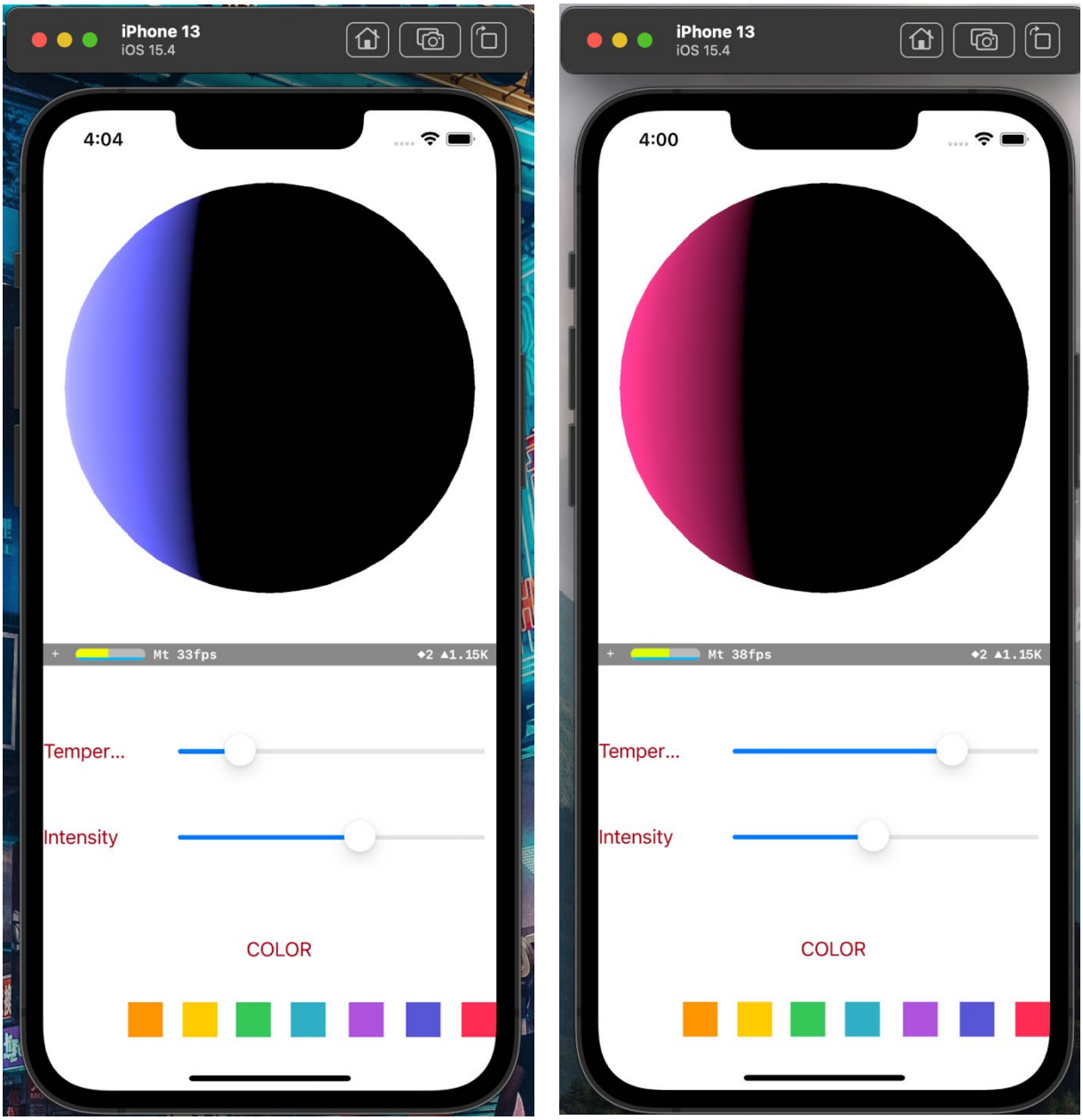
PRACTICAL – 9

Create an app to use light, temperature, and intensity to modify theappearance of virtual objects.

