🛠️ Moon Deception - Unity Setup Guide

Prerequisites

- **Unity 2022.3 LTS** or newer
- **Universal Render Pipeline (URP)** — already configured
- Basic Unity knowledge

🚀 Quick Start

Option A: Automatic Setup

1. Open the project in Unity
2. Go to menu: **Moon Deception > Setup Phase 1**
3. Press **Play** to test

Option B: Manual Setup

Follow the detailed steps below.

📋 Manual Setup Steps

Step 1: Player Setup

1. **Create Player GameObject**
   - `GameObject > Create Empty` → name it `Player`
   - ⚠️ **SPAWN POSITION RULE**: If ground is at Y=0 with scale Y=1, character spawn should be Y = 1 + (height/2) = **2**
   - The CharacterController height=2 with center at (0, 1, 0), so spawn Y=2 keeps feet at ground level
   - Position: `(0, 2, 0)` — ensures proper ground collision detection on first frame

2. **Add Visible Mesh to Player** ⚠️ NEW
   - `GameObject > 3D Object > Capsule` as **child** of Player
   - Name it `PlayerMesh`
   - Local Position: `(0, 1, 0)` — aligned with CharacterController center
   - Remove the Capsule's default `CapsuleCollider` component (Player uses CharacterController)
   - This makes the player visible in the scene

3. **Add Components to Player**
   - `Add Component > Character Controller`

     - Height: `2`
     - Radius: `0.5`
     - Center: `(0, 1, 0)`
     - **Skin Width: `0.08`** ⚠️ Critical for ground collision!

   - **Step Offset:** `0.3`
   - Slope Limit: `45`
   - Min Move Distance: `0.001`
   - `Add Component > PlayerMovement`
   - `Add Component > PlayerShooting`
   - `Add Component > StressSystem`
   - `Add Component > SimpleCrosshair` (for visible crosshair)

4. **Setup Camera**
   - Drag `Main Camera` as child of `Player`
   - Camera Position: `(0, 1.6, 0)` (eye level)
   - Camera Rotation: `(0, 0, 0)`
   - In `PlayerMovement`, assign the camera to `cameraTransform`

Step 2: Layer Configuration

1. **Create Layers** (Edit > Project Settings > Tags and Layers)
   - Layer 8: `NPC`
   - Layer 9: `Alien`
   - Layer 10: `Environment`

2. **Configure PlayerShooting**
   - Set `hitLayers` to include: `NPC`, `Alien`, `Environment`

Step 3: Test Environment

1. **Create Ground**
   - `GameObject > 3D Object > Plane`
   - Scale: `(10, 1, 10)`
   - Add a material for visibility
   - Layer: `Environment`

2. **Create Test NPC**
   - `GameObject > 3D Object > Capsule` → name it `TestNPC`
   - Add `NPCBehavior` script
   - Layer: `NPC`
   - Duplicate a few times and spread around

Step 4: GameManager Setup

1. **Create GameManager**
   - `GameObject > Create Empty` → name it `GameManager`
   - Add `GameManager` script
   - Assign player reference

Step 5: UI Setup (Stress Bar)

1. **Create Canvas**
   - `GameObject > UI > Canvas`
   - Render Mode: `Screen Space - Overlay`

2. **Create Stress Bar**
   - Under Canvas: `UI > Slider` → name it `StressBar`
   - Anchor: Top-left
   - Position: `(120, -30, 0)`
   - Width: `200`, Height: `20`
   - Uncheck `Interactable`

3. **Style the Bar**
   - Background: Dark gray
   - Fill: Red gradient (low=green, high=red)
   - Delete Handle

4. **Connect to StressSystem**
   - Select Player
   - In `StressSystem`, assign the Slider to `stressSlider`

✅ Testing Checklist

Movement Tests

- [ ] WASD moves player correctly
- [ ] Mouse look works (horizontal + vertical)
- [ ] Vertical look is clamped (-90° to 90°)
- [ ] Space bar makes player jump
- [ ] Gravity pulls player down
- [ ] Cursor is locked and hidden

Shooting Tests

- [ ] Left-click fires raycast
- [ ] Debug rays visible in Scene view (yellow=miss, red=hit)
- [ ] Console shows hit messages with target name
- [ ] Hitting NPC triggers damage (if IDamageable)

Stress System Tests

- [ ] Stress bar visible in UI
- [ ] `AddStress(float)` increases bar
- [ ] `ReduceStress(float)` decreases bar
- [ ] Stress clamped between 0-100
- [ ] Reaching 100 triggers `OnStressMaxed` event
- [ ] Passive recovery works when below threshold

NPC Tests

- [ ] NPCs patrol between waypoints

- [ ] NPCs are on correct layer
- [ ] NPCs can receive damage

GameManager Tests

- [ ] Game starts in `Playing` state
- [ ] Stress max triggers `Chaos` phase
- [ ] Win/Lose conditions trigger correctly

🔧 Common Issues

Player falls through floor / feels inside ground

- Ensure ground has a `Collider` component
- Check `CharacterController` height and center
- ⚠️ **SPAWN POSITION RULE: Y >= height/2** (e.g., Y = 1.05 for CharacterController height 2)
- **CRITICAL: Set Skin Width to 0.08** — Default 0.01 is too small and causes clipping!
- **Set Step Offset to 0.3** — Must be less than Height/2
- Scripts now call `controller.Move(Vector3.down * 0.5f)` in Start() to snap to ground

Camera feels like TPS / orbits around player

- Camera must be a **child** of the Player GameObject
- Camera local position should be `(0, 1.6, 0)` — at eye level
- Camera local rotation must be `(0, 0, 0)` initially
- **Camera should NOT have any rotation scripts** — only PlayerMovement controls it
- In PlayerMovement, the camera only rotates on LOCAL X axis (pitch), never Y
- The player body rotates on Y axis (yaw) for horizontal mouse movement

No crosshair visible

- Add the `SimpleCrosshair` script to any GameObject (e.g., Player or MainCamera)
- The script draws a crosshair using OnGUI, no Canvas needed

Mouse look not working

- Verify `cameraTransform` is assigned in `PlayerMovement`
- Check if another script is controlling cursor

Shooting doesn't hit anything

- Verify `hitLayers` includes target layers
- Ensure targets have `Collider` components
- Check raycast range in `PlayerShooting`

Stress bar not updating

- Ensure `stressSlider` is assigned in `StressSystem`
- Check Slider min/max values (should be 0-1 for normalized)
- The updated `StressSystem.cs` auto-finds the slider by name “StressBar” if not assigned
- Check console for “[StressSystem] Initialized. Slider found: true/false”

NPCs don’t move/patrol

- NPCs now have **Auto Patrol** enabled by default (no waypoints needed)
- They patrol randomly within `patrolRadius` (default 5m) from start position
- Check console for “[NPC] name state: Idle -> Walking” logs
- Verify NPCs have `NPCBehavior` script attached
- If adding waypoints manually, ensure waypoint Transforms are assigned in inspector

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🎮 Play Test Procedure

1. **Enter Play Mode** (Ctrl+P)
2. **Test Movement**: Walk around, jump on objects
3. **Test Shooting**: Aim at NPCs, check console for hits
4. **Test Stress**: Call `player.GetComponent<StressSystem>().AddStress(20)` in console
5. **Test Stress Max**: Add stress until 100, verify chaos phase triggers

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📁 Script Dependencies

```
GameManager
    └── StressSystem (listens to OnStressMaxed)

PlayerMovement
    └── CharacterController (required)
    └── Camera (child transform)

PlayerShooting
    └── Camera.main
    └── IDamageable targets

StressSystem
    └── UI Slider (optional)

NPCBehavior
    └── NavMeshAgent (optional, for advanced AI)
    └── IDamageable interface
```

👽 Phase 2: Alien Setup

Alien Player Setup

1. **Create Alien GameObject**
   - `GameObject > 3D Object > Capsule` → name it `Alien`
   - Position: `(5, 1.05, 5)` — Y >= height/2 for proper ground collision
   - Tag: `Alien`
   - Layer: `Alien`

2. **Add Components to Alien**
   - `Add Component > AlienController` (TPS movement + camera)

- `Add Component > HungerSystem` (hunger mechanics)
- `Add Component > AlienEatSystem` (eating NPCs/aliens)

3. **Camera Setup for Alien**
   - Create a NEW camera for the Alien (or disable Main Camera when testing alien)
   - Assign camera to `AlienController > cameraTransform`
   - The TPS camera follows behind automatically — NO need to parent it

4. **Configure AlienEatSystem**
   - `Edible Tags`: `NPC`, `Alien`
   - `Player Tag`: `Player` (NEVER edible)
   - `Detect Range`: 3
   - `Detect Radius`: 1

Hunger Bar UI Setup

1. **Create Hunger Slider**
   - Under Canvas: `UI > Slider` → name it `HungerBar`
   - Anchor: Top-left
   - Position: `(120, -60, 0)` — below stress bar
   - Width: `200`, Height: `20`
   - Uncheck `Interactable`

2. **Style the Hunger Bar**
   - Background: Dark gray
   - Fill: Green (full) → Red (empty) gradient
   - Delete Handle

3. **Auto-connection**
   - HungerSystem auto-finds `HungerBar` by name

Eat Prompt UI

- `EatPromptUI` auto-creates the prompt panel if not found
- Shows “Press E to EAT” when looking at valid target

Target Highlighting

- `TargetHighlight` auto-applies red emission glow to edible targets
- No manual setup needed — added dynamically

Important Tags Setup

1. Go to `Edit > Project Settings > Tags and Layers`
2. Add Tag: `NPC` (for edible civilians)
3. Add Tag: `Alien` (for other alien players)
4. Add Tag: `Player` (astronaut — NEVER edible)

GameController Setup (Input Conflict Fix)

CRITICAL: To prevent both Player and Alien from moving together:

1. **Create GameController**
   - `GameObject > Create Empty` → name it `GameController`
   - `Add Component > GameController`

   - Assign `playerMovement` (drag Player GameObject)
   - Assign `alienController` (drag Alien GameObject)

2. **Switch Key**: Press **TAB** to toggle between Player and Alien control

3. **Alternative: Manual Disable**
   - When testing Alien: Disable `PlayerMovement` script on Player
   - When testing Player: Disable `AlienController` script on Alien

Testing Alien Mechanics

- [ ] TPS camera follows behind alien
- [ ] WASD moves alien relative to camera direction
- [ ] Mouse rotates camera smoothly
- [ ] Hunger bar visible and decreasing over time
- [ ] Looking at NPC shows red highlight (NOT self!)
- [ ] "Press E to EAT" prompt appears
- [ ] Pressing E destroys NPC and restores hunger
- [ ] Blood decal spawns at eat location
- [ ] CANNOT eat player (no highlight, no prompt)
- [ ] CANNOT eat self (raycast ignores own collider)
- [ ] TAB switches between Player and Alien control
- [ ] Only ONE character moves at a time

🚧 Next Steps (Phase 3)

1. Multiplayer networking setup
2. Voting system implementation
3. Emergency meeting mechanics
4. Map expansion and tasks
5. Win/lose conditions refinement

Happy developing! 🚀