# Augmented Reality Exercise

For this project, you must use either Apple X Code or Spark AR Studio to create a plane- or marker-detection based augmented reality project. Follow the instructions provided to get started, and then add 3D assets to your project to create the immersive experience.

Requirements:
– Build project in Reality Composer or Spark AR Studio
– Add at least two 3D assets to the experience
– Include Text
– Include Audio (can be narration, music, sound effects)
– Export, and screen-record you using the app

## Reality Composer with X Code Instructions:

1. Create an Apple Developer account at developer.apple.com. Click "Account" at the top, type in your apple account and password, and accept the terms.
2. Open X Code, and click "Create New XCode Project"
3. Choose "Augmented Reality App", and click Next
4. Give your product a name. Under **Team**, click "Add Account", and after you add your credentials, close out of that window and go back to the new project options. Now, you should be able to add your name under the Team name. Accept all the other default options, and choose Next.
5. You will then be prompted to find a location to save your project. Choose your Desktop, or Documents folder, and then click Create
6. From the X Code main menu, un-check the Landscape Left and Landscape Right under "Device Orientation"
7. From the menu on the left, choose the **Experience.rcproject** option, and then select the Open in Reality Composer button on the top right, like so:
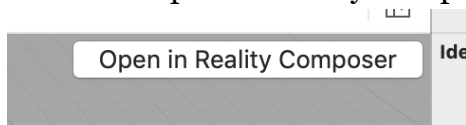

8. From the Reality Composer, you can add or remove elements from the scene by choosing the **Objects** button at the top. Simply search for an item and drag it

onto your 3D world. Once an item is added, you can select it to move it around, rotate it, or change the width, height, or depth in the Properties section on the right. Be sure to check the box that says **Physics** so items can interact with each other. For example, you can give items properties of ice, in which case it will slide around. Additionally, if you give an item a collision shape of sphere, it will roll around.

9. When an item is selected, you can also click on "Behaviors" in the top right to add interactions from the user, such as tapping, bouncing, floating and others.
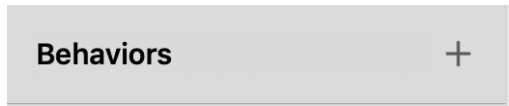
10. Once a Behavior is added, you can choose between options on how you want the user to interact with the objects. From here, you can also add sound effects and other immersive effects.
11. Be sure to remove the cube that you are given, so it won't show up in your environment
12. When you are finished, close out of the Reality Composer, and you will see your scene in X Code.
13. From the main project view, click on the "Signing & Capabilities" menu, and choose your Team name from the dropdown, like so:
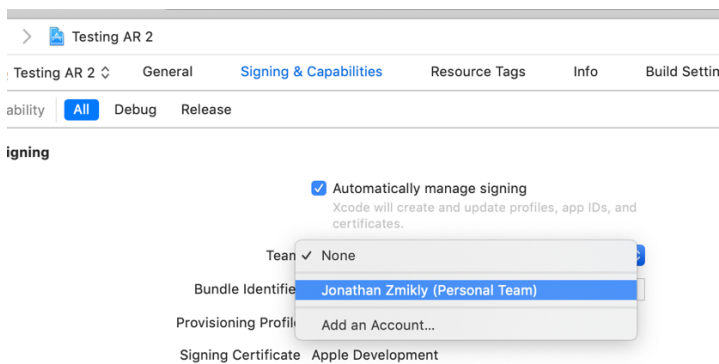
14. Plug in your iPhone (must have iOS 13), and you should be prompted on your iPhone to "Trust this computer". Do so, and you will see it populate as one of the device options at the top of X Code, like so:
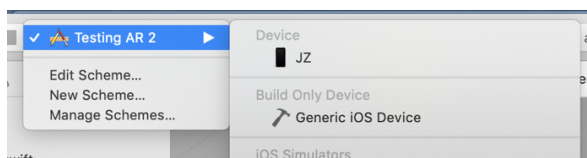
15. Choose your device, and press the Play button. After compiling, your new AR app should deploy to your device!
16. When you open the new app, you will get a message to trust the developer. To do this, go to Settings / General / Device Management, and choose your Team. Choose the "Trust Apple Development…" message, and then you will be able to open the app.
17. Screen record you using the app, and upload that video to class Facebook page

Reality Composer with iPhone Instructions:
1. Download the Reality Composer app from the Apple App Store
2. In the top right, choose the + sign to create a new project.
3. You can choose either a horizontal (plane) tracker, or Image tracker
    a. For Image tracking, select the black and white square image provided, and choose the Settings icon in the top menu.
    b. You can then choose a new Image Asset to set off the AR experience (must be imported from iCloud, Google Drive, Dropbox, etc.)
4. Select the cube you are given, and select "cut" to remove it. You can then add new objects by pressing the + in the top of the screen.
5. Search the content library for Assets. Once it is selected and added to the scene, you can move it along the X, Y and Z axes. To add more components to the item, select the button to the right of **AR** in the top menu. You will be able to change the transformation, look, style, physics and other elements.
6. You can also add Behaviors to elements by selecting the . . . menu option. Behaviors allows you to tap or gesture an object to activate an animation or sound. Press the + sign to add new behaviors, such as Tap & Flip, Tap & Play Sound, etc.
7. Add text to the scene by adding a new object and selecting Text
8. To test your scene, press the AR button and then the play button
9. Screen record you using the app, and upload that video to class Facebook page

Spark AR Studio Instructions:

1. Open the Spark AR Studio application on your Mac. Login to Facebook when prompted, and choose Create Project
2. Go to Project…Edit Properties, and un-check Instagram
3. From the Scene panel on the left, choose + **Add Object**, and choose either "Target Tracker" or "Plane Tracker". The "Fixed Target Tracker" allows you to

create an AR experience once your phone detects an image, logo or label. The "Plane Tracker" will place AR objects around you as soon as it detects a plane. If you chose "Fixed Target Tracker", once it is added, you must click on it, and click on Texture...and upload an image file for it to detect to add the asset.

4. Create an account at sketchfab.com. This will allow you to have access to a large library of free 3D objects, audio files and more! When finished, go to Spark AR, and click on File...Preferences...Library, and then sign in to Sketchfab from there. If you do not want to do this, you can find free 3D objects to add to your scene by going to sites like Turbosquid.com or free3d.com. File types that are accepted are: .dae, .fbx, .glb, .gltf, or .obj. Sometimes 3D objects will come with texture files associated with them. Download those as well, so you can compile them later in AR Spark. If everything comes in a .zip file, unzip those files

5. Click on the Library icon on the bottom left of your panel, like so:
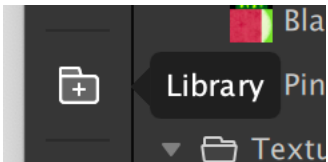

6. From the Library, you should be able to search and import tons of free 3D files. If you do not use sketchfab, you will have to install 3D objects manually. To do this, go into Spark AR and choose **+ Add Asset**, and then choose **Import From Computer...** Find the appropriate 3D file, and open it.

7. Once your items have been imported to the Assets area, click on the asset and drag it ONTO the **planeTracker** item in your Scene, like so:
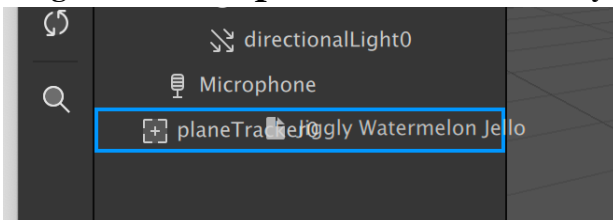
8. It should now be a "child" of the planeTracker item and should look like so:
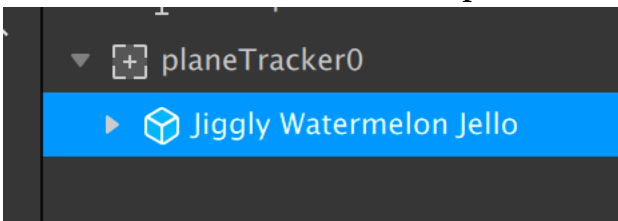
9. When you are ready to test your file, click on the bottom left to Test on Device. You can either Preview in App (can deploy to Facebook / Instagram) or Preview in Spark AR Player (requires download from app store).
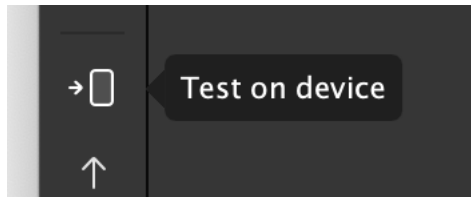
Adding Audio:
1. Find a song or sound effect and convert it to a .m4a.
    a. Online-convert.com is a great website for this. Choose **Audio converter**, and then Select **target format**... to **.m4a**
    b. Press "**Choose file**" and upload your audio file
    c. In the Optional settings area, change the **audio frequency to 44100 Hz**, **audio channels to Mono**, and then choose only a few seconds of the audio clip, like the first 15 seconds by going from 00:00:00 to 00:00:15.
    d. Press **Start** and then your .m4a should download
2. Go back into Spark AR Studio, and add a new **Asset +** and choose **Playback Controller / Audio Playback Controller**
3. In the **Audio** section in the Inspector, choose **Import from Computer** from the dropdown and select your .m4a
4. You can then check the Play button, and Loop if you would like the audio to loop
5. Add a new **Object +** to your scene, and scroll down until you see the Speaker. Then press **Insert**
6. With the **speakerO** selected, choose the dropdown on the Audio on the Inspector on the right, and choose **audioPlayerControllerO**

Adding Text
1. Click on Add / 3D Object / 3D Text.
2. Then take the **3DTextO** layer and drag it onto your **planeTrackerO** or **targetTrackerO**. The text should be a child of the tracker.
3. You can then move your text around the object using the Move tool and change the content of the text, spacing, font, etc in the Inspector when the Text layer is selected

Deploying to Facebook / Instagram:
1. Click on "Select an Experience" in orange
2. Under Experiences, choose the Add Experience button
3. Choose the first option: Sharing Experience, and then select Insert
4. Depending on use case and capabilities, choose either Instagram or Facebook. For most experiences, Instagram does not work because it can not do plane tracking.
5. It will take you back to your project, and then choose Send to export to Facebook.
6. You should get a mobile notification to test out your AR experience**!**

Deploying to Spark AR Player:

Download the Spark AR Player from the Google Play store or Apple Store. Login with your Facebook credentials and then deploy your experience to your phone.