ViewController.swift:



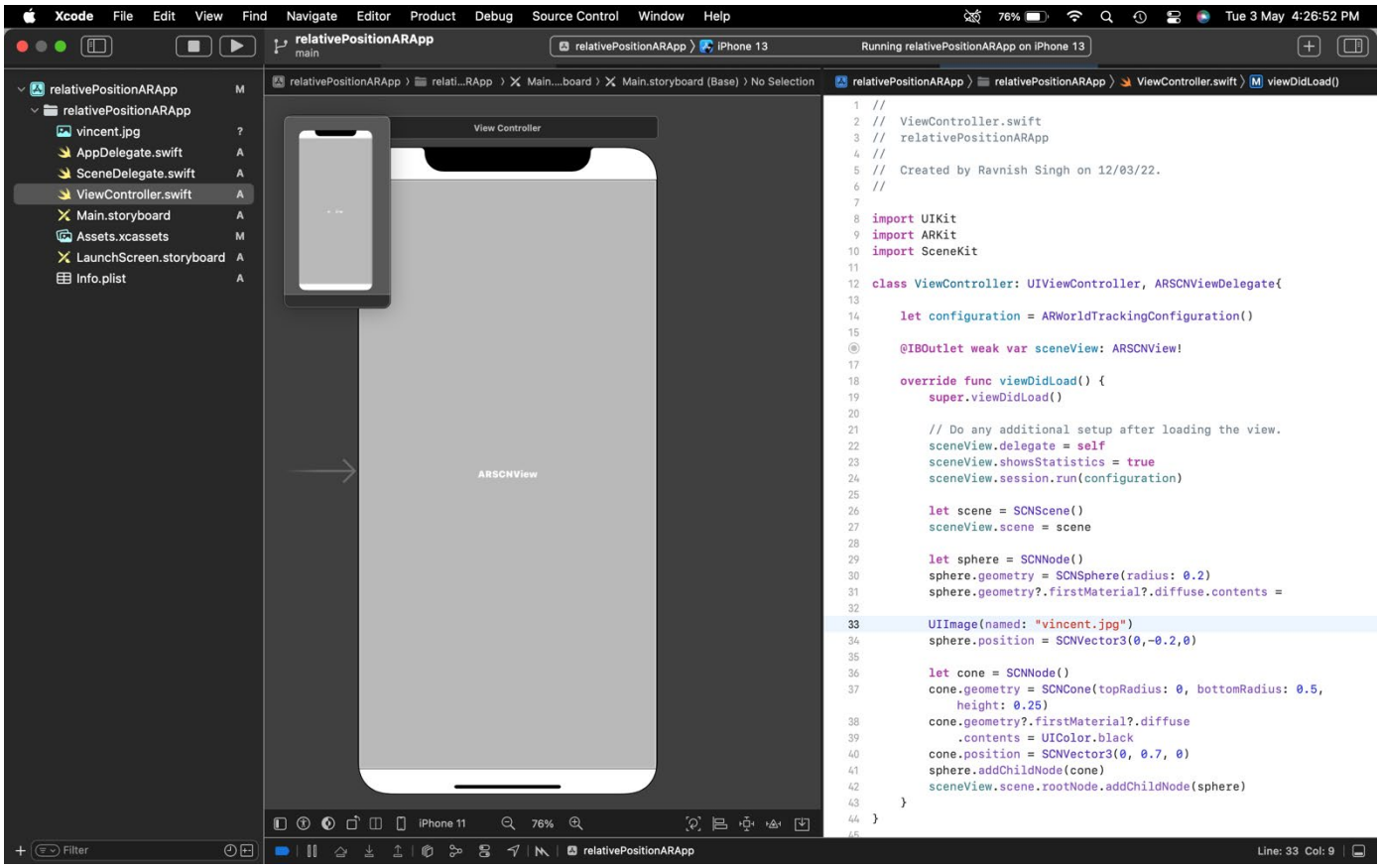
Simulator Output:



PRACTICAL – 10

Create an app that utilizes Positioning in AR.

ViewController.swift:



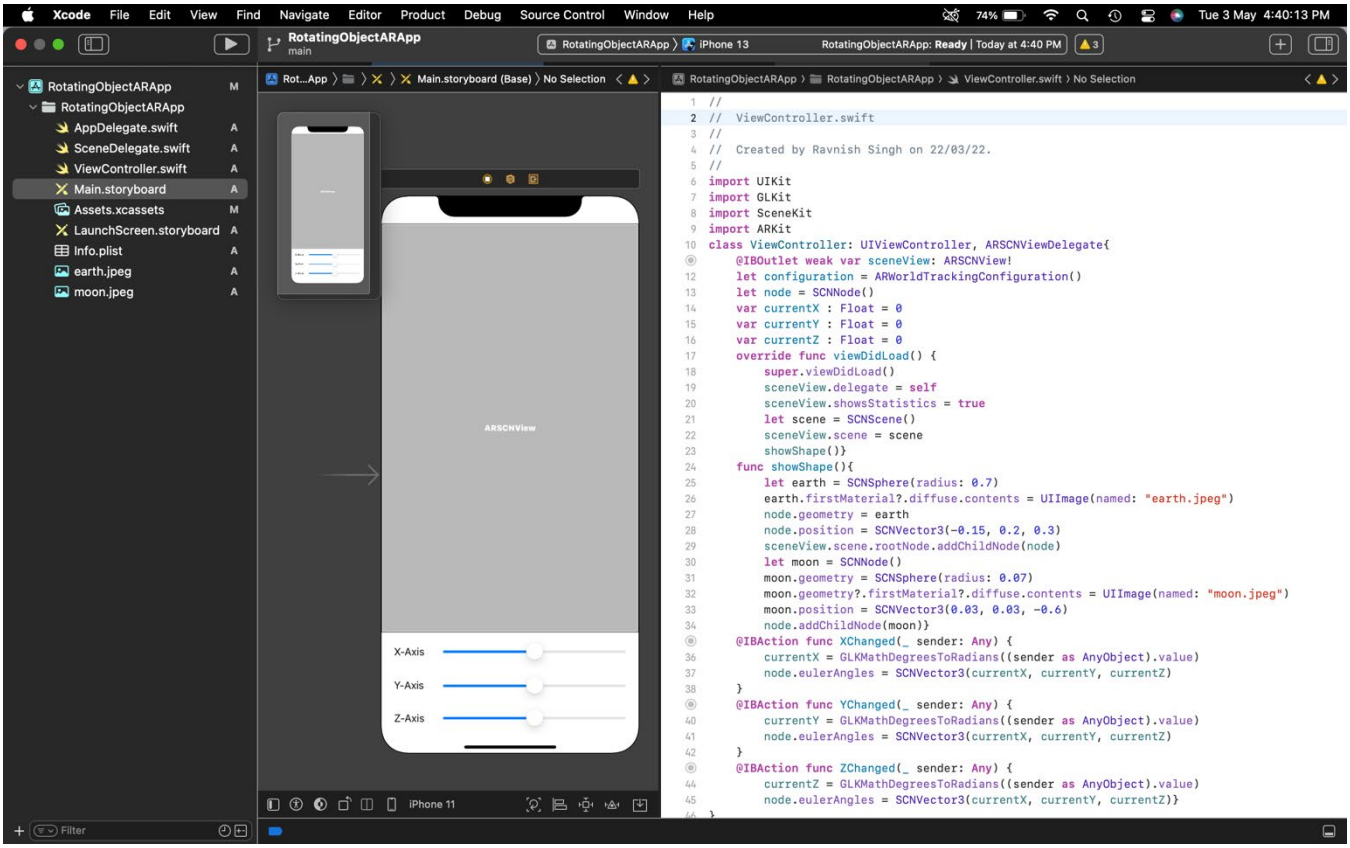

```swift
//
//  ViewController.swift
//  relativePositionARApp
//
//  Created by Ravnish Singh on 12/03/22.
//

import UIKit
import ARKit
import SceneKit

class ViewController: UIViewController, ARSCNViewDelegate{

    let configuration = ARWorldTrackingConfiguration()

    @IBOutlet weak var sceneView: ARSCNView!

    override func viewDidLoad() {
        super.viewDidLoad()

        // Do any additional setup after loading the view.
        sceneView.delegate = self
        sceneView.showsStatistics = true
        sceneView.session.run(configuration)

        let scene = SCNScene()
        sceneView.scene = scene

        let sphere = SCNNode()
        sphere.geometry = SCNSphere(radius: 0.2)
        sphere.geometry?.firstMaterial?.diffuse.contents =

        UIImage(named: "vincent.jpg")
        sphere.position = SCNVector3(0,-0.2,0)

        let cone = SCNNode()
        cone.geometry = SCNCone(topRadius: 0, bottomRadius: 0.5,
            height: 0.25)
        cone.geometry?.firstMaterial?.diffuse
            .contents = UIColor.black
        cone.position = SCNVector3(0, 0.7, 0)
        sphere.addChildNode(cone)
        sceneView.scene.rootNode.addChildNode(sphere)
    }
}
```

Simulator Output:

PRACTICAL – 11

Create an app to Rotate Objects in AR.

ViewController.swift:

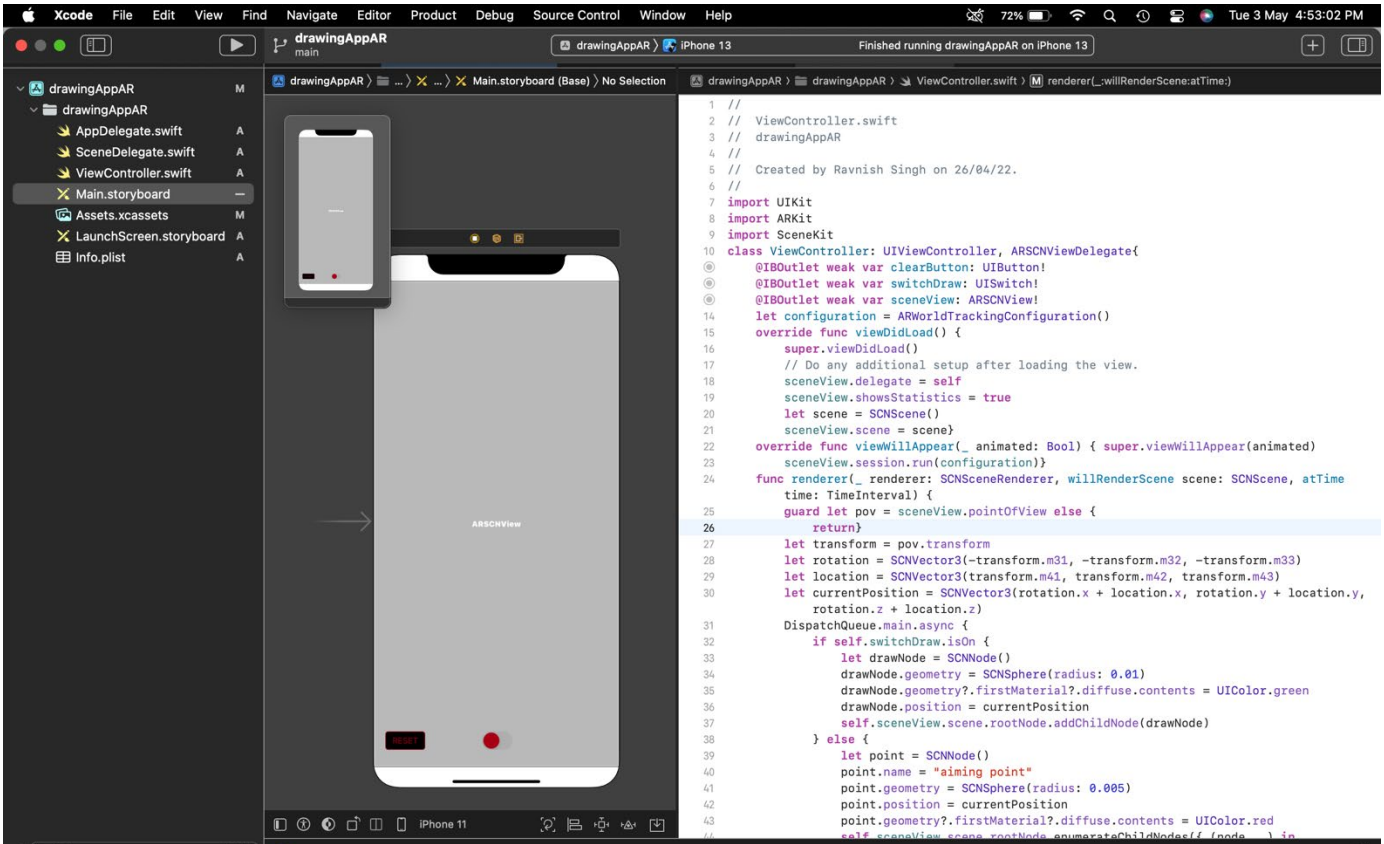


Simulator Output:

PRACTICAL – 12

Create an app for Drawing in AR.

ViewController.swift:

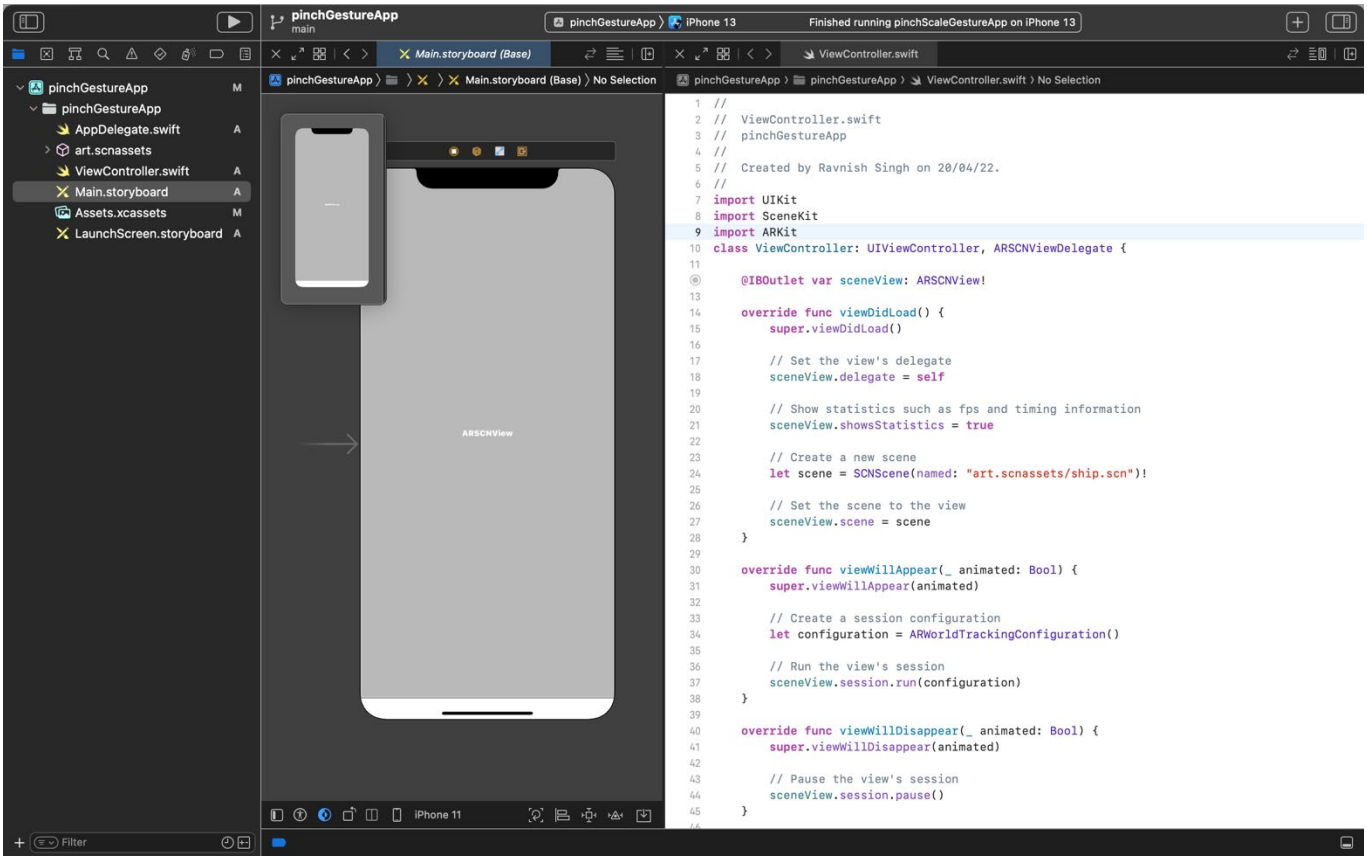


Simulator Output:

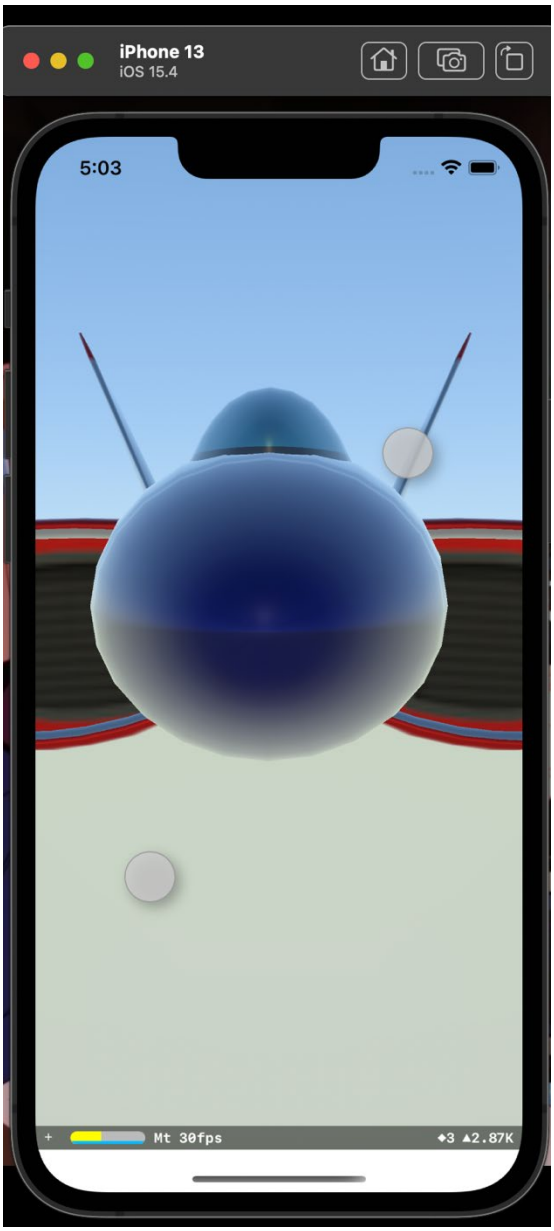
PRACTICAL – 13

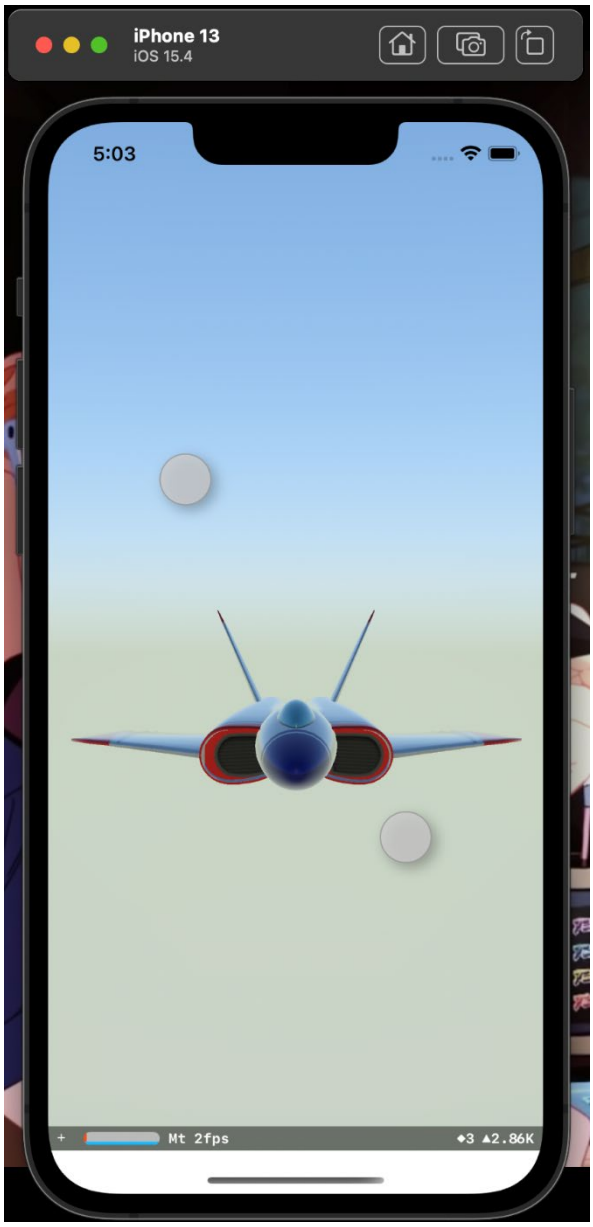
Create an app to recognize Pinch Gesture.

ViewController.swift:



Simulator Output:

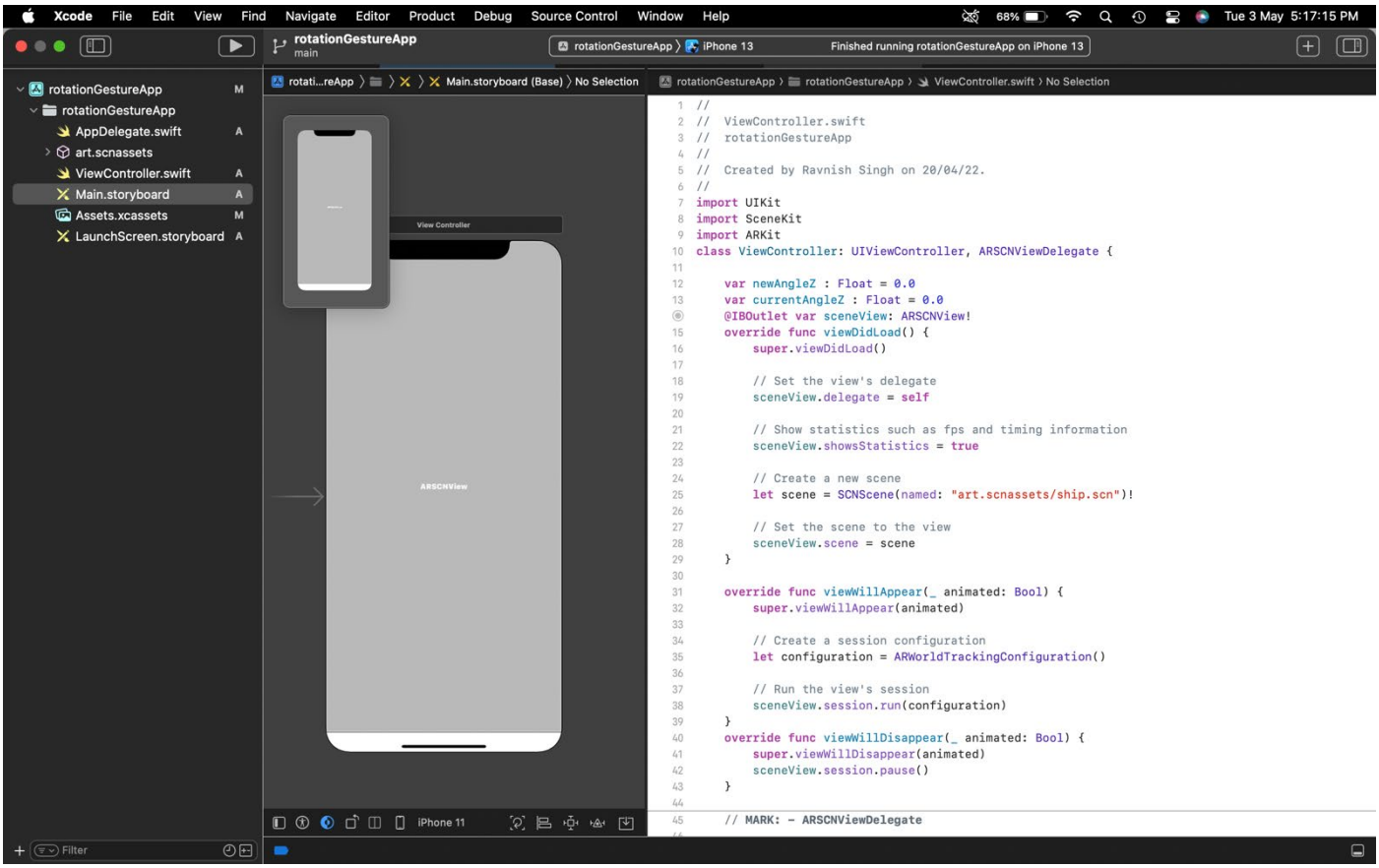




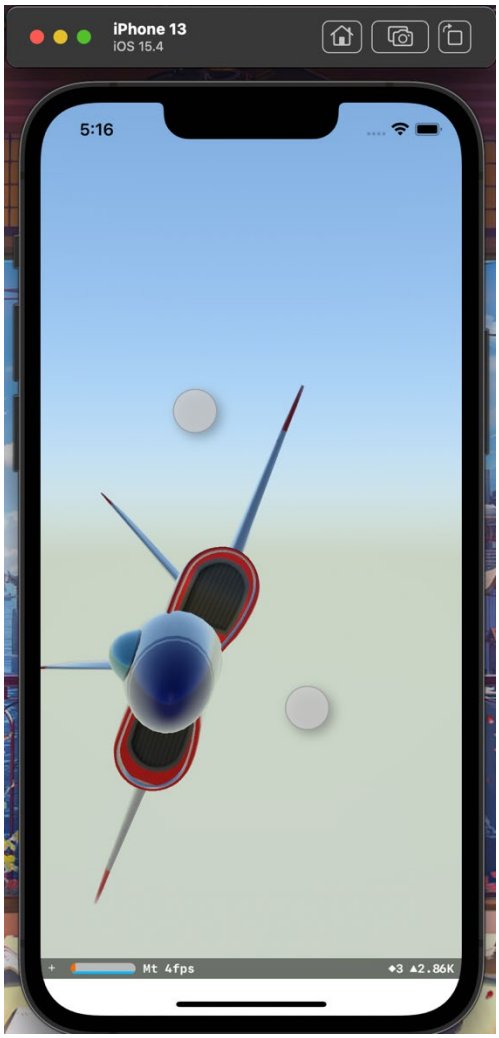
PRACTICAL – 14

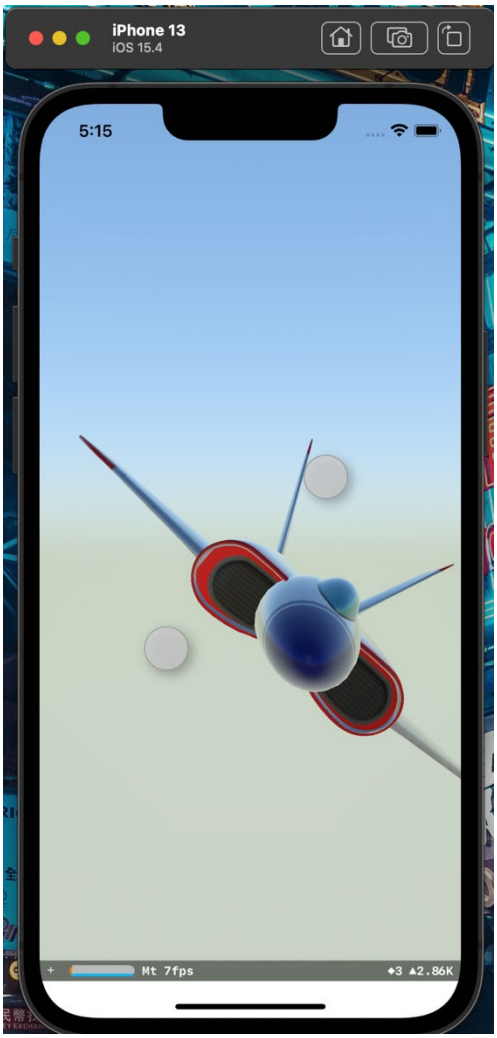
Create an app to recognize Rotation Gesture.

