# Hands On

***CheckPoint01***

## Creating the Project

Open “Unity Hub” create “New Project” 3D, name it “QuickStartVR”.

Go to “Asset Store”, install: “Oculus Integration”, make sure to uncheck “SampleFramework”, “Milky Way”, “Dinner Table”.

Import the Resources/\*.fbx, in the import options use scale of 0.002 and enable mesh read/write.

### Project Settings

Go to “edit” > “project settings”.

In XR Settings enable VR and add Oculus. Remove Open VR, set single stereo rendering.

In Quality settings, 4x MSAA, 1 light, high textures.

Remove “Vulcan”. Use OpenGL ES 3.1.

### Quality

Create Quality empty object. On Start set:

* OVRManager.fixedFoveatedRenderingLevel
* OVRManager.display.displayFrequency
* XRSettings.eyeTextureResolutionScale
* XRSettings.renderViewportScale
* QualitySettings.antiAliasing

### Tracking

Create empty object “TrackingSpace” move the camera inside, add “TrackingSpace” script, on Start set:

* OVRPlugin.SetTrackingOriginType(OVRPlugin.TrackingOrigin.FloorLevel);

Camera position set to 0, 0. Place the “TrackingSpace” as necessary.

### Scene V1

Add a Quad on the floor 10m x 10m.

Add a Cube 2x1x1.

Add some smaller balls, 1x 0.4, 3x 0.1 scale.

Add some materials.

Enable the Milky Way skybox by adding “Skybox” component on the “MainCamera” and then dragging the material onto the property slot.

Set “static” for the table and the floor, explain lightmap. Increase shadow texture quality to high.

## Hands

***CheckPoint02***

### Block Hands

Add two boxes in the TrackingSpace. Name them LeftHand and RightHand. Scale 0.03, 0.15, 0.15, Posiiton 0,0,0. Add a TrackedXRDevice script on them that reads a left or right hand from InputDevices.GetDeviceAtXRNode and sets local position and rotation.

### Collisions

On each sphere add Rigidbody. Spheres should fall. Try to hit them with hands. They will be awkward.

### VR Hands

Remove the block hands. Add a RightHand empty object. Add a VRHand script on it. Reuse the tracked device but use Rigidbody.MovePosition and Rigidbody.MoveRotation instead, make sure to transform to local coordinates.

Add the hand model from resources, add mesh collider, add Rigidbody, set **IsKinematic.**

Copy for left hand, rename, just change scale X for the hand from 100 to -100 to flip it.

## VR Grab

***CheckPoint03***

## Grab

Add the “grab” hand model from the HandModels folder into the left and right hands. Add mesh collider, add Rigidbodies with IsKinematic. Disable them.

Add code to check open/close state. Perform OverlapSphere to capture nearby Rigidbody. (copy from Snippets/ VRHand.02.cs)

## Physics – Bounce!

Create a physics material, add bounce. Assign to balls.

## Fixed Update

Switch from 0.02 to 0.0138888 at Edit > Project Preferences > Time > Fixed Timestep

## Add Magic

***CheckPoint04***

Open the “Dinner Table” demo scene, pick some objects, copy, paste them in our scene.

Add BoxCollider on the table. Add mesh collider on one of the jugs.

## Beer Pong

Add a canvas, add a background, import TextMesh Pro, add a Billboard script with LookAt Camera.main on update.

Set the text to “Beer Pong Time!”.

Ooopps it is flipped. That’s why you don’t checking past 5 o’clock. Fix it.

Throw all small balls at the jug, fail all small balls. Get the big one! Put it on top.

## Reset Button

Add a button, create custom material, make it red, add a ResetButton.cs script that will use “private void OnTriggerEnter(Collider other)” to check if a left or right hand collider is entering the reset button, and move back the balls on their places.