SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA

CLASS WORK
SESSIONAL WORK

ASSIGNMENT / EXPERIMENT	NO 01

SUBMITTED ON ..... MARKS OR GRADE OBTAINED .....

NAME Ayushi Atlasiya ROLL NO. 19100BTCSEMA05478

CLASS B-Tech (CSE+MA) DEPARTMENT Computer Science

SUBJECT ..... CODE NO. .....

Signature of Student Signature of Professor

P01:- AR Template.

ViewController.Swift

```
import UIKit
import SceneKit
import ARKit
class ViewController : UIViewController, ARSCNViewDelegate {
    @IBOutlet var sceneView: ARSCNView!
    Override func viewDidLoad.{
    Super.viewDidLoad()
    SceneView.delegate = Self   //Set the view's delegate.
    SceneView.showsStatistics = true   // Show FPS and timing.
    let Scene = SCNScene (named: "art.scnassets/dragon.scn")!
    SceneView.scene = Scene
    }
    Override func viewWillDisAppear (_animated: Bool){
    Super.viewWillDisappear (animated)
    SceneView.session.pause()  // pause the View's Session
    }
    override func viewWillAppear (_animated: Bool){
    Super.viewWillAppear (animated)
    let Configuration = ARWorldTrackingConfiguration()
    SceneView.session.run (Configuration)  }
```

```
func session(_ session: ARSession, didFailWithError error: Error) {
        // present an error message to the user
}

func sessionWasInterrupted(_ session: ARSession) {
        // inform the user that the session is interrupted
}

func sessionInterruptionEnded(_ session: ARSession) {
        // Reset tracking
    }
}
```

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ASSIGNMENT / EXPERIMENT NO 02

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CLASS B.Tech (CSE+MA) DEPARTMENT Computer Science

SUBJECT ..... CODE NO. .....

Signature of Student Signature of Professor

P02:- Create a Single View app.

ViewController.Swift

```
import UIKit
import SceneKit
import ARKit

Class ViewController: UIViewController, ARSCNViewDelegate {
    @IBOutlet Var SceneView: ARSCNView!

    Override func viewDidLoad(){
    Super.ViewDidLoad()

    SceneView.delegate = Self
    SceneView.shows Statistics = true
    let Scene = SCNScene (named: "art.scnassets/Ship.scn")
    SceneView.Scene = Scene.
    }

    Override func ViewWillAppear(_animated: Bool)
    {
```

```
super.viewWillAppear(animated)

let configuration = ARWorldTrackingConfiguration()
sceneView.session.run(configuration)
}
```

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ASSIGNMENT / EXPERIMENT	NO 03

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SUBJECT ..... CODE NO. .....

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P03:- Adding the object structure.

ViewController.Swift

```
import UIKit
import ARKit
import SceneKit

class ViewControllerx: UIViewController, ARSCNViewDelegate {
    @IBOutlet var SceneView: ARSCNView!
    let Config = ARWorldTracking Configuration ()

    func object () {
        let Shape = SCNBox (width: 0.1, height: 01, length: 01,
                            chamferRadius: 01)
        let node = SCNNode()
        node.geometry = Shape()
        node.geometry? firstMaterial? diffuse.contents
                      = UIColor.orange
        node.position = SCNVector3(0, 0, -5)
        let Scene = SCNScene()
        SceneView.Scene = Scene
        Scene.rootNode.addchildNode (node) }
```

```
@IBAction func resetBtn(_ sender: UIButton) {
    sceneView.session.pause()
    sceneView.session.run(configuration, options: [.resetTracking])
}

override func viewDidLoad() {
    super.viewDidLoad()

    sceneView.delegate = self
    configureObject()
}
}
```

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ASSIGNMENT NO 04
EXPERIMENT

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CLASS ..... B-Tech (CSE+MA) ..... DEPARTMENT Computer Science

SUBJECT ..... CODE NO. .....

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P04 :- World origin on camera and feature points.

ViewController.swift

```
import UIKit
import ARKit
import SceneKit

class ViewController: UIViewController, ARSCNViewDelegate {
    @IBOutlet var SceneView: ARSCNView!
    let Config = ARWorldTrackingConfiguration()

    func object() {
        let Shape = SCNBox (width: 0.1, height: 0.1, chamferRadius: 0.1)
        let node = SCNNode()
        node.geometry = Shape
        node.geometry?.firstMaterial?.diffuse.contents = UIColor.orange
        node.position = SCNVector3(0, 0, -5)
        let Scene = SCNScene()
        SceneView.Scene = Scene
        Scene.rootNode.addChildNode (node)
    }
```

```
@IBAction func resetBtn(_ sender: UIButton) {
    sceneView.session.pause()
    sceneView.scene.session.run(configuration, options: [.resetTracking])
}

override func viewDidLoad() {
    super.viewDidLoad()

    sceneView.delegate = self
    sceneView.debugOptions = [ARSCNDebugOptions.showWorldOrigin,
                              ARSCNDebugOptions.showFeaturePoints]

    object()
}
}
```

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ASSIGNMENT / EXPERIMENT	NO 05

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CLASS B.Tech (CSE+MA) DEPARTMENT Computer Science

SUBJECT ..... CODE NO. .....

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P05:- Multiple objects

ViewController.Swift

```
import UIKit
import ARKit
import SceneKit

class ViewController: UIViewController, ARSNViewDelegate {
    @IBoutlet var SceneView: ARSNView!
    let config = ARWorldTrackingConfiguration()

    @IBAction func boxBtn(_sender: UIButton){
    let shape = SCNBox()
    let node = SCNNode()
    node.geometry = shape
    node.geometry? firstMaterial? diffuse.contents = UIColor.orange
    node.position = SCNVector3(0,0,-5)
    let Scene = SCNScene()
    SceneView.Scene = Scene
    Scene.rootNode.addChildNode(node)
}
```

```
@IBAction func SphereBtn (_ Sender : UIButton) {
let shape = SCNSphere()
let node = SCNNode()
node.geometry = shape
node.geometry?.firstMaterial?.diffuse.contents = UIColor.orange
node.position = SCNVector3(0, 0, -5)
let Scene = SCNScene()
SceneView.Scene = Scene
Scene.rootNode.addChildNode (node)
}
```

```
@IBAction func ConeBtn (_ Sender : UIButton) {
let shape = SCNCone()
let node = SCNNode()
node.geometry = shape.
node.geometry?.firstMaterial?.diffuse.contents = UIColor.orange
node.position = SCNVector3(0, 0, -5)
let Scene = SCNScene().
SceneView.scene = scene.
Scene.rootNode.addChildNode (node)
}
```

```
@IBAction func CylinderBtn (_ Sender : UIButton) {
let shape = SCNCylinder()
let node = SCNNode()
node.geometry = shape.
node.geometry?.firstMaterial?.diffuse.contents = UIColor.orange
node.position = SCNVector3(0, 0, -5)
let Scene = SCNScene()
SceneView.Scene = Scene.
Scene.rootnode.addChildNode (node)
}
```

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```
@IBAction func pyramidBtn(_sender: UIButton){
    let shape = SCNPyramid()
    let node = SCNNode()
    node.geometry = shape
    node.geometry?.firstMaterial?.diffuse.contents = UIColor.orange
    node.position = SCNVector3(0,0,-5)
    let scene = SCNScene()
    sceneView.scene = scene
    scene.rootNode.addChildNode(node)
}

@IBAction func tubeBtn(_sender: UIButton){
let shape = SCNTube()
let node = SCNNode()
node.geometry = shape
node.geometry?.firstMaterial?.diffuse.contents = UIColor.orange
node.position = SCNVector3(0,0,-5)
let scene = SCNScene()
sceneView.scene = scene
scene.rootNode.addChildNode(node)
}
```

```
@IBAction func resetBtn(_ sender: UIButton) {
    SceneView.session.pause()
    SceneView.session.run(config, options: [.resetTracking])
}

Override func viewDidLoad() {
    SceneView.session.
    super.viewDidLoad()

    SceneView.delegate = self
    SceneView.debugOptions = [ARSCNDebugOptions.showWorldOrigin,
                              ARSCNDebugOptions.showFeaturePoints]
  }
}
```

SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA

CLASS WORK
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ASSIGNMENT / EXPERIMENT NO 06

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CLASS B-Tech (CSE+MA) DEPARTMENT Computer Science

SUBJECT ..... CODE NO. .....

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P06:- Program to change the position of object using slider.

ViewController.Swift

```
import UIKit
import ARKit
import SceneKit

class ViewController: UIViewController, ARSCNViewDelegate {

    @IBOutlet var SceneView: ARSCNView!
    @IBOutlet var xAxis: UISlider!
    @IBOutlet var yAxis: UISlider!
    @IBOutlet var zAxis: UISlider!
    let Configuration = ARWorldTrackingConfiguration()

    @IBAction func addObject(_Sender: UIButton){
        let Shape = SCNBox()
        let node = SCNNode()
        node.geometry = Shape
        node.geometry?.firstMaterial?.diffuse.Contents = UI color
                                                        .orange
        node.position = SCNVector3(xAxis.value, yAxis.value,
                                   zAxis.value)
```

```
        node.name = "box"
        let Scene = SCNScene()
        SceneView.Scene = Scene
        Scene.rootNode.addChildNode(node)
    }
    @IBAction func resetBtn(_ sender: UIButton) {
        SceneView.session.pause()
        SceneView.Scene.rootNode.enumerateChildNode { (node, _) in
            if node.name == "box" {
            node.removeFromParentNode() }
        }
        SceneView.Session.run(Configuration, options: [.resetTracking])
    }

    override func viewDidLoad() {
    Super.viewDidLoad()

    SceneView.delegate = self
    SceneView.showsStatistics = true
    SceneView debugOptions = [ARSCNDebugOptions.ShowWorldOrigin,
                              ARSCNDebugoptions.ShowFeaturePoints]
    }

    override func viewWillAppear(_ animated: Bool) {
        Super.viewWillAppear(animated)
        SceneView.Session.run(Configuration)
    }
}
```

SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA

CLASS WORK
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ASSIGNMENT / EXPERIMENT NO 07

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P07:- Add Texture on object.

ViewController.Swift

```
import UIKit
import ARKit
import SceneKit

class ViewController : UIViewController, ARSCNViewDelegate {

    @IBOutlet Var sceneView: ARSCNView!
    let Config = ARWorldTrackingConfiguration()

    func object(){
        let Shape = SCNSphere(radius: 0.1)
        let node = SCNNode()
        node.geometry = Shape
        node.geometry?.firstMaterial?.diffuse.contents = UIImage
                                        (named: "texture.Png")
        node.position = SCNVector3(0,0,-5)
        let Scene = SCNScene()
        SceneView.Scene = Scene
        Scene.rootNode.addChildNode(node)
    }
```

```
override func viewDidLoad() {
    super.viewDidLoad()

    SceneView.delegate = self
    object()

}
}
```