ViewController.swift:



Simulator Output:

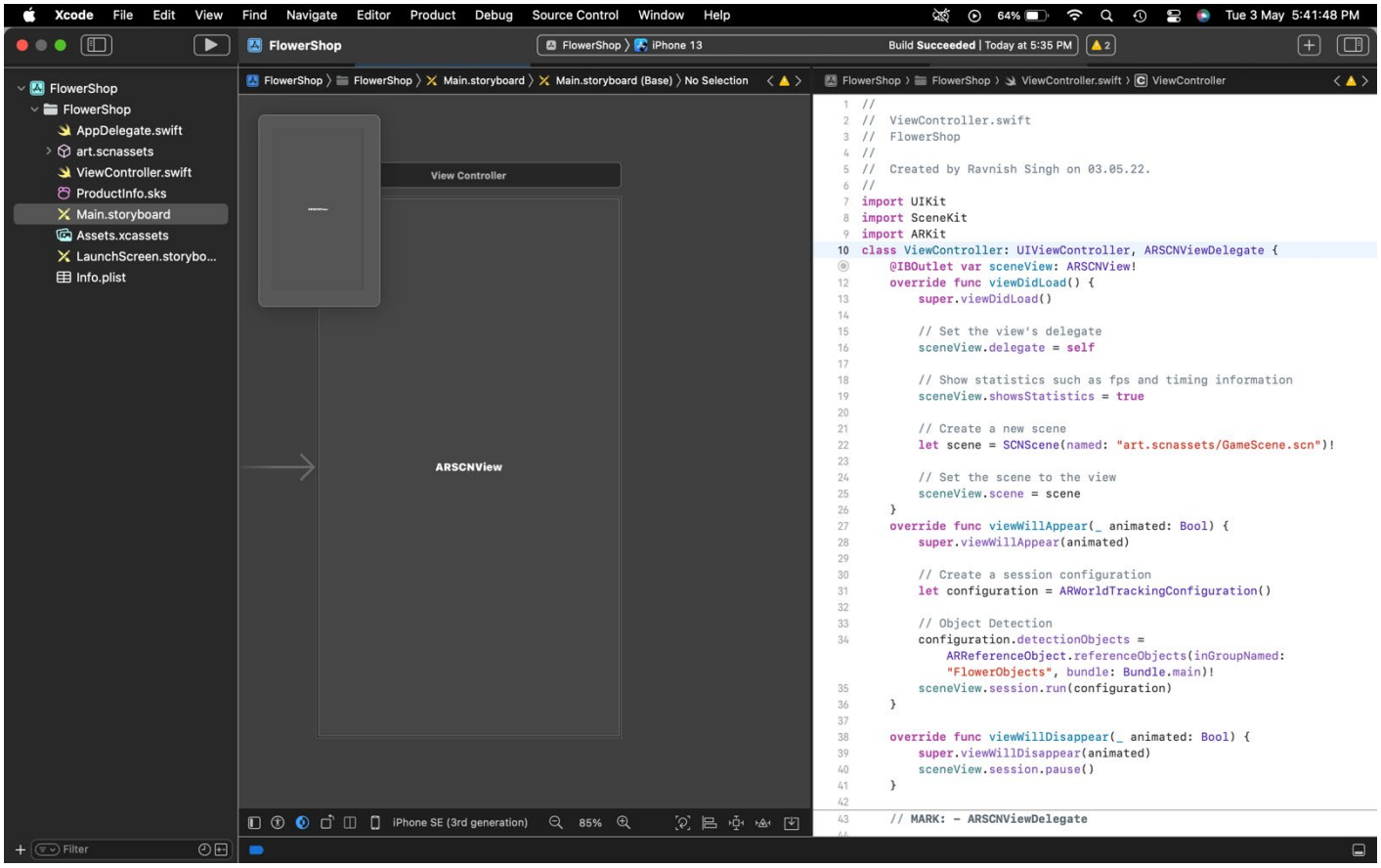




PRACTICAL – 15

Create an Mini Project (3DObjectScanningAndDetection).

ViewController.swift:



Simulator Output: