

**PLEASE TAKE A USB STICK, FIND A SEAT,  
COPY THE TRAINING DAY PROJECTS  
ZIP FILE AND UNITY 5.2 INSTALLER  
TO YOUR COMPUTER, THEN..**

**INSTALL UNITY 5.2  
UNZIP TRAINING DAY PROJECTS  
DO IT NOW!**

**Open Unity, File > Open Project  
Open 'TrainingDayPhase1'**

**(Inside Unzipped 'Training Day Projects')**



Welcome to

# **UNITE**

# **TRAINING DAY**



# INTRODUCTIONS



# INTRODUCTIONS



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R&D CONTENT TEAM CODE WHISPERER



**WILL GOLDSTONE**

R&D CONTENT TEAM LEAD

**@WILLGOLDSTONE**

# **TRAINING HELP TEAM**

UNITE 2015



# WHAT YOU WILL BUILD



TANKS!

# WHAT'S A TRAINING DAY?!

Introduction & Installation

**01 - PROJECT & SCENE SETUP**

**02 - TANK CREATION & CONTROLS**

**03 - CAMERA**

**04 - HEALTH**

Lunch eta 13:00

**05 - SHELLS**

**06 - SHOOTING**

**07 - GAME MANAGERS**

**08 - AUDIO**

SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST



# WHAT YOU NEED TO KNOW

- Isometric shooter game **TANKS!**
- Catch up zip files - each Phase has it's own dedicated project zip to avoid falling behind
- Fall behind in Phase 1? wait and open Phase 2 Project folder when it begins!
- Dedicated Helpers - just raise your hand!
- Q & A limited to end of day, Slides distributed at end of day also



**OKAY.  
LET'S DO THIS.**



- 1. Copy the zip on the USB stick across to your laptop's hard drive**
- 2. Extract the installer and all copies of the project**
- 3. Install the Unity version supplied (5.2)**
- 4. Launch Unity and then Open the project called TrainingDayPhase1**



1. Use **Two by Three** layout using the **Layout** drop-down in the upper right
2. Drag the **Project** window below the **Hierarchy**
3. Set **Project** window zoom to minimum



1. Make sure you have the correct project open  
and you are in an **empty scene**, if not, go to  
**File > New Scene**
2. **Save** the empty scene to the **Scenes** folder  
and call it **Main**



1. Delete the **Directional Light** from the scene
2. Drag the **Level Art** prefab from the **Project** panel **Prefabs** folder into the **Hierarchy** panel
3. From the **Window** menu, open the **Lighting Panel** and dock it with the **Inspector**



1. At the bottom of the panel **uncheck Auto**
2. Moving up, **uncheck Baked GI**
3. Set **Realtime Resolution** to **0.5**
4. Change **Ambient Source** from **Skybox** to **Color**
5. Set the **Ambient Color** to ( **72, 62, 113** )
6. Click **Build** on the **Lighting** panel



1. Return to the **Inspector** panel
2. Change the **Position** of the **Main Camera** to  
**( -43, 42, -25 )**
3. Change its **Rotation** to **( 40, 60, 0 )**
4. On the **Camera** component change the  
**Projection** to **Orthographic**



1. Change **Clear Flags** from **Skybox** to **Solid Color**
2. Change the **Background** color to  
**( 80, 60, 50 )**
3. **Save your scene!**



# **END OF PHASE ONE**

Fallen behind? Don't worry!

**File > Open Project > TrainingDayPhase2**



# PHASE 1 QUIZ

What colour represents the X axis?

- a) Blue   b) Red   c) Yellow   d) Green

In which panel can you find a list of all of the game objects in the Scene?

- a) Inspector   b) Project   c) Scene   d) Hierarchy

If you want to create an instance of a prefab in your scene, you drag the prefab from the project panel into either of which two panels?

- a) Inspector or Hierarchy
- b) Inspector or Scene
- c) Scene or Hierarchy
- d) Game or Inspector



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- d) Game or Inspector



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- b) Inspector or Scene
- c) **Scene or Hierarchy**
- d) Game or Inspector



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**SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST**

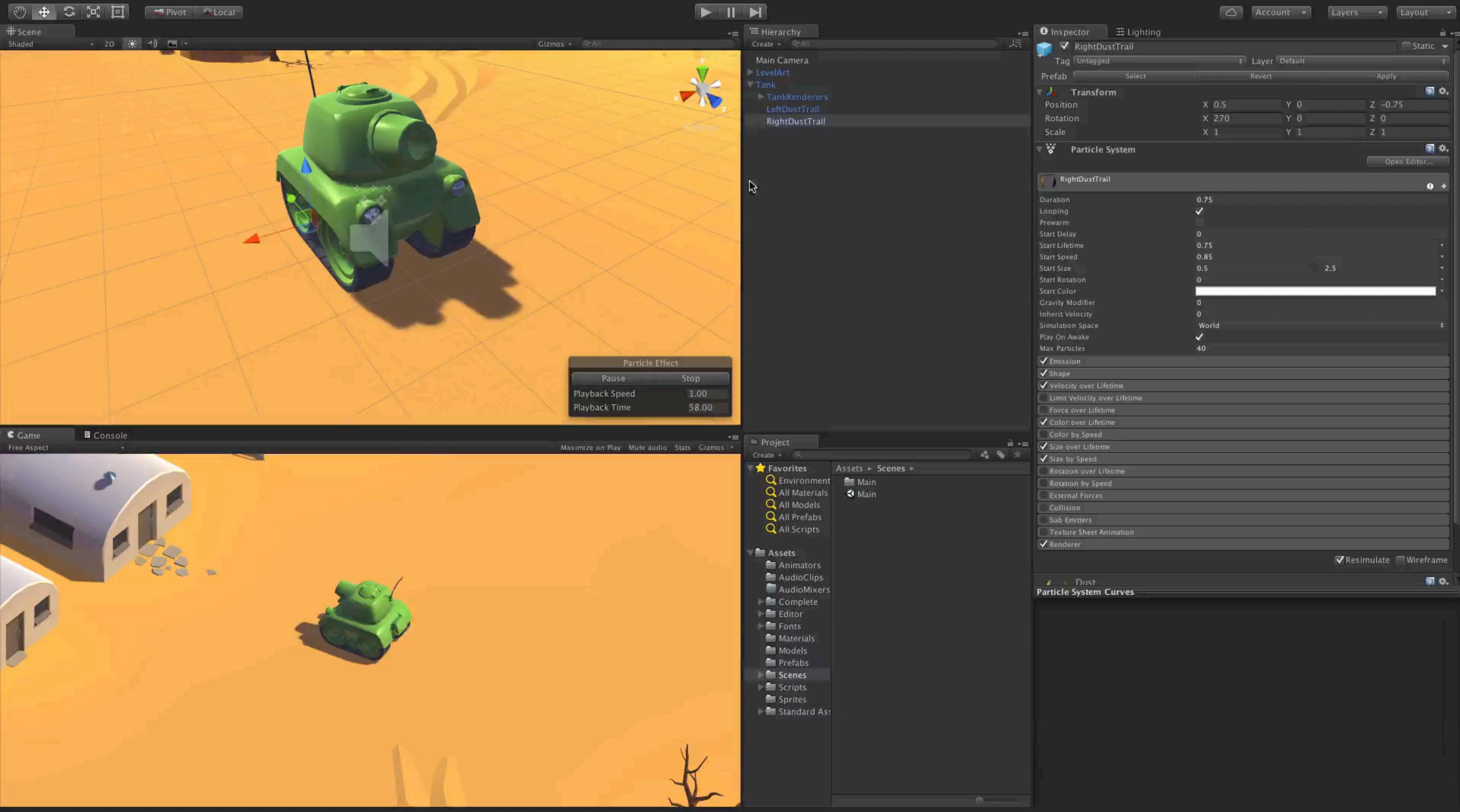




# **PHASE TWO**

# **TANK CREATION**





1. In the **Models** folder of the **Project**, find the model called **Tank** and **drag** it into the **Hierarchy** panel
2. At the top of the **Inspector** panel, set the **Layer** of the **Tank** GameObject to **Players**
3. For the **Change Layer** dialog that appears, select **No, this object only**



1. Add a **Rigidbody** component
2. Expand the **Constraints** area of the **Rigidbody**
3. Under **Constraints** check **Freeze Position** for  
the **Y axis**
4. Check **Freeze Rotation** for the **X** and **Z axes**



1. Add a **Box Collider** component to the **Tank GameObject**
2. On the **Box Collider** component change the **Center** to ( **0, 0.85, 0** )
3. Also, change the **Size** to ( **1.5, 1.7, 1.6** )



1. Add an **Audio Source** component to the **Tank GameObject**
2. On the **Audio Source** component change the **AudioClip** to **Engineldle** using the **circle-select** button
3. Also check **Loop**



- 1. Add another **Audio Source** component**
- 2. On the second **Audio Source** component  
uncheck **Play On Awake****
- 3. Select the **Prefabs** folder in the **Project** panel**
- 4. Click and drag the **Tank GameObject** from  
the **Hierarchy** to the **Project** panel**
- 5. Save the scene!**



1. From the **Prefabs** folder drag the **DustTrail** prefab onto the **Tank GameObject** in the **Hierarchy** to make it a child **GameObject**
2. Duplicate the **DustTrail** so that there are two, use Command-D on Mac, Ctrl-D on PC



1. Rename one of the child GameObjects from **DustTrail** to **LeftDustTrail**
2. Set the Position of **LeftDustTrail** to ( **-0.5, 0, -0.75** )
3. Rename the other **DustTrail** GameObject to **RightDustTrail**
4. Set the position of **RightDustTrail** to ( **0.5, 0, -0.75** )



1. In the **Scripts/Tank** folder, find the **TankMovement** script
2. Drag and drop it onto the **Tank GameObject**
3. Open the **TankMovement** script using double click on the script in the **Project view**



## Script Checklist

1. GET THE INPUT
2. SETUP THE AUDIO
3. SETUP FORWARD/BACK MOVEMENT
4. SETUP TURNING



1. For the **Movement Audio** variable use the first **Audio Source** component. Drag the name of the component and drop it onto the **space next to Movement Audio**
2. For the **Engine Idling** variable, click on the **circle-select** button and choose the **Enginidle** audio clip from the list



1. For the **Engine Driving** variable, click on the circle-select button & choose **EngineDriving**
2. At the top of the **Inspector**, apply the changes to your Tank prefab by clicking **Apply**
3. **Save** your scene using **File > Save**



1. Press **Play** and try driving the tank around!
2. Remember to press Play again to stop playing afterwards
3. **Save** the scene!



# **END OF PHASE TWO**

Fallen behind? Don't worry!

**File > Open Project > TrainingDayPhase3**



# PHASE 2 QUIZ

Which of these is a component used to play sounds in a game?

- a) Audio Source
- b) Audio Clip
- c) Audio Listener
- d) Audio Mixer

What variable type do we use to store Rotation?

- a) Integer
- b) Vector3
- c) Transform
- d) Quaternion

After the following line of code is run, what will the Rigidbody's position be?

```
m_Rigidbody.MovePosition(new Vector3(0, 0, 10));
```

- a) Ten units from it's previous position in the Z axis
- b) At the origin
- c) At (0, 0, 10)
- d) This won't move the Rigidbody



# PHASE 2 QUIZ

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**SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST**





# **PHASE THREE**

# **CAMERA**





Hierarchy

- Create
- All

CameraRig

- Main Camera
- SpawnPoint1
- SpawnPoint2
- CompleteLevelArt
- Directional light
- Boundaries
  - Cliff (1)
  - Cliff (2)
  - Cliff (3)
- Ground
  - Dunes
  - Rocks
  - Cacti
  - Trees
- Military
  - OilField
  - Ruins
  - Helipad
- EventSystem
- GameManager
- MessageCanvas
- CompleteTank(Clone)
- CompleteTankExplosion(Clone)
- CompleteTank(Clone)
- CompleteTankExplosion(Clone)

Add

Components that are only objects cannot be multiplied.

Game Console

Maximize on Play Mute audio Stats Gizmos

Project

Create

Favorites

- Assets > Complete >
- Q Environment
- Q All Materials
- Q All Models
- Q All Prefabs
- Q All Scripts

Assets

- Animators
- AudioClips
- AudioMixer
- Complete
  - Animator
  - AudioMix
  - Prefabs
- Scenes
- Scripts
- Editor
- Fonts
- Materials
- Models
- Prefabs
- Scenes
- Scripts
- Sprites
- Standard As

1. Use the **Create** menu in the **Hierarchy** to  
create an **Empty GameObject** by choosing  
**Create Empty**
2. **Rename** the empty **GameObject** to  
**CameraRig**



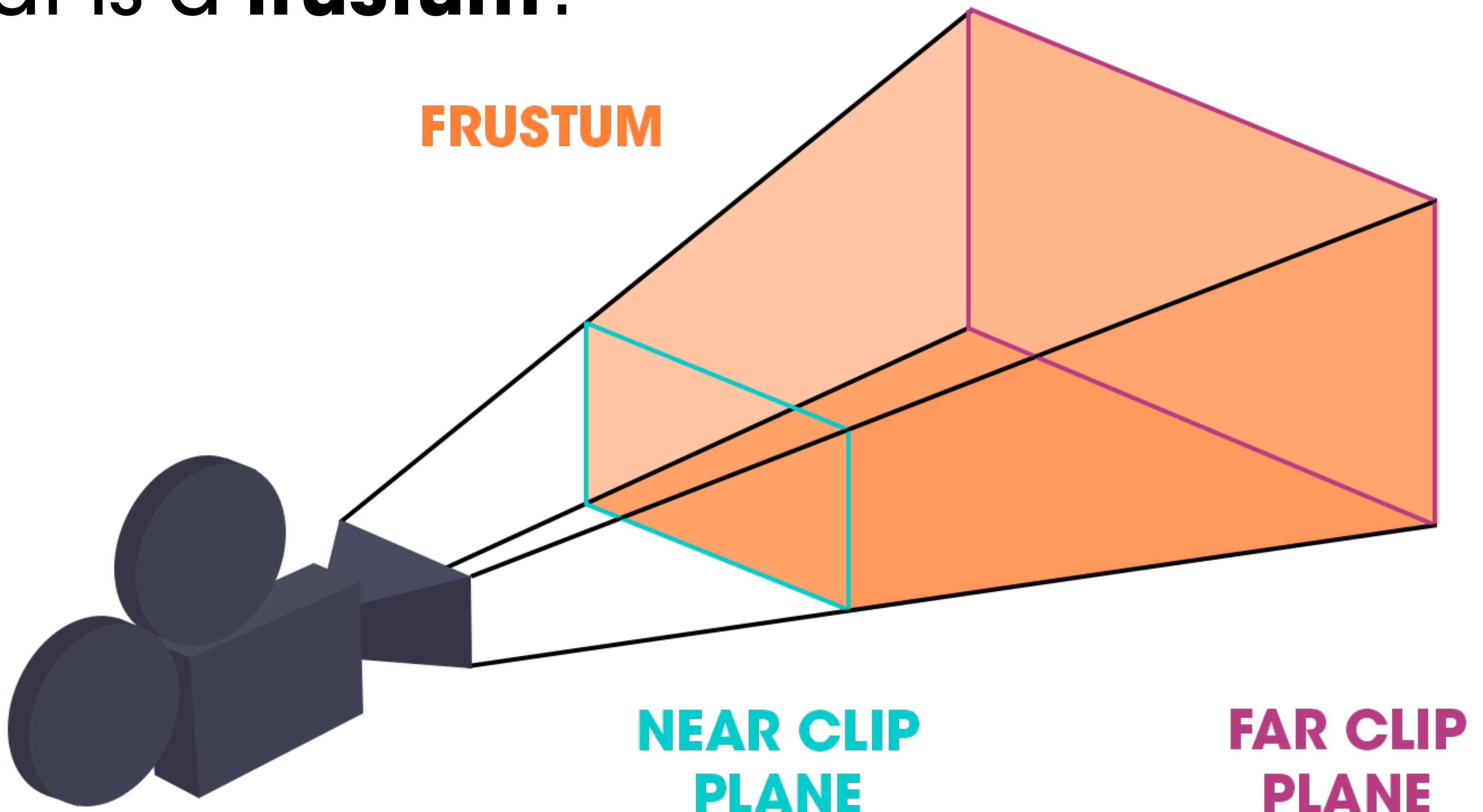
1. Reset its **Position** by clicking the Cog icon next to its **Transform** component and choosing **Reset Position**
2. Set the **Rotation** of the **CameraRig** to ( **40, 60, 0** )



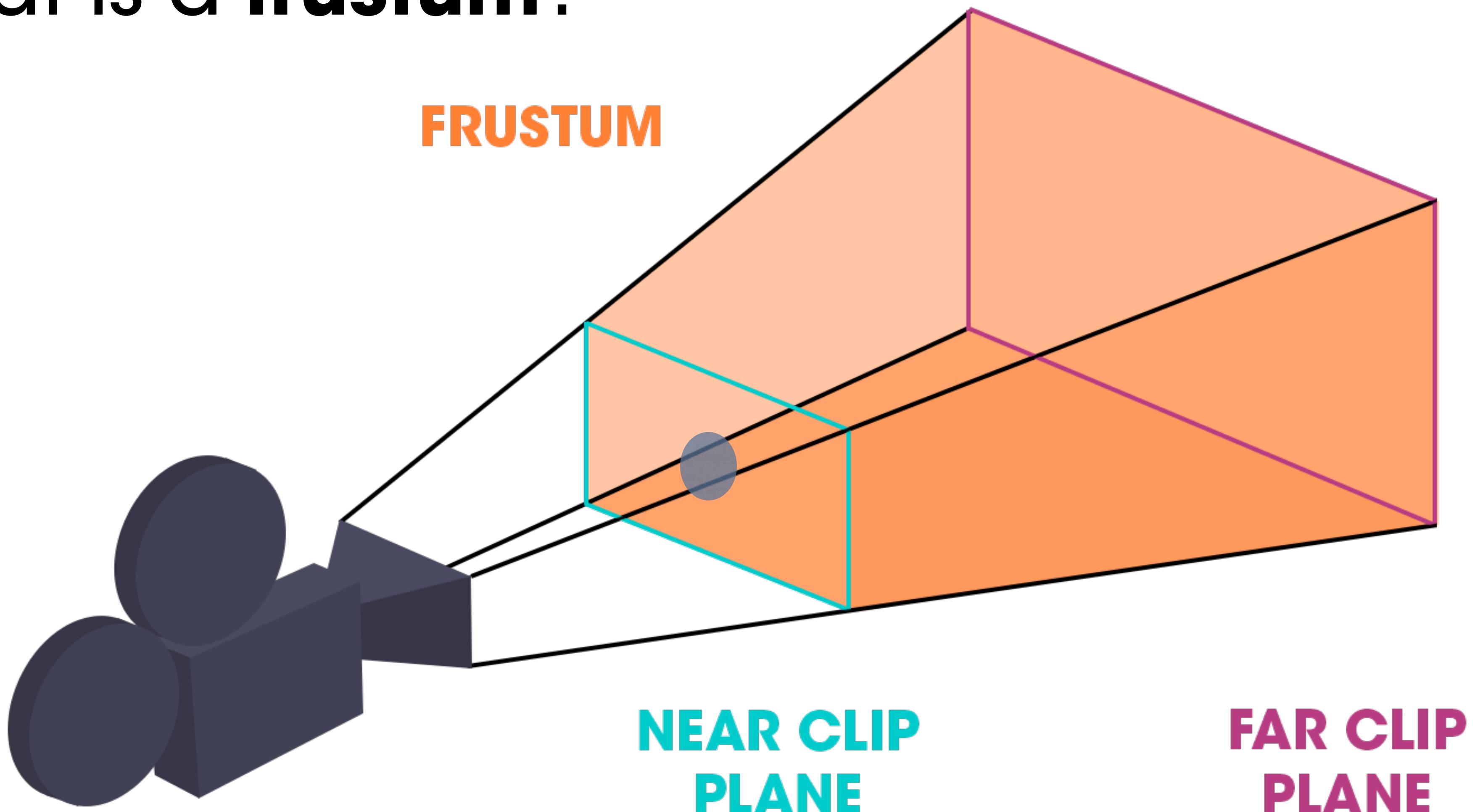
1. In the **Hierarchy** drag the **Main Camera** **GameObject** onto the **CameraRig** **GameObject** to make it a child
2. Set the **Position** of the **Main Camera** to **( 0, 0, -65 )**
3. Make sure the **Rotation** of the **Main Camera** is **( 0, 0, 0 )**



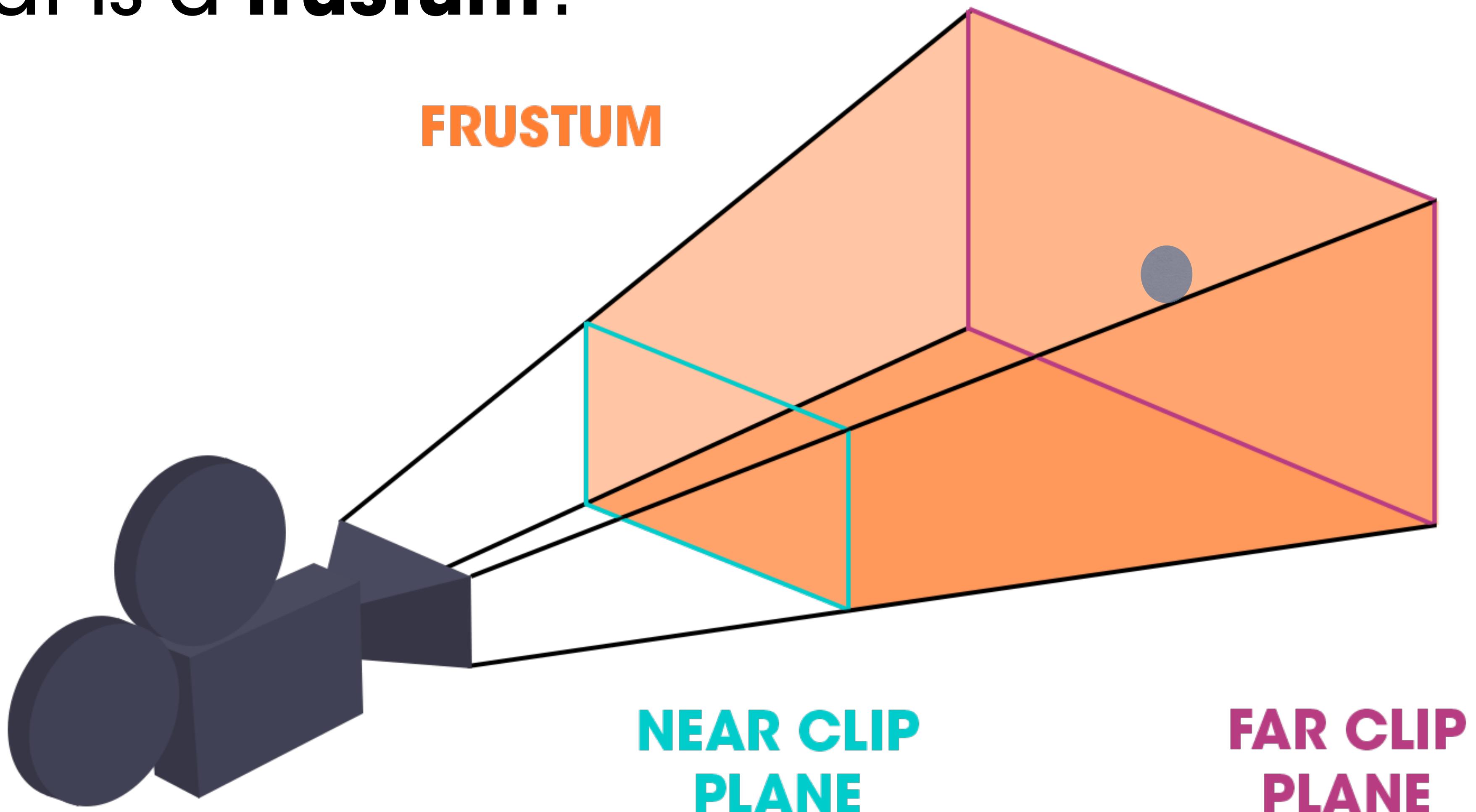
- What is a **frustum**?



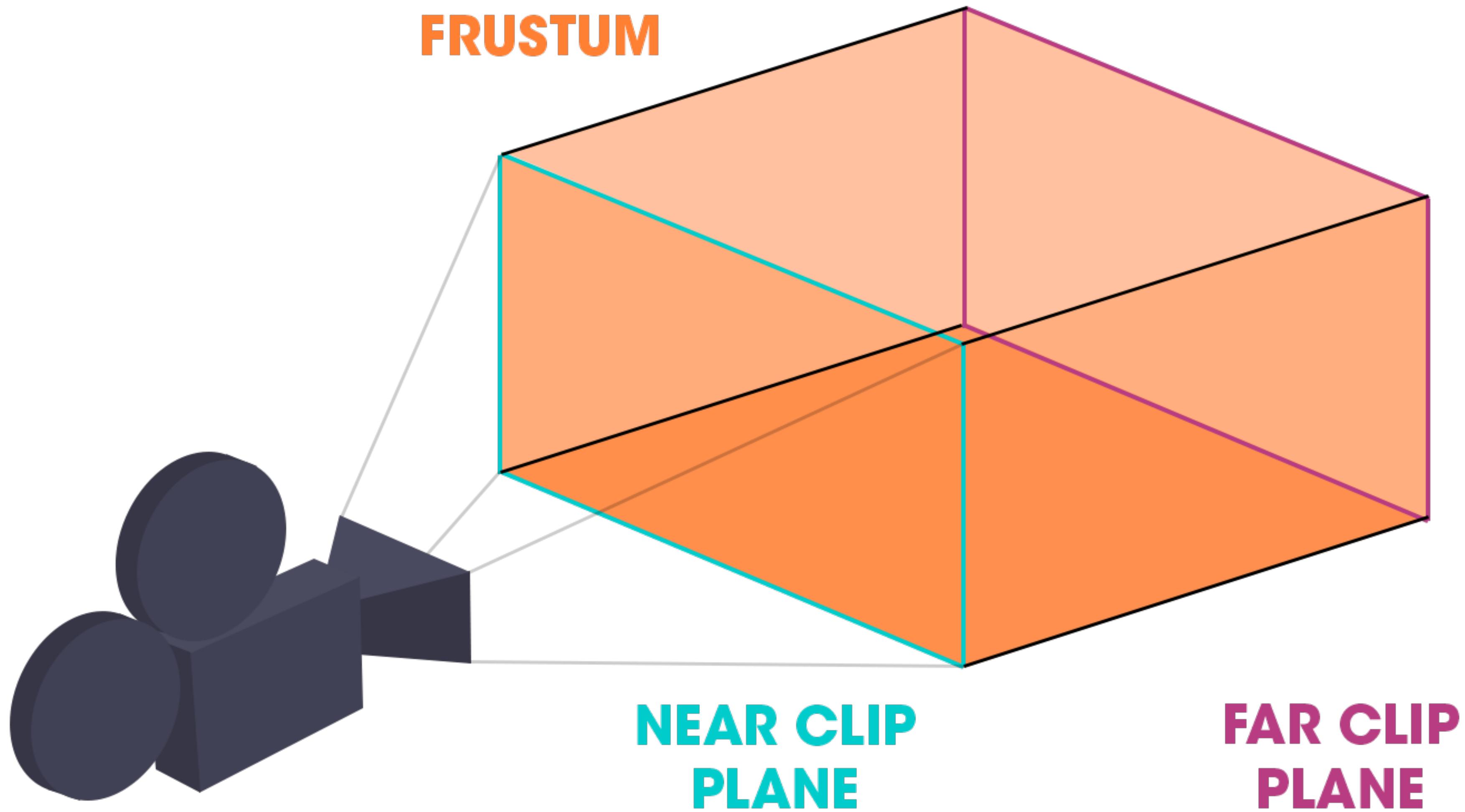
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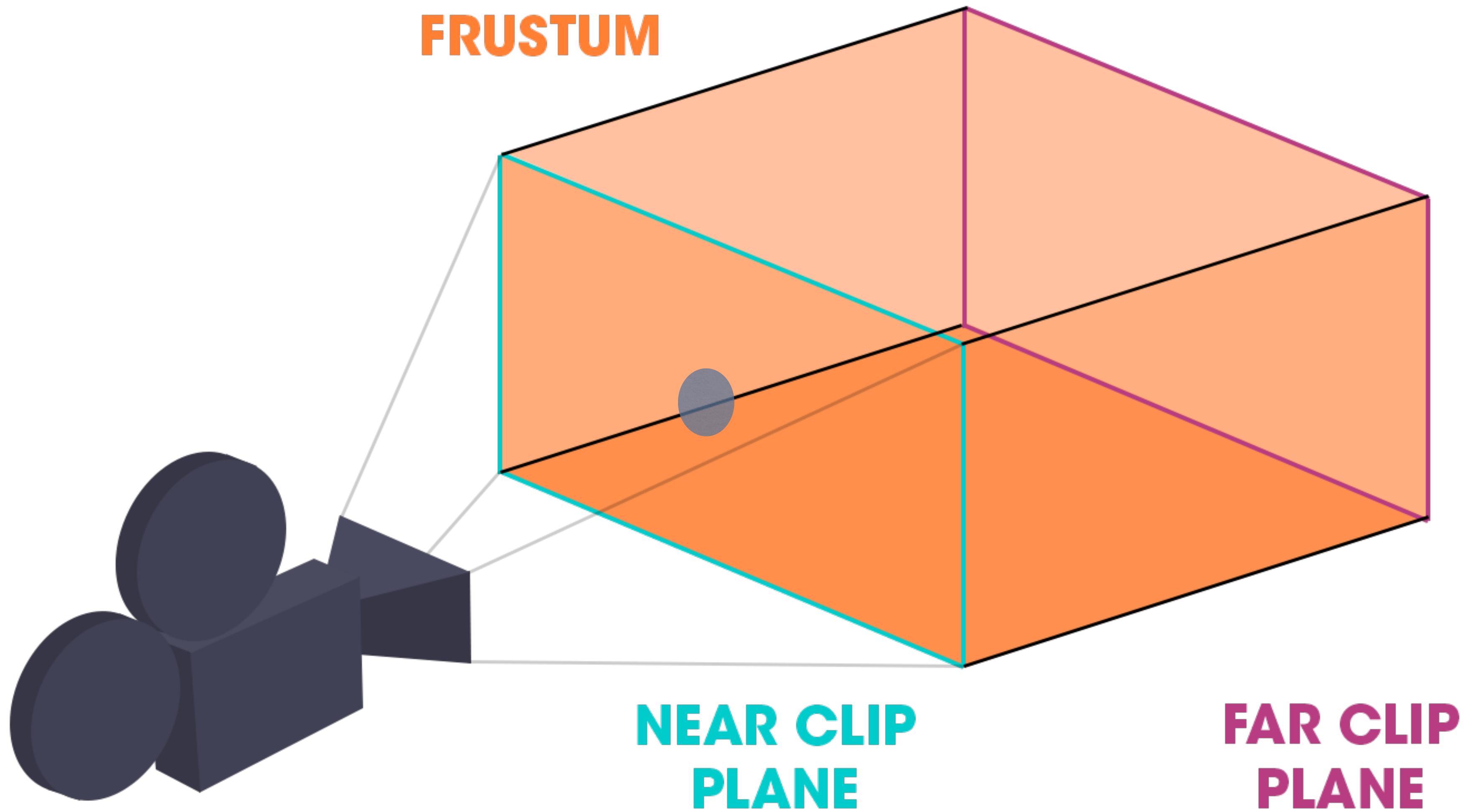
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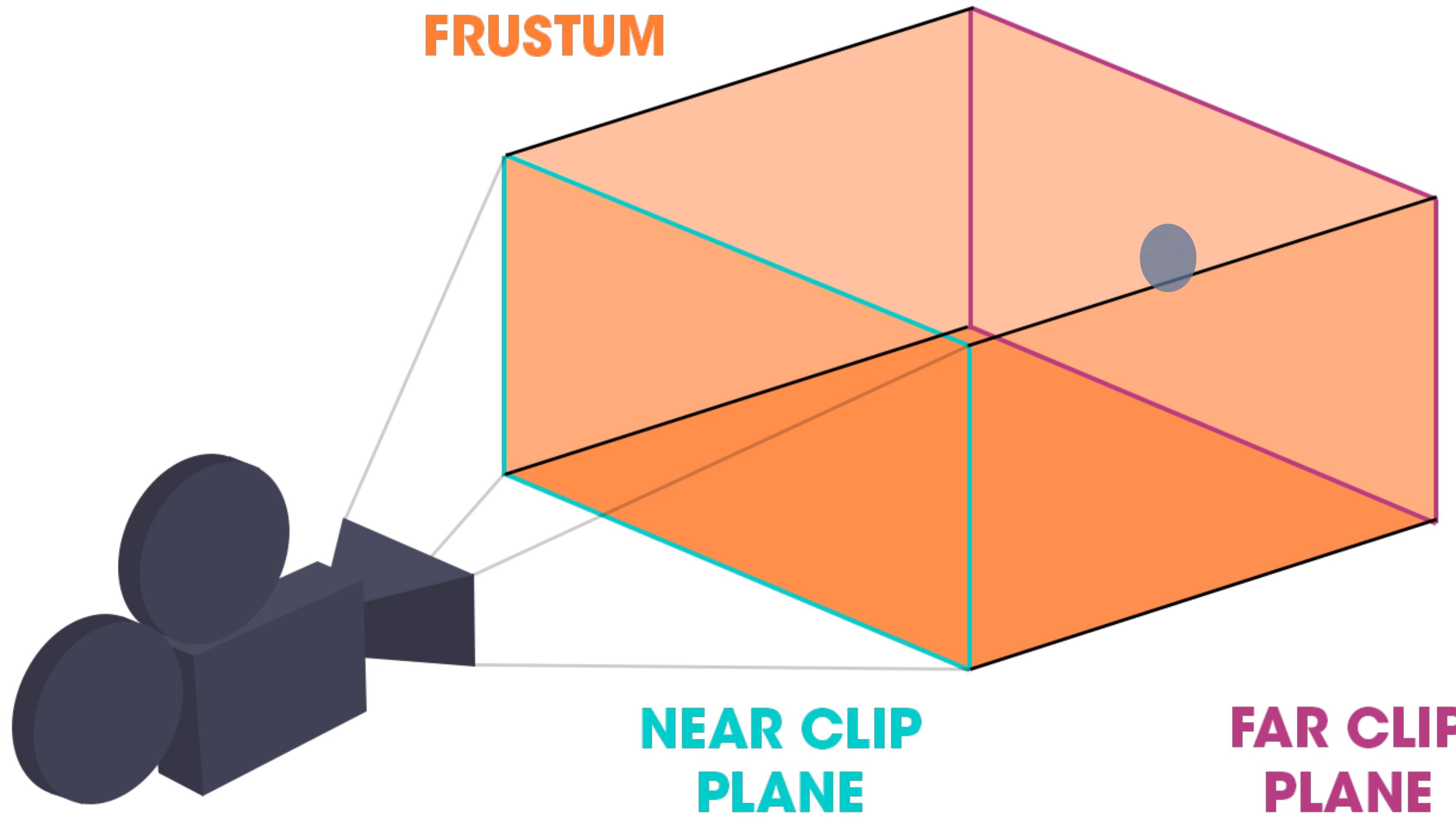
- What is an **orthographic camera**?



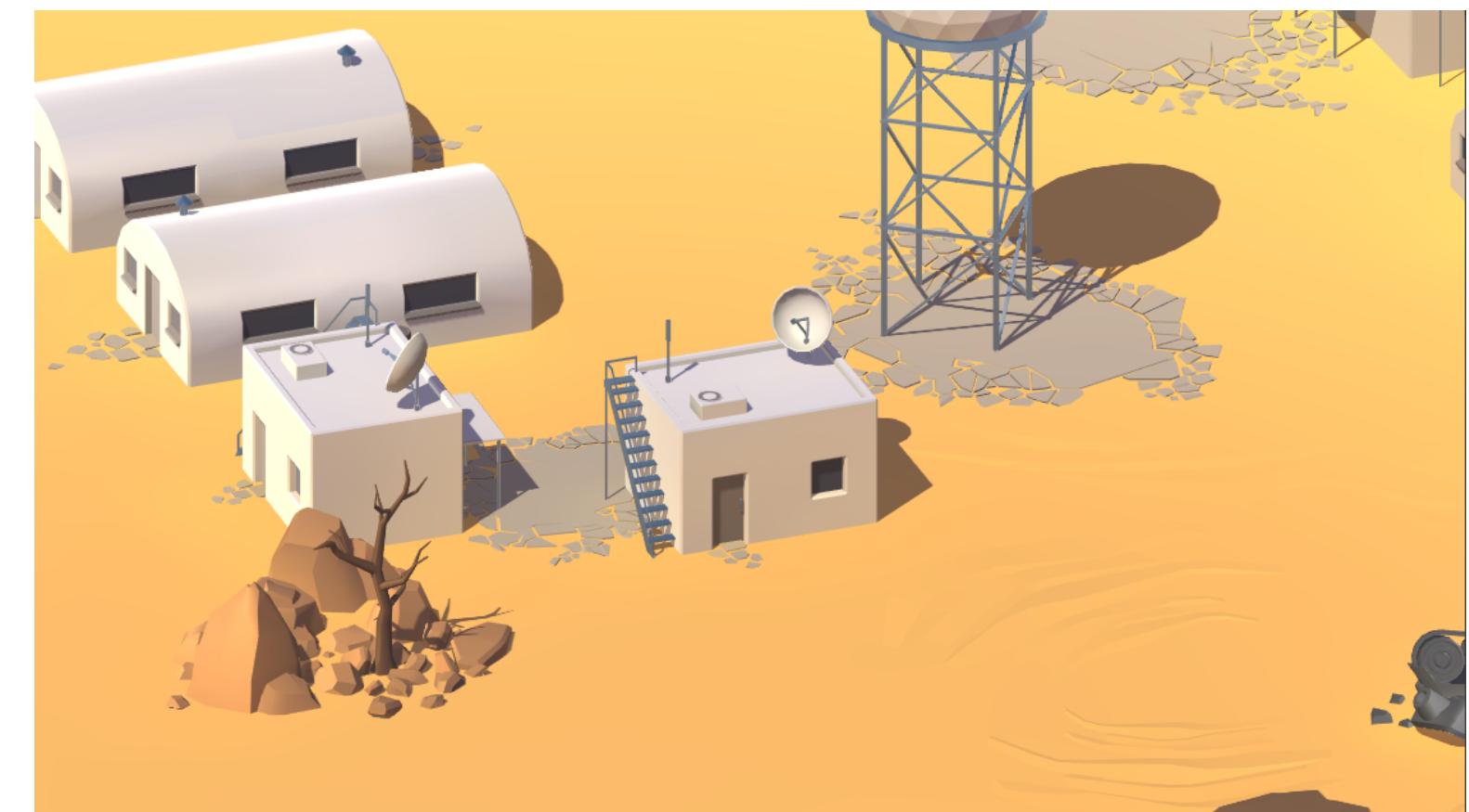
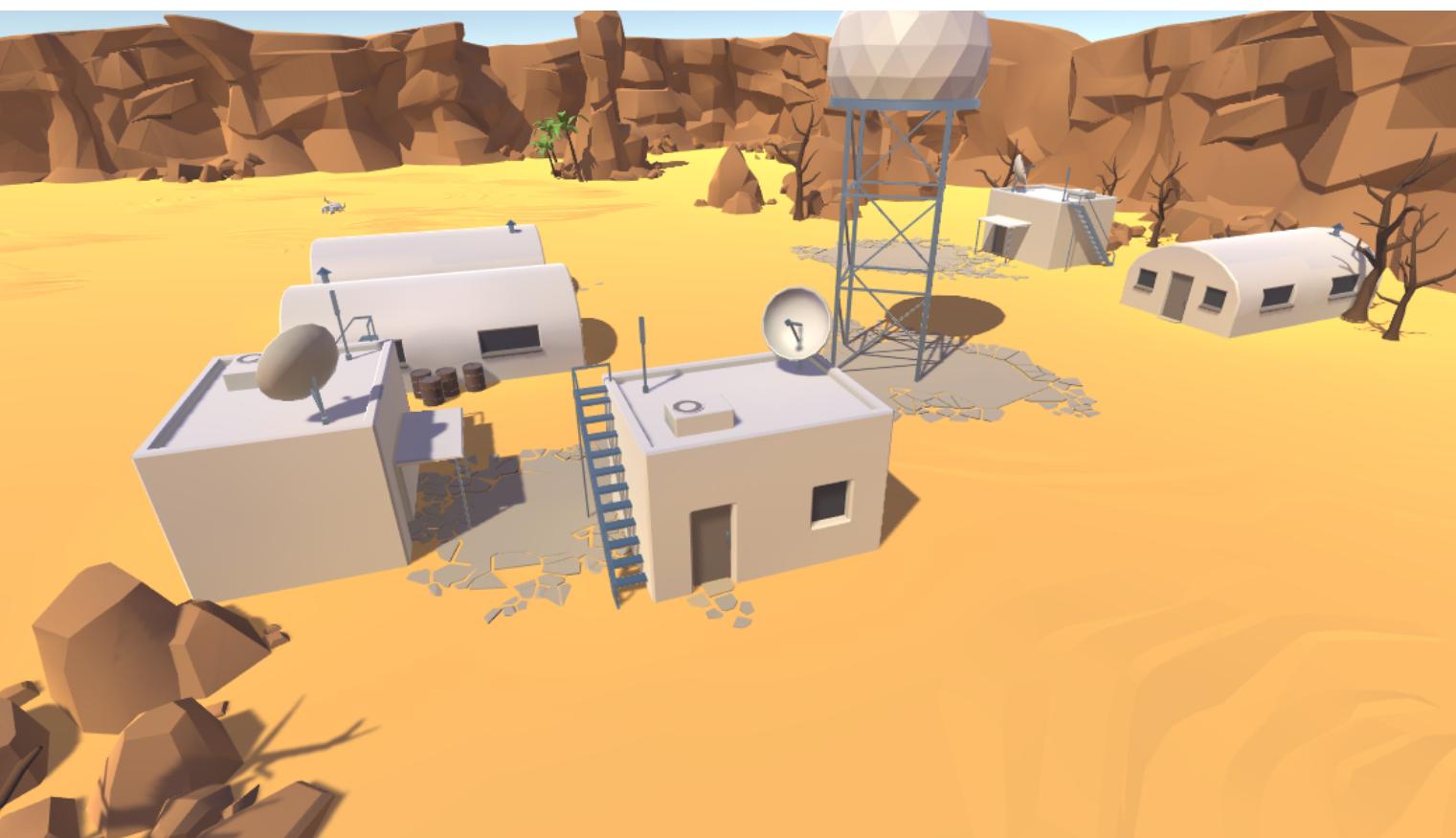
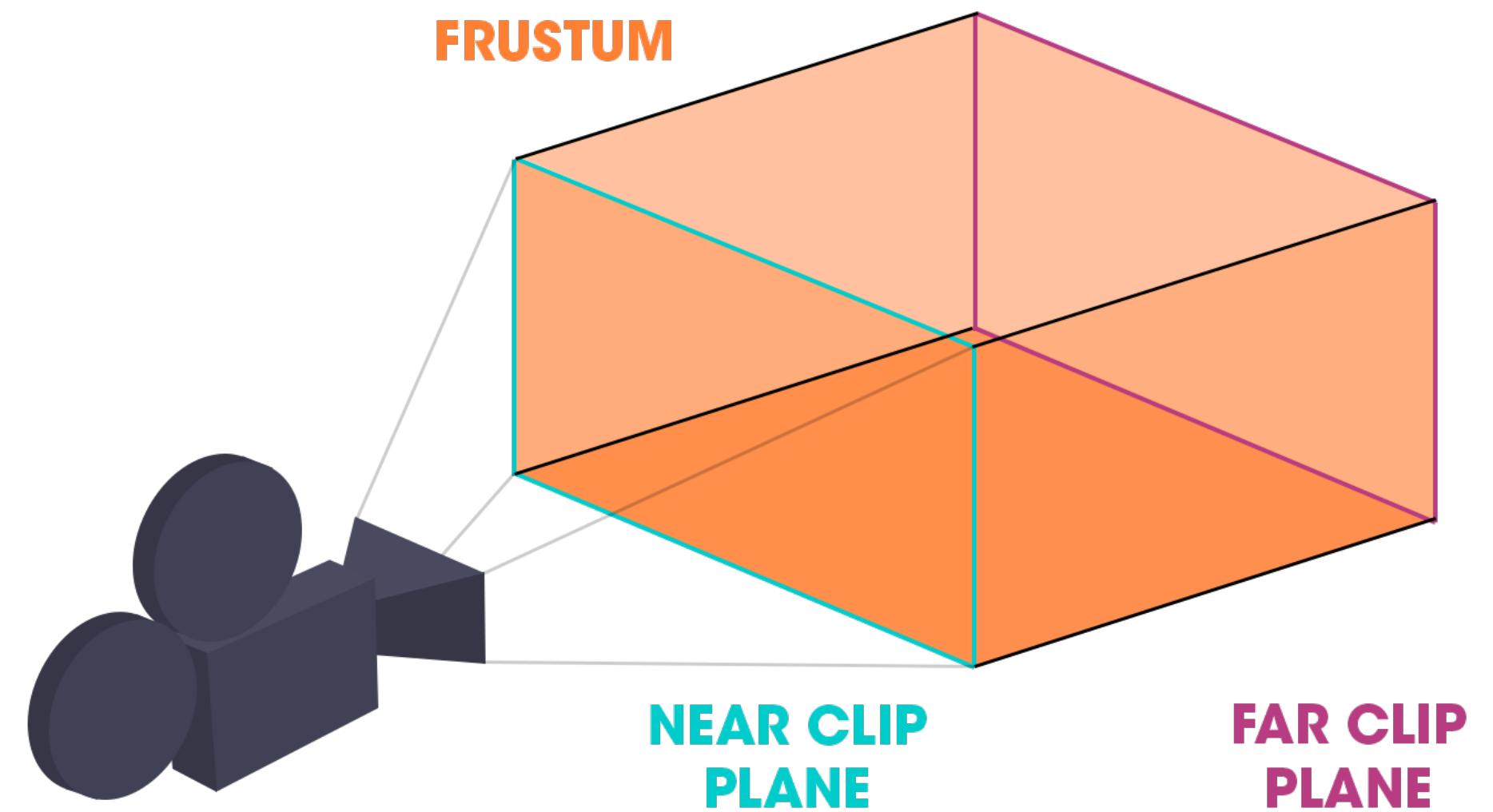
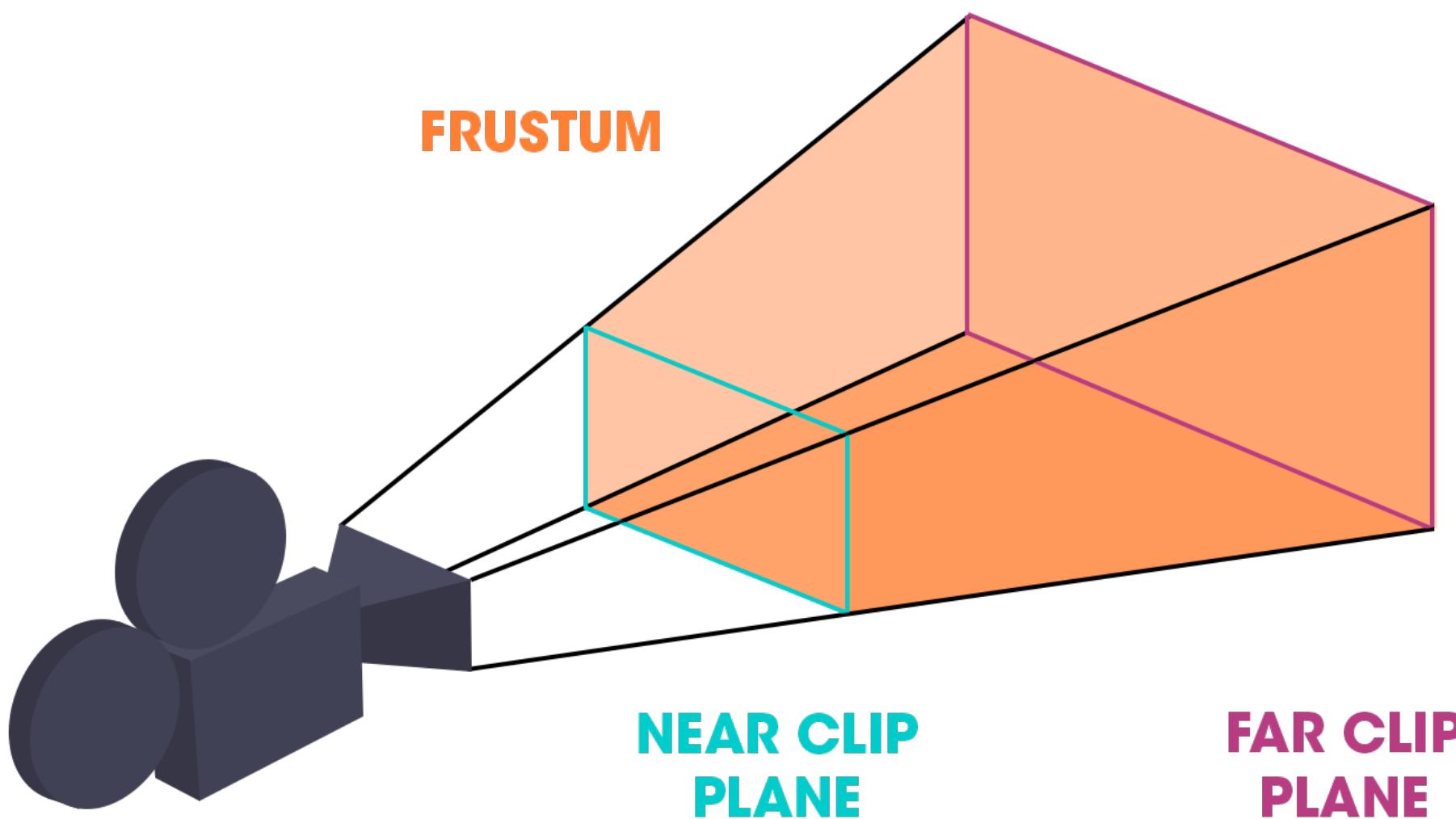
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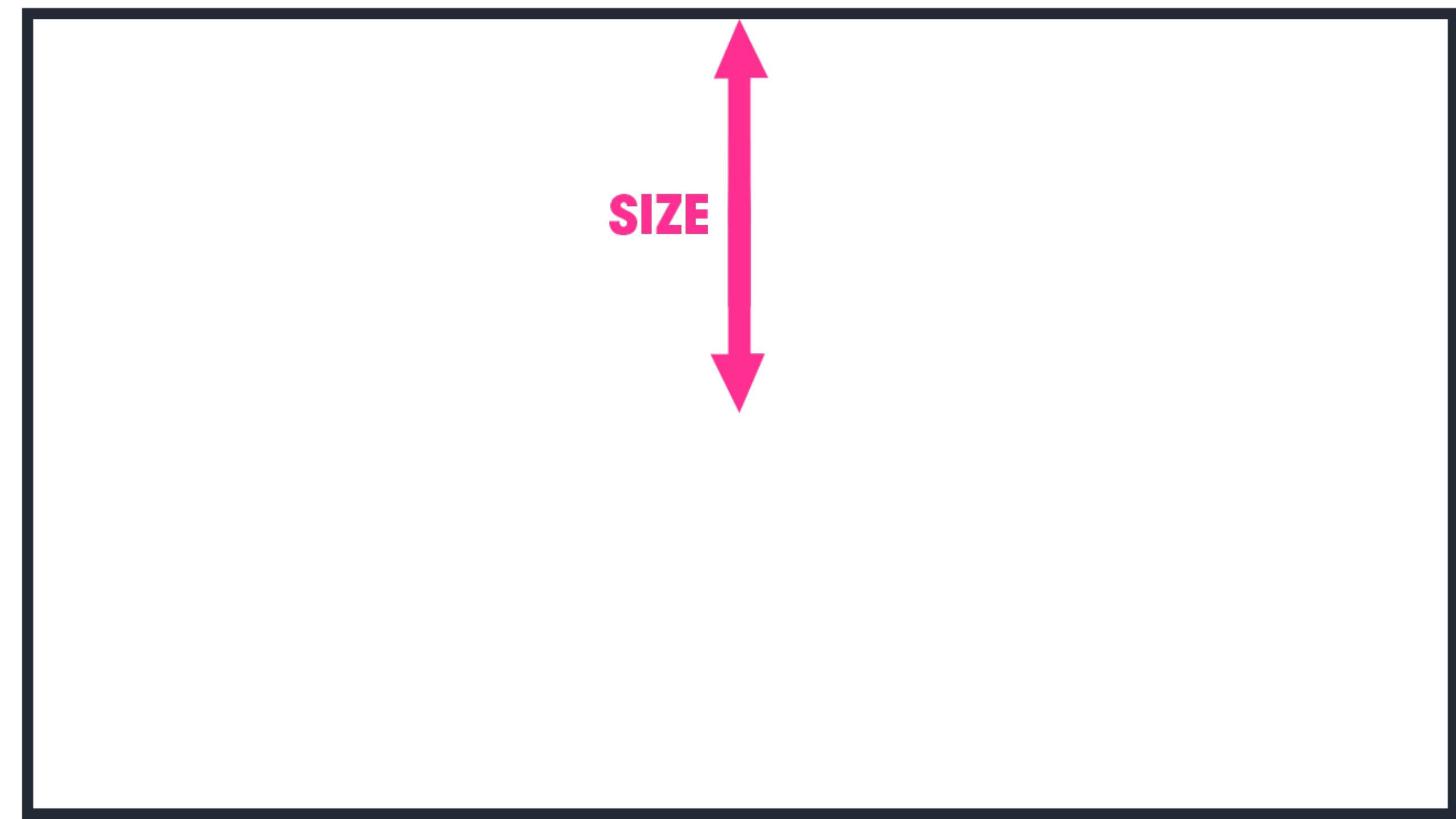
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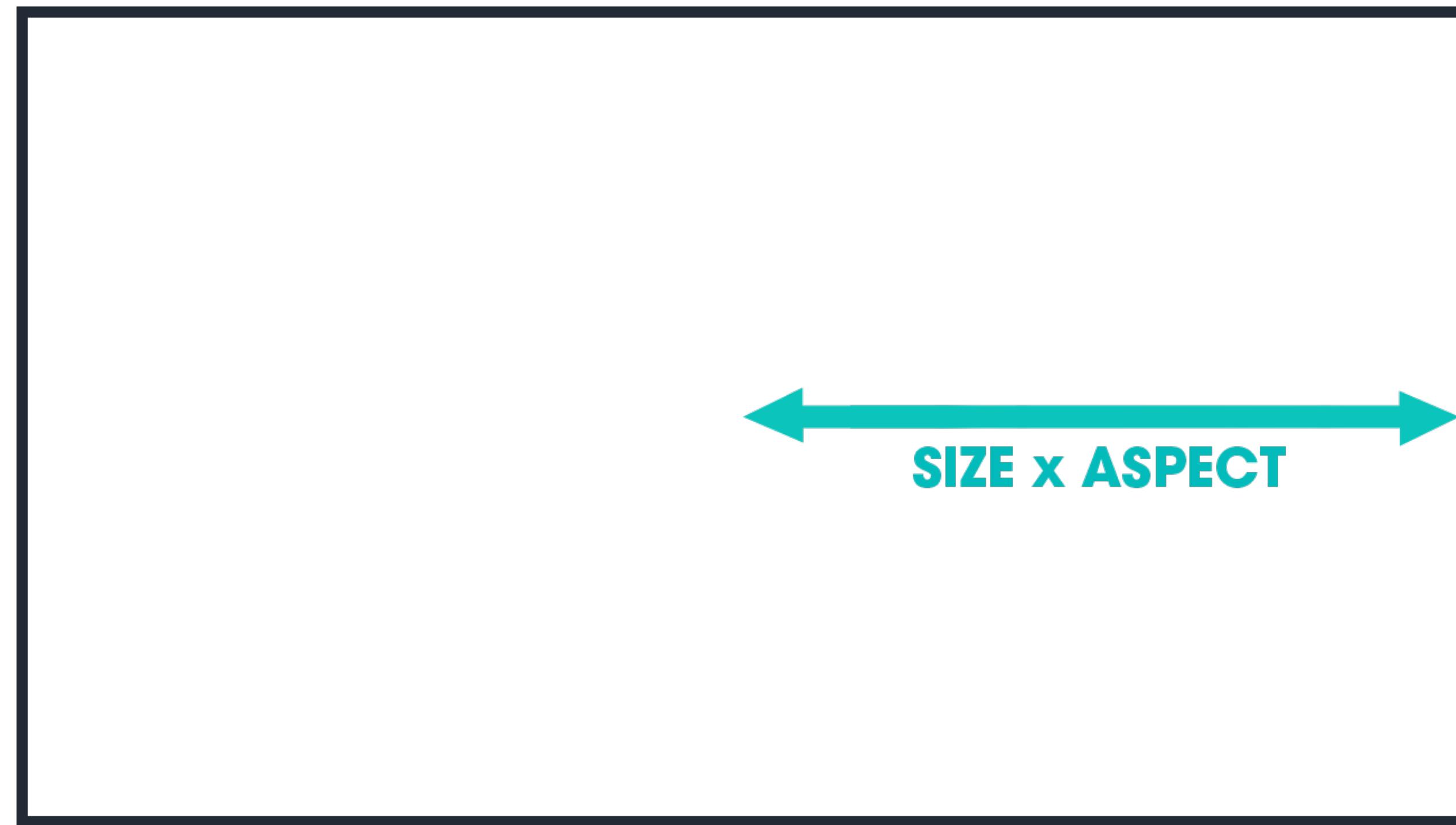
- What is an orthographic camera's **size**?



Remember: We **Zoom** by setting the **size**.



- What is a camera's **aspect**?



**1080p** means a screen is **1920 x 1080** pixels

1920 x 1080 is an **aspect ratio** of **16:9**

To find the aspect we divide - the **aspect** of 16:9 is **16 / 9 = 1.778**



## What should our camera do?



## What should our camera do?

- Follow the tanks



## What should our camera do?

- Follow the tanks
- Re-size (Zoom) to fit the tanks on screen



# CAMERA

PHASE 3 / 8



1. Find the **Scripts/Camera** folder
2. Drag and drop the **Camera Control** script onto the **CameraRig GameObject** in the **Hierarchy**
3. Double click on the script name on the Component to open it



# CAMERA FOLLOWING THE TANKS

PHASE 3 / 8



- I. Find the **Average** of the Tanks' positions
- II. Set the **CameraRig** to that **position** each frame

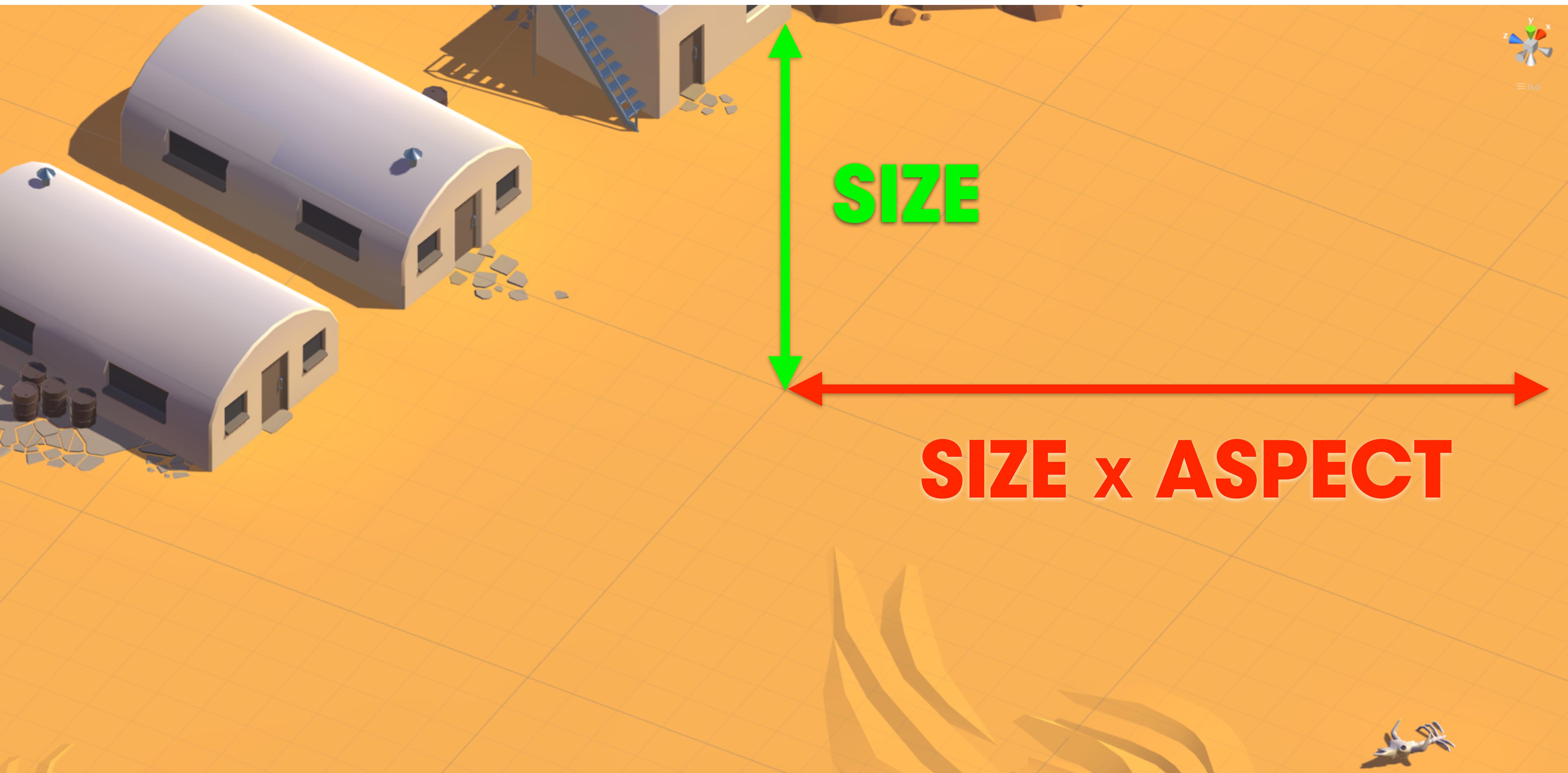


Following the tanks is easy!  
What about zoom?



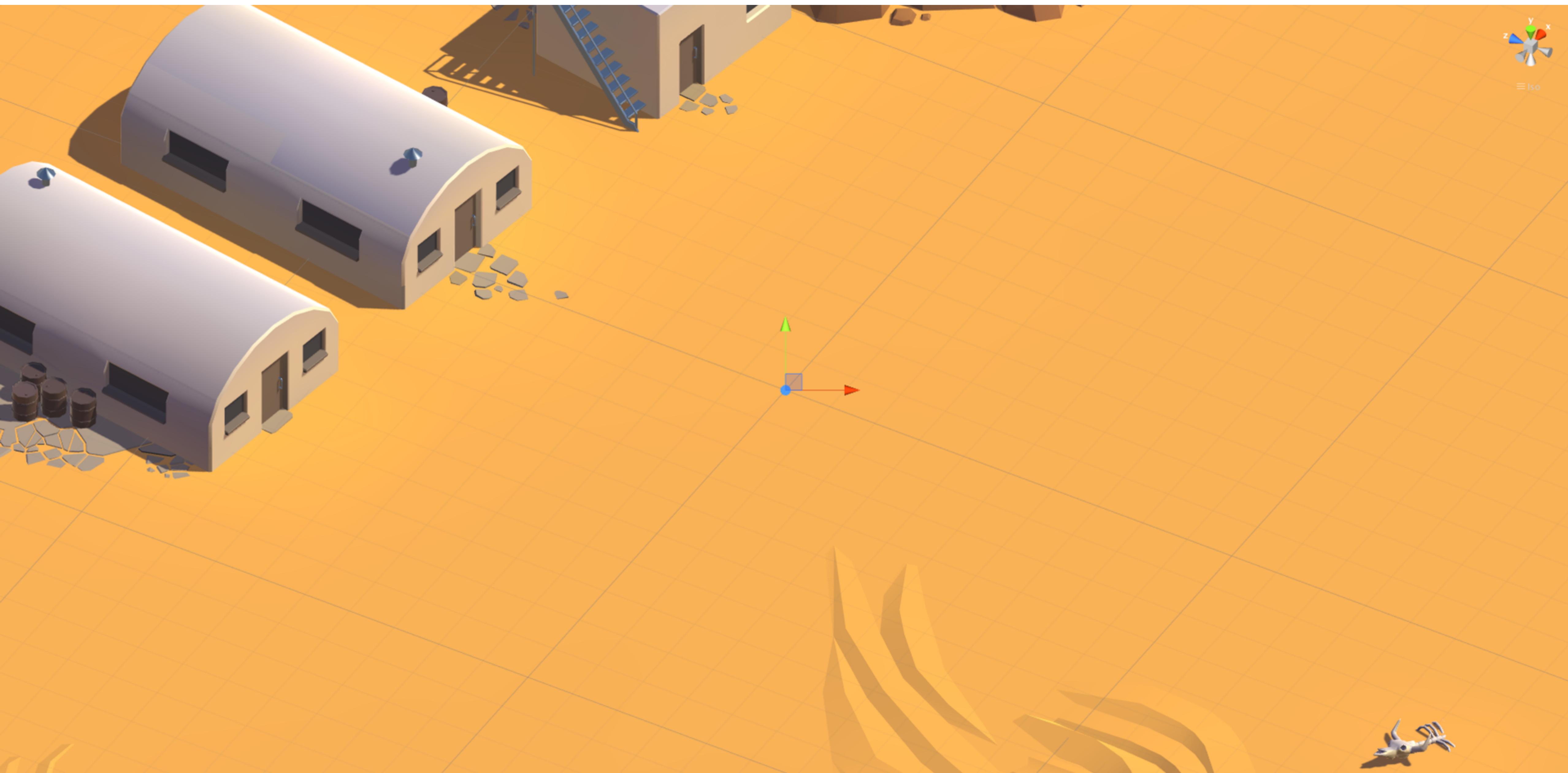
# CAMERA

PHASE 3 / 8



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PHASE 3 / 8



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PHASE 3 / 8



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PHASE 3 / 8



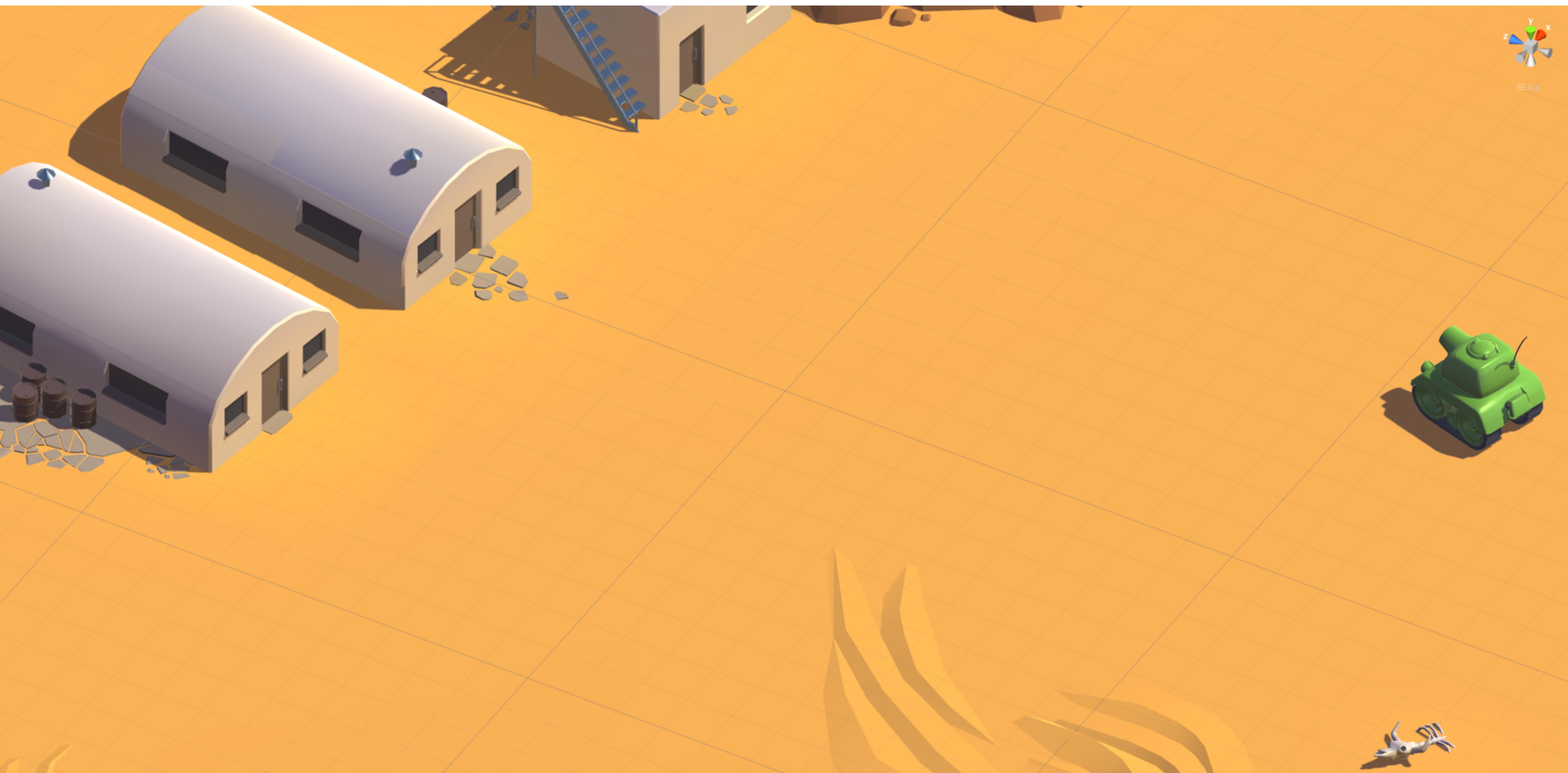
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PHASE 3 / 8



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PHASE 3 / 8



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PHASE 3 / 8



# CAMERA

PHASE 3 / 8



# CAMERA

PHASE 3 / 8



# CAMERA

PHASE 3 / 8



$$\frac{\text{DISTANCE}}{\text{ASPECT}} = \text{SIZE}$$

1. Select the **CameraRig** GameObject
2. Drag the **Tank** GameObject onto the name of the public variable **Targets** on the **Camera Control** (script) component



1. Press **Play** and give your game a test
2. Stop Play afterwards! (not pause)
3. **Save** the scene!



# **END OF PHASE THREE**

Fallen behind? Don't worry!

**File > Open Project > TrainingDayPhase4**



# PHASE 3 QUIZ

In a game object's Transform component on the Inspector, what does the property 'Position' display?

- a) The world space position
- b) The local space position
- c) The position relative to it's children
- d) The relationship between it's Scale and it's Euler angles rotation

With an orthographic camera, which of the following would have the effect of zooming in?

- a) Move the camera's position closer
- b) Decreasing the camera's orthographic size
- c) Increasing the camera's orthographic size
- d) Increasing the camera's aspect



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**SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST**

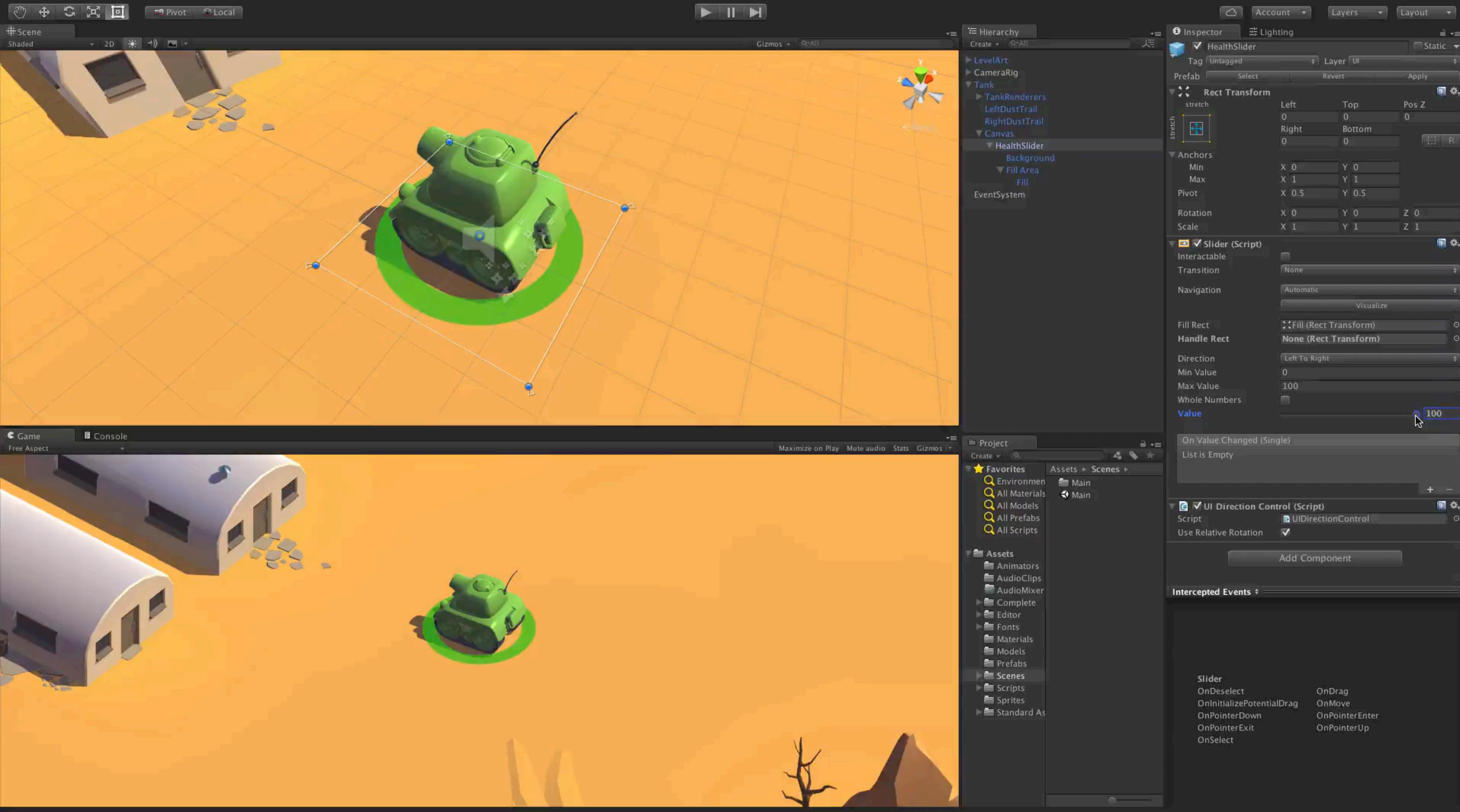




# **PHASE FOUR**

# **HEALTH**





1. Make sure the transform toggle above the Scene View is set to **Pivot** and not **Center**
2. Create a **Slider** using  
**GameObject > UI > Slider**  
from the top menu



1. Select the **EventSystem** GameObject
2. On the **Standalone Input Module** component  
change the **Horizontal Axis** to **HorizontalUI**
3. Set the **Vertical Axis** to **VerticalUI**
4. Select the **Canvas** GameObject
5. On the **Canvas Scaler** component change  
the **Reference Pixels per Unit** to **1**



1. On the **Canvas** component of the **Canvas** GameObject change the **Render Mode** to **World Space**



1. In the **Hierarchy** drag **Canvas** onto the **Tank** **GameObject** to make it a child
2. Select the **Canvas**, on the **RectTransform** component change **Position** to ( **0, 0.1, 0** )
3. Change the **Width** and **Height** to **3.5**
4. Change the **Rotation** to ( **90, 0, 0** )
5. **Save** the scene!



1. Expand the **Canvas** and all of it's children by Alt-clicking the arrow to its left
2. **Select the HandleSlideArea** and **delete** it
3. Multi-Select **Slider**, **Background**, **Fill Area** and **Fill**
4. **Click** on the **Anchor Presets** drop-down and  
**Alt-Click** on the **lower-right** preset to **stretch** the  
**GameObjects** over the entire canvas



1. Select the **Slider** GameObject
2. On the **Slider** component uncheck **Interactable**
3. Change the **Transition** to **None**
4. Change the **Max Value** and **Value** to **100**



1. Rename the **Slider** to **HealthSlider**
2. Select the **Background GameObject**
3. On the **Image** component use the **circle-select** to change the **Source Image** to **HealthWheel**
4. **Click on Color** to change the **alpha (A)** to **80**



1. Select the **Fill GameObject**
2. Set the **SourceImage** on the **Image** component to **HealthWheel**
3. Change the **alpha (A)** to **150**
4. Change the **Image Type** to **Filled**
5. Change the **Fill Origin** to **Left**
6. Uncheck **Clockwise**



1. In the **Scripts/UI** folder, find the **UIDirectionControl** script
2. Select the **HealthSlider** GameObject and add the **UIDirectionControl** script to it
3. Select the **Tank** GameObject and click **Apply** at the top of the Inspector to update the prefab



1. Find the **TankExplosion** prefab in the **Prefabs** folder. Drag it into the **Hierarchy**
2. Add an **AudioSource** component to the **TankExplosion** **GameObject**
3. Assign the **TankExplosion** **Audio Clip** to the **Audio Source**, and uncheck **Play On Awake**



1. On the **TankExplosion** GameObject, click **Apply** to update the prefab
2. Delete the **TankExplosion** prefab from the **Hierarchy**
3. Find the **TankHealth** script in the **Scripts/Tank** folder.  
Drag it onto the **Tank** GameObject
4. Double-click on the **TankHealth** script to open it for editing



## Script Checklist

1. SETUP TANK DAMAGE
2. UPDATE UI BASED ON TANK HEALTH
3. TANK DEACTIVATION



1. Select the **Tank** GameObject
2. Drag and drop the **HealthSlider** GameObject from the **Hierarchy** onto the **HealthSlider** public variable of the **TankHealth** script
3. Do the same with the **Fill** GameObject for the **Fill Image** public variable
4. Drag & Drop the **TankExplosion** prefab onto the **Explosion Prefab** public variable



1. At the top of the Inspector, **Apply** the changes to the **Tank** prefab.
2. **Save** the scene!



# **END OF PHASE FOUR**

Fallen behind? Don't worry!

**File > Open Project > TrainingDayPhase5**



# PHASE 4 QUIZ

What component do all UI game objects have that most game objects do not?

- a) Canvas
- b) Canvas Scaler
- c) Rect Transform
- d) Event System

To switch off a Game Object, which code syntax is correct?

- a) gameObject.SetActive(false);
- b) gameObject.SetEnabled(false);
- c) gameObject.enabled = false;
- d) gameObject.activated = false;

How do you stop the player from being able to drag to adjust the value of a slider?

- a) Delete the Handle Slide Area game object
- b) Change the Slider's Transition to None
- c) Delete the Background game object
- d) Uncheck Interactable on the Slider component



# PHASE 4 QUIZ

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- c) **Rect Transform**
- d) Event System

To switch off a Game Object, which code syntax is correct?

- a) gameObject.SetActive(false);
- b) gameObject.SetEnabled(false);
- c) gameObject.enabled = false;
- d) gameObject.activated = false;

How do you stop the player from being able to drag to adjust the value of a slider?

- a) Delete the Handle Slide Area game object
- b) Change the Slider's Transition to None
- c) Delete the Background game object
- d) Uncheck Interactable on the Slider component



# PHASE 4 QUIZ

What component do all UI game objects have that most game objects do not?

- a) Canvas
- b) Canvas Scaler
- c) Rect Transform
- d) Event System

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**LUNCH**  
**EATIN' TIME**



# TRAINING DAY SCHEDULE

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**08 - AUDIO**

**SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST**



# PHASE FIVE SHELLS





1. Find the model named **Shell** in the **Models** folder. **Drag** it into the **Hierarchy**
2. **Add** a **Capsule Collider** component to the **Shell GameObject**
3. Check **Is Trigger** on the **Capsule Collider**



- 1. Set the Direction to Z-Axis**
- 2. Change the Center of the Capsule Collider  
to ( **0**, **0**, **0.2** )**
- 3. Change the Radius of the Capsule Collider  
to **0.15** and the Height to **0.55****
- 4. Add a Rigidbody component to the Shell  
GameObject**



1. Find the prefab **ShellExplosion** in the **Prefabs** folder. Drag it onto the **Shell** GameObject to make it a child
2. Add an  **AudioSource** component to the **ShellExplosion** GameObject



1. Use the **circle-select** to set **AudioClip** of the  **AudioSource** to **ShellExplosion**
2. Uncheck **Play On Awake** on the  **AudioSource**



- 1. Reselect the Shell GameObject**
- 2. Add a Light Component**

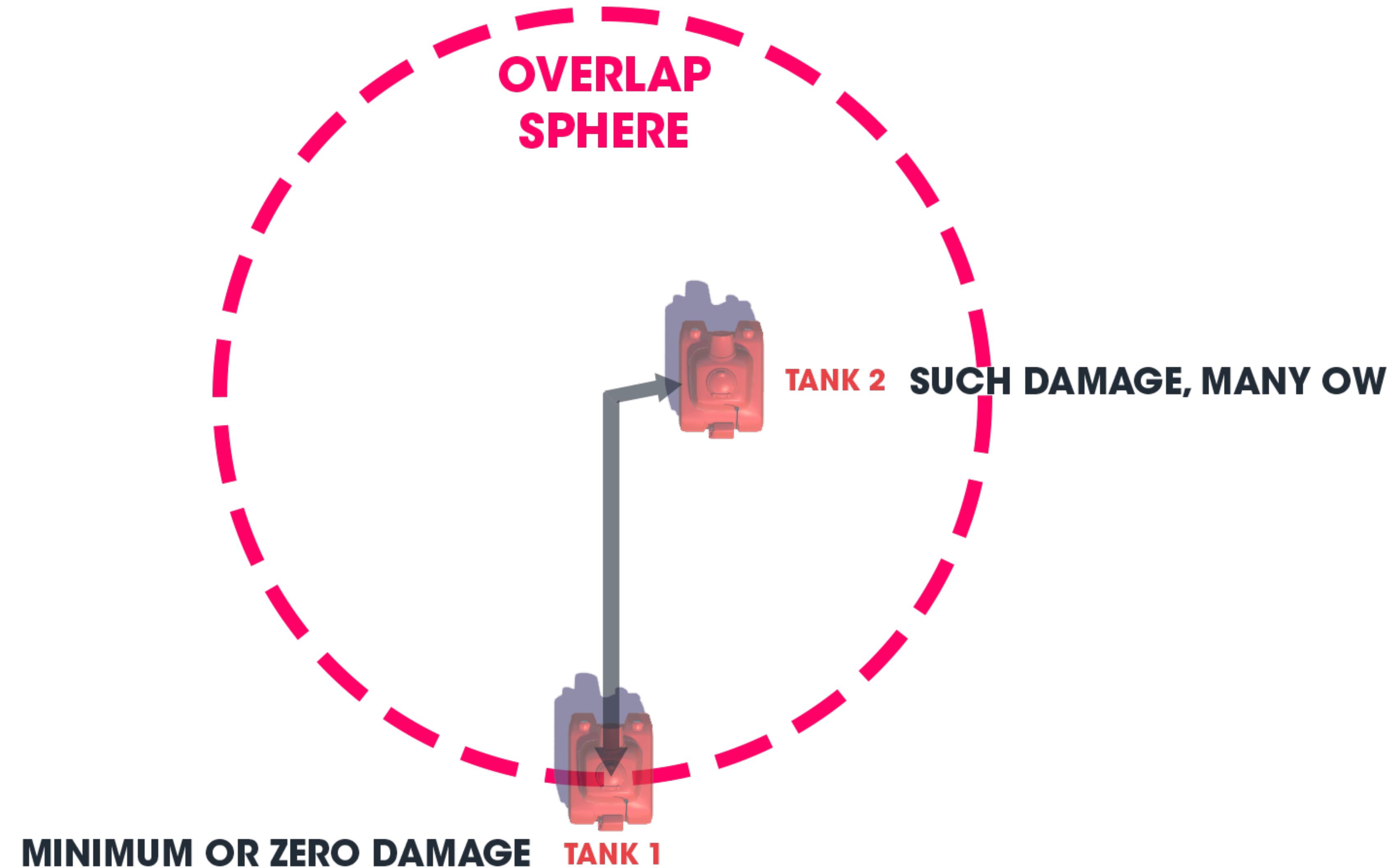


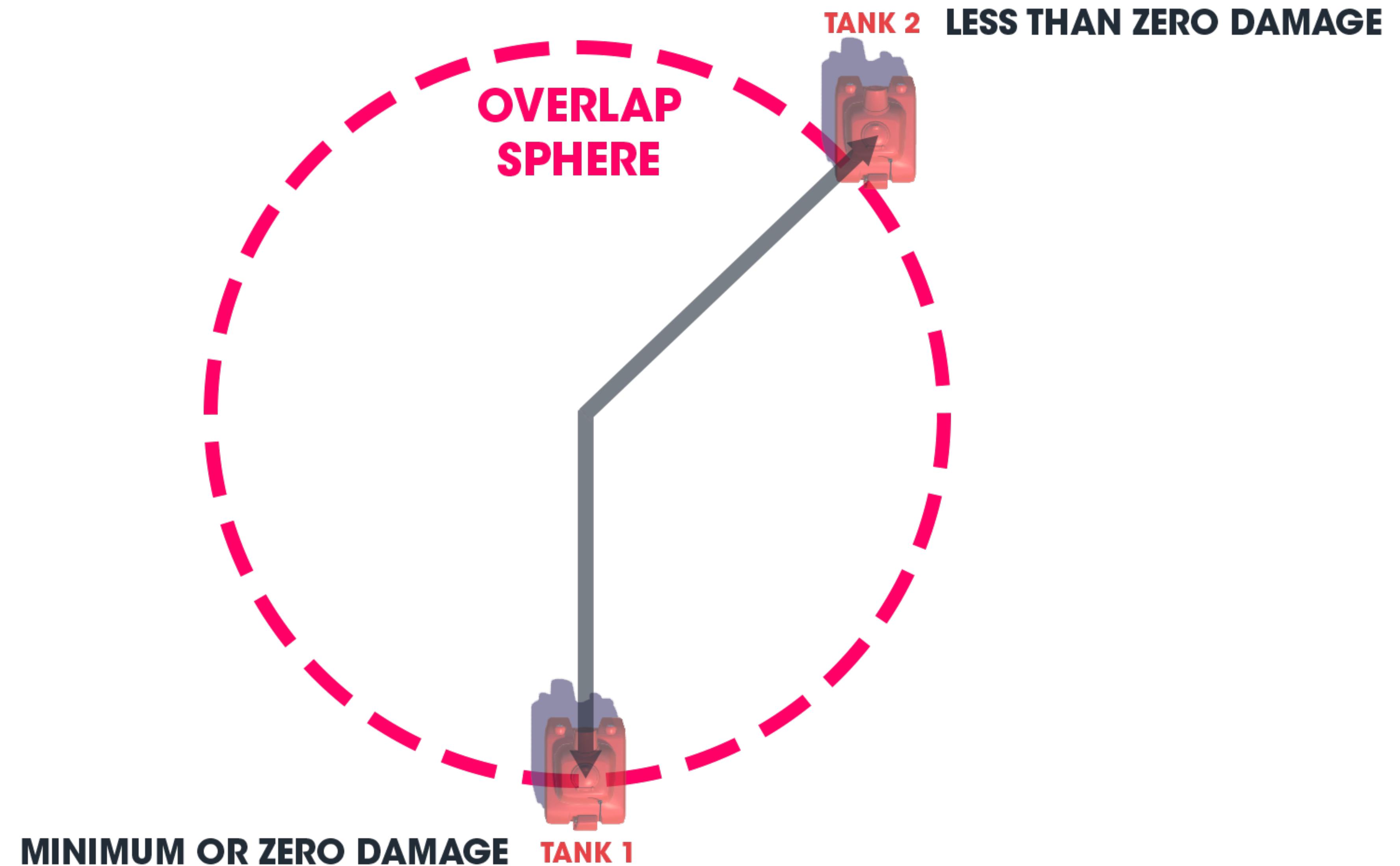
1. In the **Scripts/Shell** folder, find the **ShellExplosion** script, drag it onto the **Shell** **GameObject** in the **Hierarchy**
2. Double click on the **ShellExplosion** script to open it for editing



# SHELLS

PHASE 5 / 8





## Script Checklist

1. FIND TANKS TO AFFECT
2. APPLY DAMAGE TO AFFECTED TANKS
3. APPLY FORCE TO AFFECTED TANKS
4. PLAY SOUND AND PARTICLE EFFECTS
5. TIDY REMAINING GAME OBJECTS



1. With the **Shell** GameObject still selected **drag** the child GameObject called **ShellExplosion** onto the **Explosion Particles** and **Explosion Audio** public variables
2. Set the **Tank Mask** public variable to **Players**
3. Drag the **Shell** GameObject to the **Prefabs** folder in the **Project** panel to save it as a prefab



- 1. Delete the Shell GameObject from the Hierarchy**
- 2. Save the scene!**



# **END OF PHASE FIVE**

Fallen behind? Don't worry!

**File > Open Project > TrainingDayPhase6**



# PHASE 5 QUIZ

What type does the Physics.OverlapSphere function return?

- a) Collider[ ]
- b) Transform[ ]
- c) Rigidbody[ ]
- d) GameObject[ ]

What must be changed in the Inspector of a Capsule Collider for OnTriggerEnter to be called for that collider?

- a) A trigger material must be used
- b) The center must be offset
- c) The radius must be sufficiently small that it is less than the offset's distance
- d) The Is Trigger checkbox must be checked

Why is there an f after some numbers in code?

- a) The f replaces the decimal place when writing numbers less than 1
- b) The f stands for figure and tells the compiler to keep the number constant
- c) The f stands for forbidden, telling the compiler never to use them. like ever.
- d) The f stands for float, and tells the compiler to treat it as a floating point number



# PHASE 5 QUIZ

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**SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST**



# PHASE SIX

# SHOOTING





1. **Select the Tank GameObject in the Hierarchy**
2. **Right-click** on the **Tank GameObject** and choose **Create Empty**
3. **Rename** the child **GameObject** to **FireTransform**
4. Set the **Position** of **FireTransform** to ( **0, 1.7, 1.35** )
5. Set the **Rotation** of **FireTransform** to ( **350, 0, 0** )



1. **Right-click on Canvas in the Hierarchy and choose UI > Slider**
2. Rename the new **Slider** to **AimSlider**
3. Alt-click the arrow to the left of **AimSlider** to **Expand** the **GameObject** so that its **children** are visible in the **Hierarchy**
4. **Delete the Background and Handle Slide Area** **GameObjects**



1. Reselect the **AimSlider** GameObject and find the **Slider** component in the **Inspector**
2. Uncheck **Interactable**
3. Set the **Slider** component's **Transition** to **None**
4. Set **Direction** to **Bottom To Top**
5. Set the **Min Value** to **15**
6. Set the **Max Value** to **30**



1. Multi-Select the **AimSlider** and **Fill Area** **GameObjects**
2. In their **Rect Transform** components **click** on the **Anchor Presets** drop down and **alt-click** the **lower-right** option to **Stretch** the **GameObjects** vertically and horizontally over the canvas



1. Expand **Fill Area** and select the **Fill**
2. On the **Rect Transform**, set **Height** to **0** to remove offsets from the parent Rect
3. On the **Fill GameObject**, for the **Image** component use the **circle-select** button to change the **Source Image** to **Aim Arrow**



1. Select the **AimSlider** GameObject
2. Use the **Rect Tool (T)** to drag the Left / Right bounds of the Rect so that its as narrow as the Tank
3. Drag the **AimSlider** forward & up from the Tank, then drag out the top edge to make a longer slider
4. Our values are **(1, -9, -1, 1, 3)**



1. Find the **TankShooting** script in the **Scripts/Tank** folder
2. Drag and drop it onto the **Tank GameObject** in the **Hierarchy**
3. Double-click on the **TankShooting** script in the **Project** panel to open it for editing



## Script Checklist

1. CHECK FIRE BUTTON STATE
2. UPDATE FIRING CHARGE
3. INstantiate SHELL WHEN BUTTON RELEASED  
OR AT MAXIMUM CHARGE



1. Find the **Shell** prefab in the **Prefabs** folder and  
**drag** it onto the **Shell** public variable
2. Find the **FireTransform** child GameObject and  
**drag** it onto the **FireTransform** public variable
3. Find the **AimSlider** GameObject which is a  
child of the **Canvas** GameObject.  
**Drag** it onto the **AimSlider** public variable



**1. Find the second Audio Source on the Tank GameObject.**

This is the one with no clip assigned as well as  
**Loop and Play On Awake** unchecked

**2. Drag and drop the name of this Audio Source onto the Shooting Audio public variable of the TankShooting script**



1. Use the **circle-select** button to set the **Charging Clip** variable to **ShotCharging**
2. Likewise use the **circle-select** button to set the **Fire Clip** variable to **ShotFiring**
3. Ensure the **Tank GameObject** is still selected and click **Apply** at the top of the Inspector to update the prefab



1. The **Tank** is now finished! Give it a test!
2. MAKE SURE THAT ALL CHANGES ARE APPLIED  
to the **Tank** prefab by pressing **Apply** at the  
top of the **Tank** GameObject's **Inspector**
3. Delete the **Tank** GameObject from the scene
4. Save the scene!



# **END OF PHASE SIX**

Fallen behind? Don't worry!

**File > Open Project > TrainingDayPhase7**



# PHASE 6 QUIZ

What component is used to create the visual parts of a UI slider?

- a) Image
- b) Sprite
- c) Slider
- d) It must be done with a custom script

Which of the following functions returns true whenever an input button is held?

- a) Input.GetButton
- b) Input.GetButtonDown
- c) Input.GetButtonUp
- d) Input.GetAxis

A Rigidbody's velocity is of which type?

- a) float
- b) Transform
- c) Vector3
- d) Velocity



# PHASE 6 QUIZ

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- c) **Vector3**
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**07 - GAME MANAGERS**

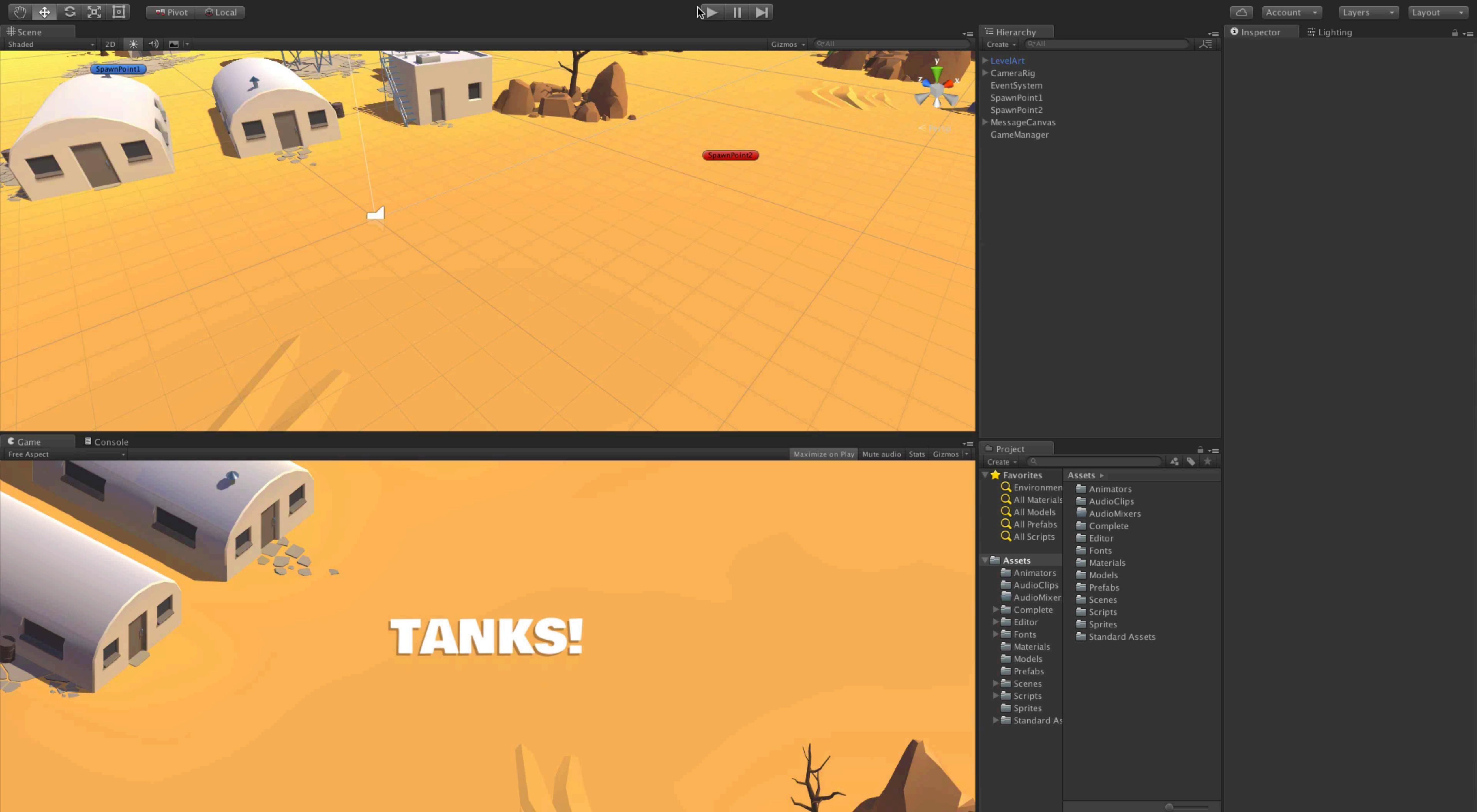
**08 - AUDIO**

**SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST**



# PHASE SEVEN MANAGERS





1. Create two empty GameObjects by going to the **Create** menu in the **Hierarchy** and selecting **Create Empty** - twice!
2. Rename the empty GameObjects to **SpawnPoint1** and **SpawnPoint2**



1. Position **SpawnPoint1** at ( **-3, 0, 30** )
2. Set the Rotation of **SpawnPoint1** to ( **0, 180, 0** )
3. Position **SpawnPoint2** at ( **13, 0, -5** )
4. Ensure the Rotation of **SpawnPoint2** is ( **0,0,0** )



1. In the **Inspector**, to the left of the **GameObject**'s name is an icon for the **GameObject**'s gizmo. Change the gizmo for **SpawnPoint1** to the **blue name tag**
2. Change the gizmo for **SpawnPoint2** to the **red name tag**



1. Go to **GameObject > UI > Canvas**  
to create a new canvas GameObject
2. Rename it **MessageCanvas**
3. On the Scene view, click on the **2D** button to  
enable 2D mode
4. With the **MessageCanvas selected** and the  
mouse cursor over the Scene view **press F** to frame  
the selected **MessageCanvas**



1. Right-click **MessageCanvas** and choose  
**UI > Text** to create a **Text GameObject** as a  
child of the **MessageCanvas**



1. On the **RectTransform** component of the **Text** **GameObject** set the **Anchors** for the **X** and **Y** **axes** to have a **Min** of **0.1** and a **Max** of **0.9**
2. Set the **Left**, **Right**, **Top**, **Bottom** and **Pos Z** to **0**



1. On the **Text** component set the **Text** to be  
**"TANKS!"**
2. Use the **circle-select** button to change the  
**Font to BowlbyOne-Regular**
3. Change the **Alignment** to **centre** and **middle**



1. Enable Best Fit
2. Set the Max Size to 60
3. Set the Color to White ( **255, 255, 255, 255** )



1. Click the **Add Component** button and type **Shadow** in the search bar
2. Click on the **Shadow** component in the list to add it to the **Text GameObject**
3. Set **Effect Color** to Brown ( **114, 71, 40, 128** )
4. Set the **Effect Distance** to ( **-3, -3** )
5. Disable **2D** Mode on the Scene View



1. **Select the CameraRig GameObject**
2. Go to **Edit > Frame Selected** (Shortcut - F)
3. On the **CameraControl** (script) component,  
set the **Targets** array to a size of **0** by typing  
into the **Size** property, and pressing Return
4. **Double click on the CameraControl script to  
open it for editing**



1. Click the **Create** button on the **Hierarchy** and choose **Create Empty**
2. Rename it **GameManager**
3. Find the **GameManager** script in the **Scripts/Managers** folder
4. Drag it onto the **GameManager** GameObject to add it as a component



1. Drag the **CameraRig** GameObject from the **Hierarchy** onto the **Camera Control** public variable of the **GameManager** (script) component
2. Expand the **MessageCanvas** GameObject
3. Drag the **Text** child GameObject onto the **Message Text** public variable of the Game Manager
4. Find the **Tank** prefab in the **Prefabs** folder and drag it onto the **Tank Prefab** public variable



1. Expand the **Tanks** array on the **GameManager** script, set the **Size** to **2**
2. Expand **Element 0**, change the **Player Color** to Blue ( **42, 100, 178** )
3. Drag the **SpawnPoint1** GameObject from the **Hierarchy** onto the **Spawn Point** variable of **Element 0** in the **Tanks** array

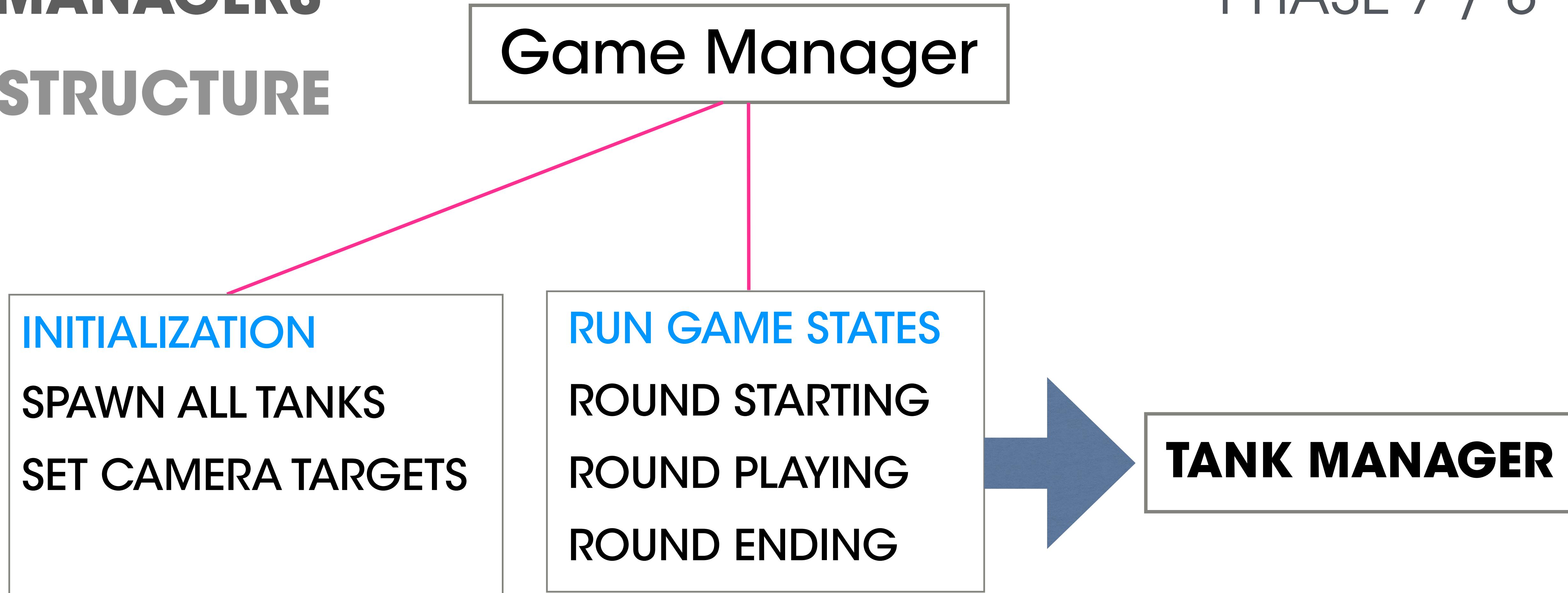


1. Expand **Element 1** and change the **Player Color** to Red ( **229, 46, 40** )
2. Drag on the **SpawnPoint2** GameObject as the **Spawn Point** of Element 1



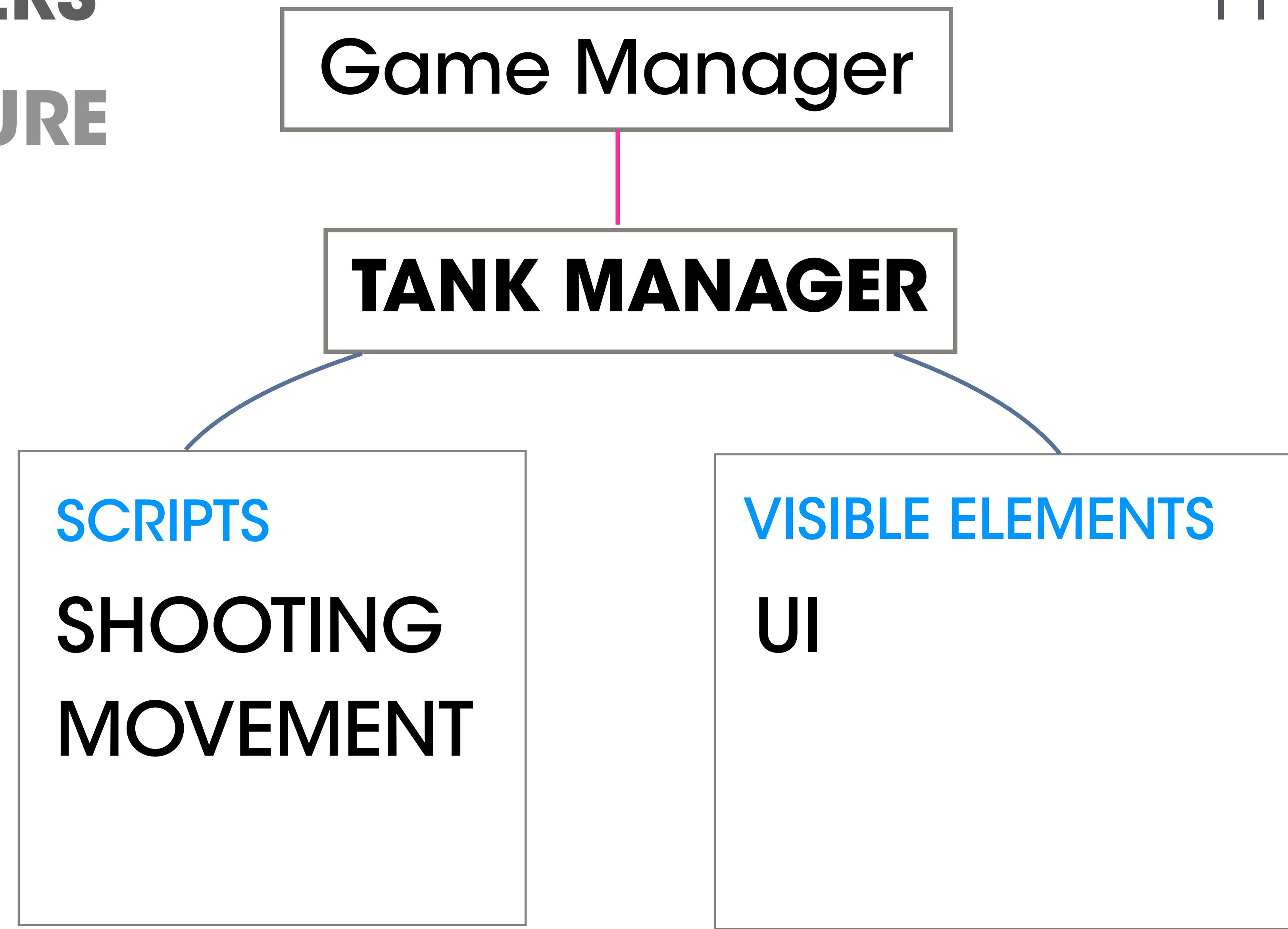
# MANAGERS STRUCTURE

PHASE 7 / 8



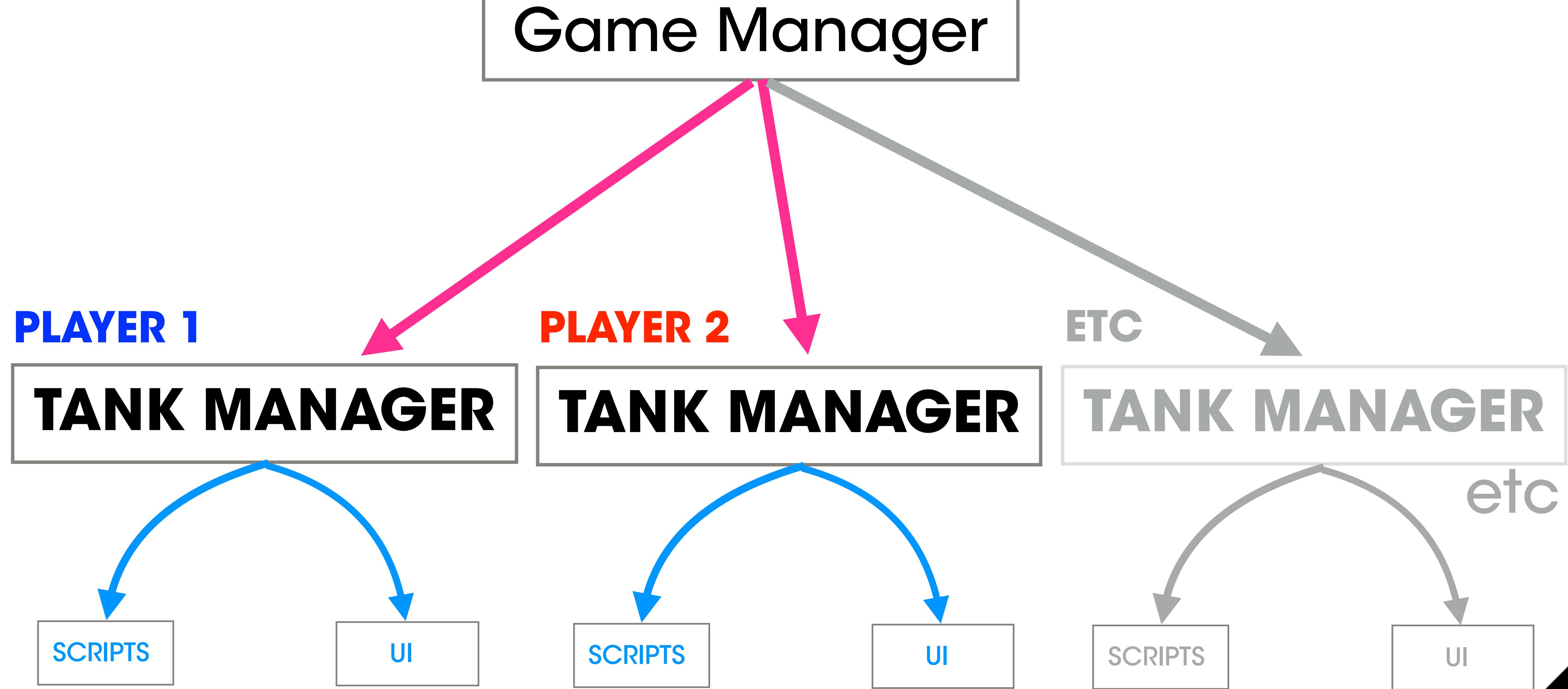
# MANAGERS STRUCTURE

PHASE 7 / 8



# MANAGERS

PHASE 7 / 8



## GAME MANAGER

Start()

Use array of **TankManagers** to spawn tanks

Set the **CameraControl** script **Targets** array

Start the **GameLoop()** Coroutine



- 1. Double click the `GameManager` script to open it**
- 2. Double click the `TankManager` script to open it**



# MANAGERS

## GAME MANAGER

PHASE 7 / 8

**GameLoop()**

**RoundStarting()**

wait, then..

**RoundPlaying()**

wait, then..

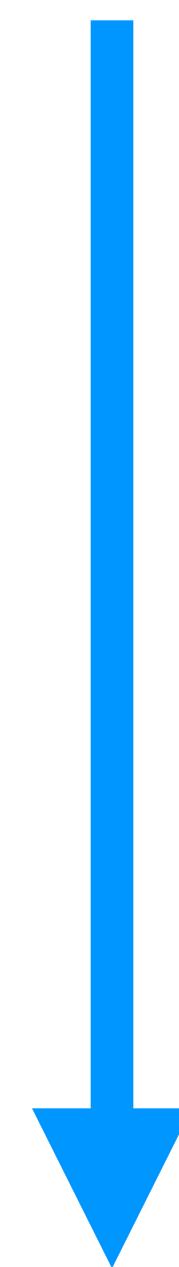
**RoundEnding()**



## COROUTINES

```
void MyFunction( )
```

```
{
```

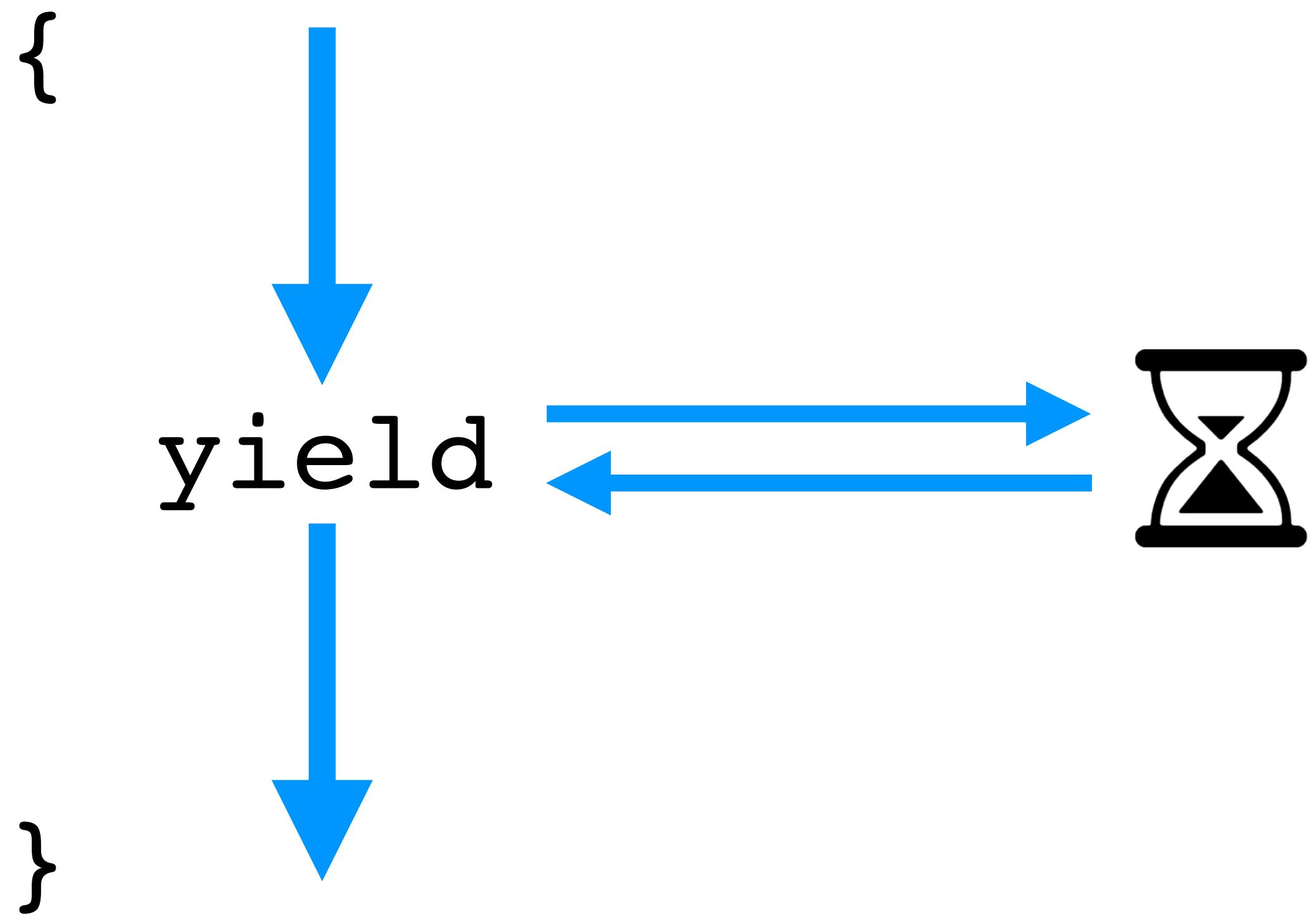


```
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```



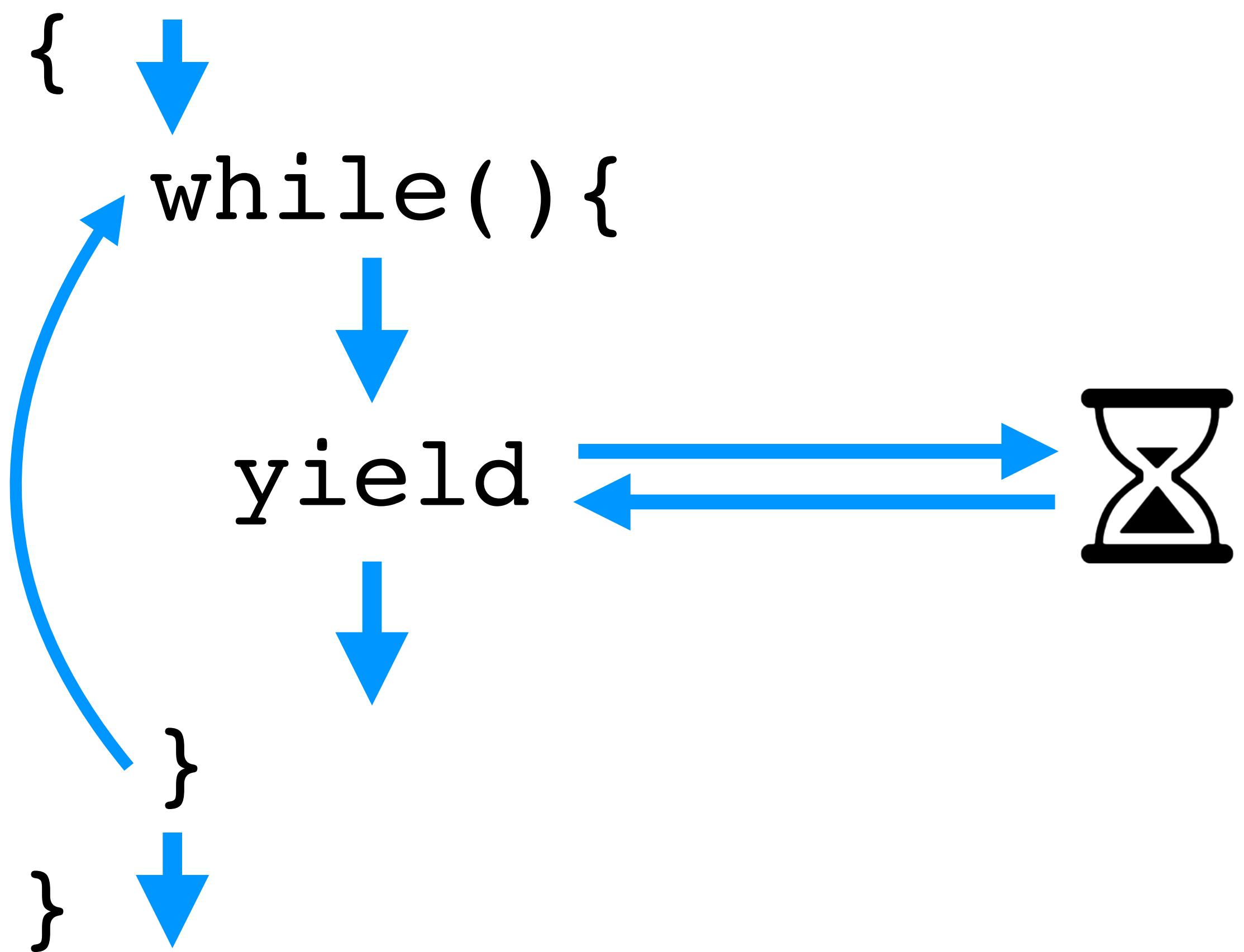
## COROUTINES

```
IEnumerator MyCoroutine()
```



## COROUTINES

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IEnumerator MyCoroutine()
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# MANAGERS

## GAME MANAGER

GameLoop()

RoundStarting

Round Playing

Round Ending

Reset all tanks  
Disable all Tank Controls  
Set Camera Pos & Size  
Increment Round number  
Set Message UI

Enable all Tank Controls  
Empty Message UI  
Wait for One Tank Left

Disable all Tank Controls  
Clear existing & get round winner  
Check for Game Winner  
Calculate Message UI & Show

## PHASE 7 / 8

## TANK MANAGER

Reset()  
(De/Reactivate / Position)  
DisableControl()  
(Cannot Move / Shoot, UI off)

EnableControl()  
(Can Move / Shoot, UI on)

- 1. Save the scene!**
- 2. Grab a neighbour and give it a test!**



# **END OF PHASE SEVEN**

Fallen behind? Don't worry!

**File > Open Project > TrainingDayPhase8**



# PHASE 7 QUIZ

Which attribute can be placed before a class declaration to make it's properties appear in the Inspector panel?

- a) ShowInInspector
- b) HideInInspector
- c) Serializable
- d) ShowInfo

What type is commonly returned by a function that will be used as a co-routine?

- a) IEnumarator
- b) IEnumarable
- c) void
- d) Interface

What component does the UI system to display text?

- a) String
- b) Message
- c) Text
- d) WordRenderer



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**SUPER SPECIAL BATTLETANK THUNDERDOME PRIZE CONTEST**





# **PHASE EIGHT**

# **AUDIO**



1. With the **GameManager** GameObject **selected**, click the **Add Component** button and choose **Audio > Audio Source**.
2. Use the **circle-select** button to set the **Audio Clip** to **BackgroundMusic**
3. **Check Loop**



- 1. Right click on the empty **AudioMixers** folder  
and choose **Create > Audio Mixer****
- 2. Rename it **MainMix****
- 3. Go to **Window > Audio Mixer****



1. Use the **+** icon above the **Groups** hierarchy to add a child of the **Master** group
2. Name the new group **Music**
3. Reselect the **Master** group and create another group as its child
4. Rename this group **SFX**



- 1. Reselect the Master group and create a third child group**
- 2. Rename the last group Driving**
- 3. Make sure they are all children of the Master group**



1. Select the **Tank** prefab in the **Prefabs** folder
2. For the **First Audio Source** use the **circle-select** button to set its **Output** to the **Driving** group of the **MainMix** audio mixer
3. For the **Second Audio Source** use the **circle-select** to set its **Output** to the **SFX** group of the **MainMix** audio mixer



1. Find the **Shell** prefab in the **Prefabs** folder.  
**Expand** it so that you can see its children.
2. Select the **ShellExplosion** child
3. Set the **Output** for the  **AudioSource** on the  
**ShellExplosion** child to the **SFX** group of the  
**MainMix** audio mixer



1. In the **Hierarchy** select the **GameManager** **GameObject**
2. Set the **Output** for the **Audio Source** to the **Music** group of the **MainMix** audio mixer
3. Select the **TankExplosion** prefab in the Project, set its **Audio Source** output to the **SFX** group of the **MainMix** audio mixer



1. Return to the **Audio Mixer Window**
2. Make sure you have **MainMix** selected
3. Select the **Music** group of **MainMix**
4. Set its **Attenuation** to **-12** using the fader
5. Select the **Driving** group of **MainMix**
6. Change its **Attenuation** to **-25**



- 1. Reselect the Music group**
- 2. In the Inspector click the Add Effect button  
and choose Duck Volume**



- 1. Select the SFX group**
- 2. Click the Add Effect button and choose Send effect**
- 3. For the Send effect set Receive to Music\Duck Volume**
- 4. Change the Send Level to 0db (full)**



- 1. Reselect the Music group**
- 2. For the Duck Volume effect change the Threshold to -46**
- 3. Change the Ratio to 250**
- 4. Change the Attack Time to 0**



- 1. Save the scene!**
- 2. Your game is complete! It's Play Time!**



# PHASE 8 QUIZ

What is the name of the window to display the flow of Audio signals?

- a) Signal b) Audio Source c) Audio Mixer d) Funkatron

What does the ducking audio effect do?

- a) pauses and plays audio sources based on pitch
- b) lower the attenuation of an audio group based on the attenuation of another
- c) it is used to send messages to custom components based on the time of a clip
- d) it is used as a trigger for the anatidae effect

How awesome have you all been today?

- a) alright I guess
- b) not bad
- c) pretty, pretty good
- d) very



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**CONGRATS**  
**YOU DID IT!**



TWO ENTER. ONE LEAVES.

# SUPER SPECIAL BATTLE TANK THUNDERDOME PRIZE CONTEST

UNITE 2015



TWO ENTER. ONE LEAVES.

ROUND ONE.  
TEAM BLUE  
TEAM RED



# LET'S TALK QUESTIONS AND ANSWERS

## CREDITS

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