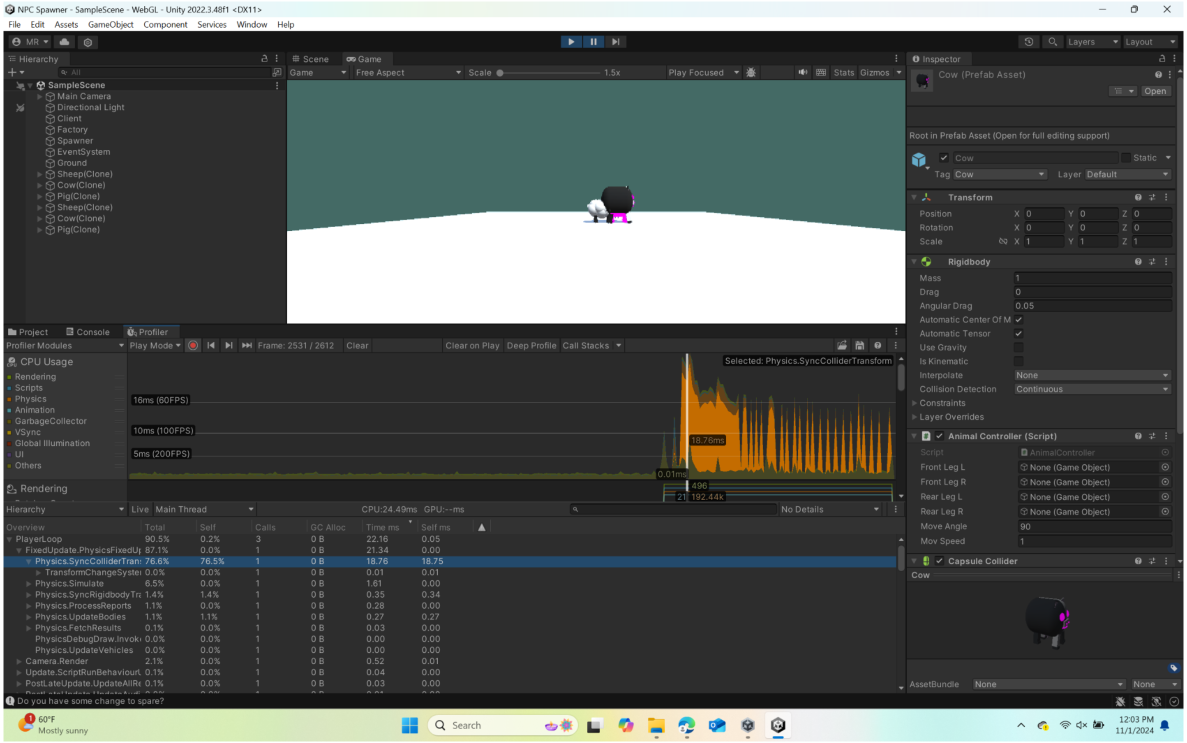
Unity Profiler:

NPC Spawner Project- Significant lag every time new animals are spawned.



NPC Spawner - SampleScene - WebGL - Unity 2022.3.48f1 <DX11>

Hierarchy: SampleScene — Main Camera, Directional Light, Client, Factory, Spawner, EventSystem, Ground, Sheep(Clone), Cow(Clone), Pig(Clone), Sheep(Clone), Cow(Clone), Pig(Clone)

Inspector: Cow (Prefab Asset)

Root in Prefab Asset (Open for full editing support)

Tag Cow — Layer Default

Transform: Position X 0 Y 0 Z 0; Rotation X 0 Y 0 Z 0; Scale X 1 Y 1 Z 1

Rigidbody: Mass 1; Drag 0; Angular Drag 0.05; Automatic Center Of Mass ☑; Automatic Tensor ☑; Use Gravity □; Is Kinematic □; Interpolate None; Collision Detection Continuous

Animal Controller (Script): Script AnimalController; Front Leg L None (Game Object); Front Leg R None (Game Object); Rear Leg L None (Game Object); Rear Leg R None (Game Object); Move Angle 90; Mov Speed 1

Capsule Collider

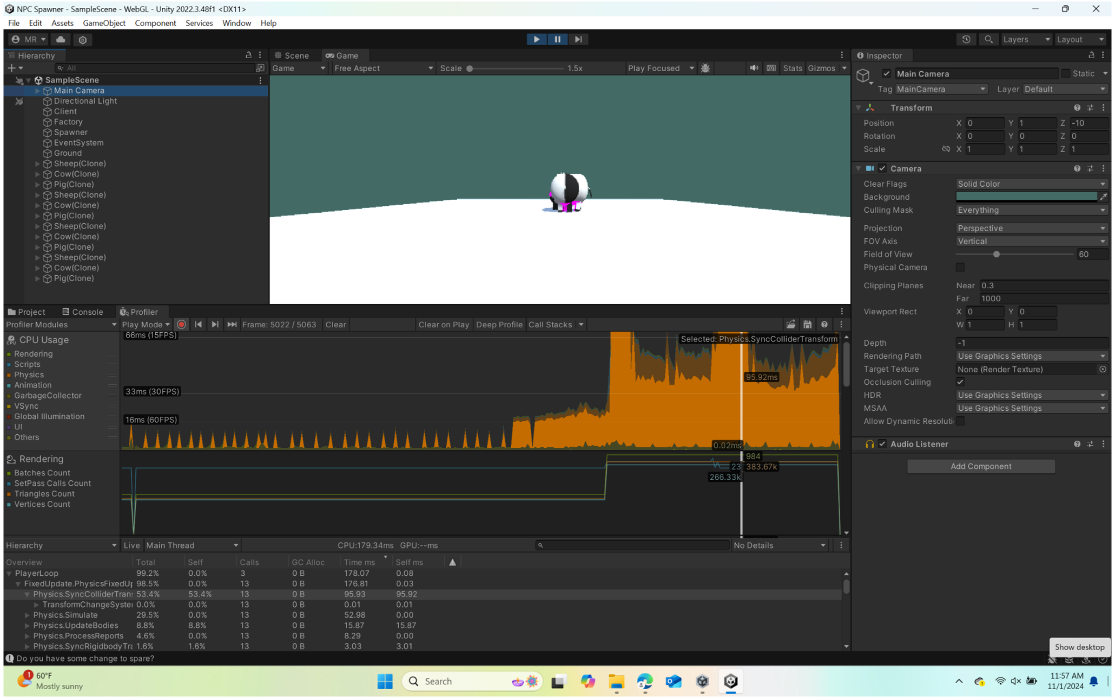
Profiler — Frame: 2531 / 2612 — Selected: Physics.SyncColliderTransform — 18.76ms

```
Hierarchy   Live   Main Thread        CPU:24.49ms  GPU:--ms

Overview                        Total   Self    Calls  GC Alloc  Time ms  Self ms
▼ PlayerLoop                    90.5%   0.2%    3      0 B       22.16    0.05
  ▼ FixedUpdate.PhysicsFixedU   87.1%   0.0%    1      0 B       21.34    0.00
    ▼ Physics.SyncColliderTran  76.6%   76.5%   1      0 B       18.76    18.75
      ▶ TransformChangeSyste    0.0%    0.0%    1      0 B       0.01     0.01
    ▶ Physics.Simulate          6.5%    0.0%    1      0 B       1.61     0.00
    ▶ Physics.SyncRigidbodyTr   1.4%    1.4%    1      0 B       0.35     0.34
    ▶ Physics.ProcessReports    1.1%    0.0%    1      0 B       0.28     0.00
    ▶ Physics.UpdateBodies      1.1%    1.1%    1      0 B       0.27     0.27
    ▶ Physics.FetchResults      0.1%    0.0%    1      0 B       0.03     0.00
      PhysicsDebugDraw.Invok    0.0%    0.0%    1      0 B       0.00     0.00
      Physics.UpdateVehicles    0.0%    0.0%    1      0 B       0.00     0.00
  ▶ Camera.Render               2.1%    0.0%    1      0 B       0.52     0.01
  ▶ Update.ScriptRunBehaviourL  0.1%    0.0%    1      0 B       0.04     0.00
  ▶ PostLateUpdate.UpdateAllRe  0.1%    0.0%    1      0 B       0.03     0.00
```

Do you have some change to spare?

First time new animals spawn:
Player Loop 90.5 percent-> Physics.SyncColliderTransform at 76.6%
After the second spawn, 98% Player Loop for extended periods of time and only gets worse until it crashes.



NPC Spawner - SampleScene - WebGL - Unity 2022.3.48f1 <DX11>

Hierarchy: SampleScene — Main Camera, Directional Light, Client, Factory, Spawner, EventSystem, Ground, Sheep(Clone), Cow(Clone), Pig(Clone), Sheep(Clone), Cow(Clone), Pig(Clone), Sheep(Clone), Cow(Clone), Pig(Clone), Sheep(Clone), Cow(Clone), Pig(Clone)

Inspector: Main Camera — Tag MainCamera — Layer Default

Transform: Position X 0 Y 1 Z -10; Rotation X 0 Y 0 Z 0; Scale X 1 Y 1 Z 1

Camera: Clear Flags Solid Color; Culling Mask Everything; Projection Perspective; FOV Axis Vertical; Field of View 60; Clipping Planes Near 0.3 Far 1000; Viewport Rect X 0 Y 0 W 1 H 1; Depth -1; Rendering Path Use Graphics Settings; Target Texture None (Render Texture); Occlusion Culling ☑; HDR Use Graphics Settings; MSAA Use Graphics Settings

Audio Listener

Add Component

Profiler — Frame: 5022 / 5063 — Selected: Physics.SyncColliderTransform — 95.92ms

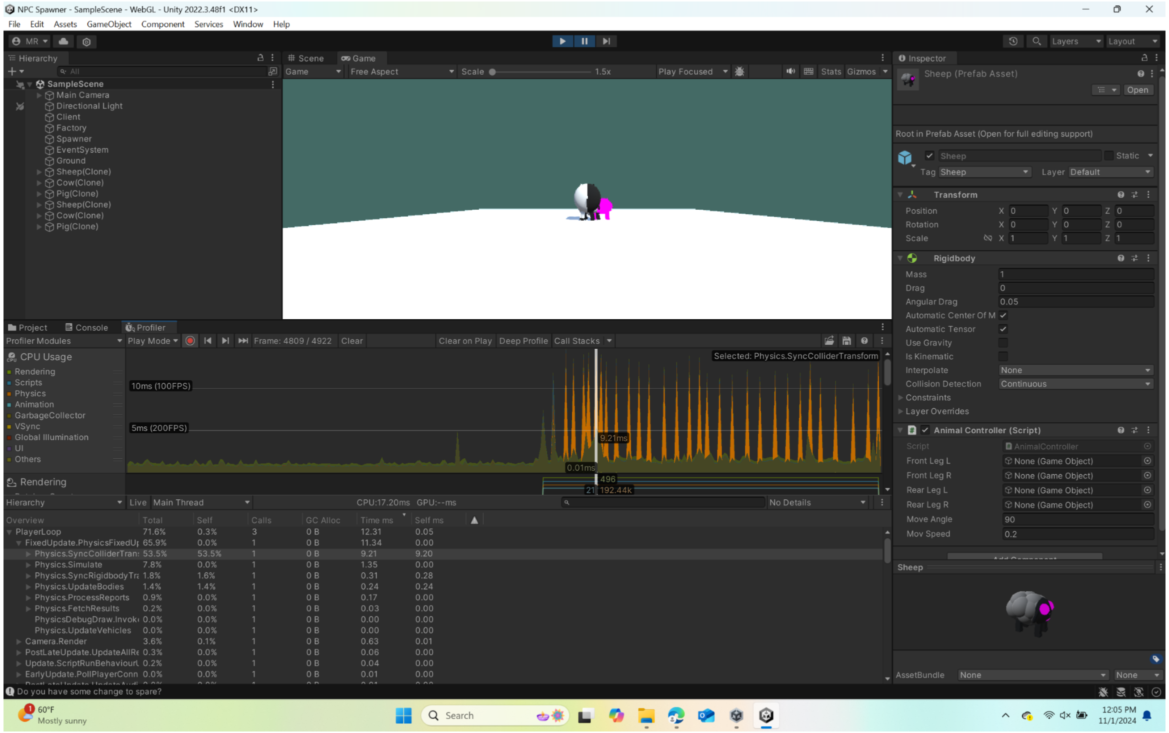
```
Hierarchy   Live   Main Thread        CPU:179.34ms  GPU:--ms

Overview                        Total   Self    Calls  GC Alloc  Time ms  Self ms
▼ PlayerLoop                    99.2%   0.0%    3      0 B       178.07   0.08
  ▼ FixedUpdate.PhysicsFixedU   98.5%   0.0%    13     0 B       176.81   0.03
    ▼ Physics.SyncColliderTran  53.4%   53.4%   13     0 B       95.93    95.92
      ▶ TransformChangeSyste    0.0%    0.0%    13     0 B       0.01     0.01
    ▶ Physics.Simulate          29.5%   0.0%    13     0 B       52.98    0.00
    ▶ Physics.UpdateBodies      8.8%    8.8%    13     0 B       15.87    15.87
    ▶ Physics.ProcessReports    4.6%    0.0%    13     0 B       8.29     0.00
    ▶ Physics.SyncRigidbodyTr   1.6%    1.6%    13     0 B       3.03     3.01
```

Do you have some change to spare?

Unity Documentation:
Physics.autoSyncTransforms:
“Whether or not to automatically sync transform changes with the physics system whenever a Transform component changes. When a Transform component changes, any Rigidbody or Collider on that Transform or its children may need to be repositioned, rotated or scaled depending on the change to the Transform.”

Fix: Delete capsule colliders on prefabs- they're not really doing anything.



Hierarchy | Live | Main Thread | CPU:17.20ms GPU:--ms

Overview	Total	Self	Calls	GC Alloc	Time ms	Self ms
PlayerLoop	71.6%	0.3%	3	0 B	12.31	0.05
FixedUpdate.PhysicsFixedUp	65.9%	0.0%	1	0 B	11.34	0.00
Physics.SyncColliderTran:	53.5%	53.5%	1	0 B	9.21	9.20
Physics.Simulate	7.8%	0.0%	1	0 B	1.35	0.00
Physics.SyncRigidbodyTra	1.8%	1.6%	1	0 B	0.31	0.28
Physics.UpdateBodies	1.4%	1.4%	1	0 B	0.24	0.24
Physics.ProcessReports	0.9%	0.0%	1	0 B	0.17	0.00
Physics.FetchResults	0.2%	0.0%	1	0 B	0.03	0.00
PhysicsDebugDraw.Invok	0.0%	0.0%	1	0 B	0.00	0.00
Physics.UpdateVehicles	0.0%	0.0%	1	0 B	0.00	0.00
Camera.Render	3.6%	0.1%	1	0 B	0.63	0.01
PostLateUpdate.UpdateAllRe	0.3%	0.0%	1	0 B	0.06	0.00
Update.ScriptRunBehaviourU	0.2%	0.0%	1	0 B	0.04	0.00
EarlyUpdate.PollPlayerConn	0.0%	0.0%	1	0 B	0.01	0.00

Do you have some change to spare?

Sheep (Prefab Asset)

Root in Prefab Asset (Open for full editing support)

☑ Sheep □ Static
Tag Sheep Layer Default

Transform

	X	Y	Z
Position	0	0	0
Rotation	0	0	0
Scale	1	1	1

Rigidbody

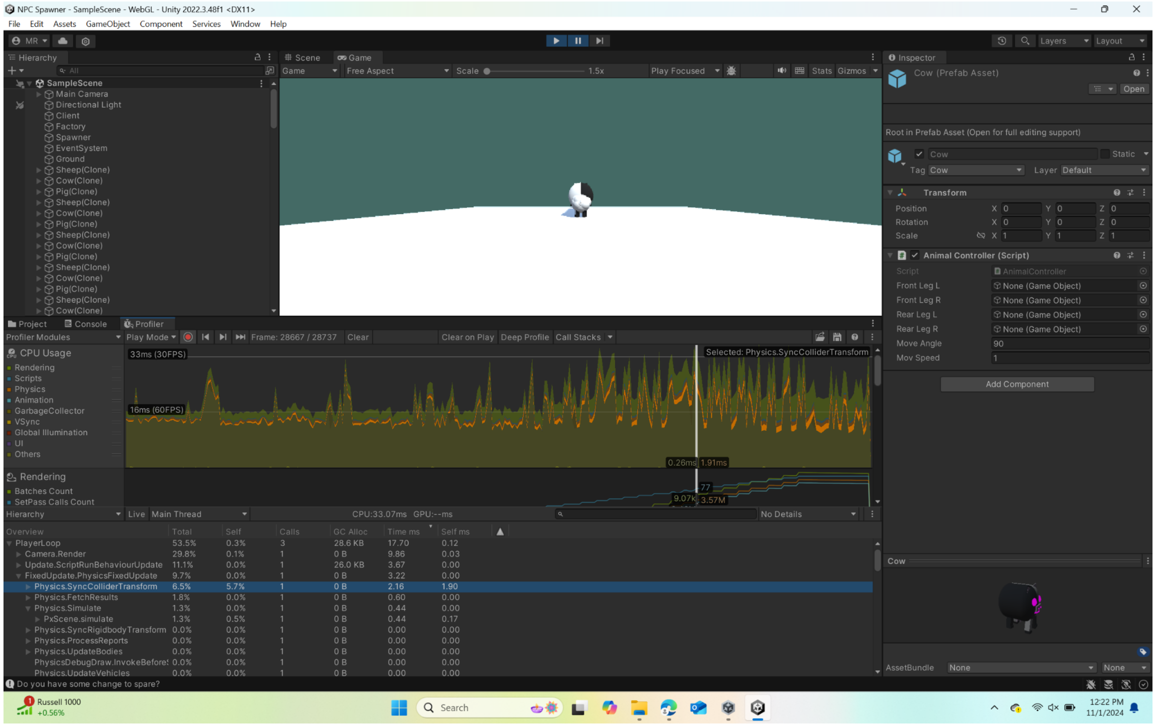
Mass	1
Drag	0
Angular Drag	0.05
Automatic Center Of M	☑
Automatic Tensor	☑
Use Gravity	□
Is Kinematic	□
Interpolate	None
Collision Detection	Continuous
Constraints	
Layer Overrides	

☑ Animal Controller (Script)

Script	AnimalController
Front Leg L	None (Game Object)
Front Leg R	None (Game Object)
Rear Leg L	None (Game Object)
Rear Leg R	None (Game Object)
Move Angle	90
Mov Speed	0.2

Reduced lag spike on the first set of animals spawned, Player Loop only 71.6% on first spawn, but subsequent spawns still had Player Loop to high 90s, not really a noticeable change from the first run besides on very first spawn.

Next fix: I tried removing the rigid body.



Hierarchy | Live | Main Thread | CPU:33.07ms GPU:--ms

```
Overview                              Total   Self   Calls  GC Alloc  Time ms  Self ms
▼ PlayerLoop                          53.5%   0.3%   3      28.6 KB   17.70    0.12
  ▶ Camera.Render                     29.8%   0.1%   1      0 B       9.86     0.03
  ▶ Update.ScriptRunBehaviourUpdate   11.1%   0.0%   1      26.0 KB   3.67     0.00
  ▼ FixedUpdate.PhysicsFixedUpdate    9.7%    0.0%   1      0 B       3.22     0.00
    ▶ Physics.SyncColliderTransform   6.5%    5.7%   1      0 B       2.16     1.90
    ▶ Physics.FetchResults            1.8%    0.0%   1      0 B       0.60     0.00
    ▼ Physics.Simulate                1.3%    0.0%   1      0 B       0.44     0.00
      ▶ PxScene.simulate              1.3%    0.5%   1      0 B       0.44     0.17
    ▶ Physics.SyncRigidbodyTransform  0.0%    0.0%   1      0 B       0.00     0.00
    ▶ Physics.ProcessReports          0.0%    0.0%   1      0 B       0.00     0.00
    ▶ Physics.UpdateBodies            0.0%    0.0%   1      0 B       0.00     0.00
      PhysicsDebugDraw.InvokeBefore:  0.0%    0.0%   1      0 B       0.00     0.00
      Physics.UpdateVehicles          0.0%    0.0%   1      0 B       0.00     0.00
```

Do you have some change to spare?

Inspector

Cow (Prefab Asset)

Root in Prefab Asset (Open for full editing support)

☑ Cow ☐ Static

Tag Cow Layer Default

Transform

	X	Y	Z
Position	0	0	0
Rotation	0	0	0
Scale	1	1	1

☑ Animal Controller (Script)

Script	AnimalController
Front Leg L	None (Game Object)
Front Leg R	None (Game Object)
Rear Leg L	None (Game Object)
Rear Leg R	None (Game Object)
Move Angle	90
Mov Speed	1

Add Component

Cow

AssetBundle None None

In terms of improving lag and the performance, this was great! The Player Loop never really went above 60%, and most of that wasn't from the Physics.SyncColliderTransform. I could spawn as many animals as I want yippee!!

While this seemed good, it broke the animation so that the animals just walked in a straight line and not in a circle…

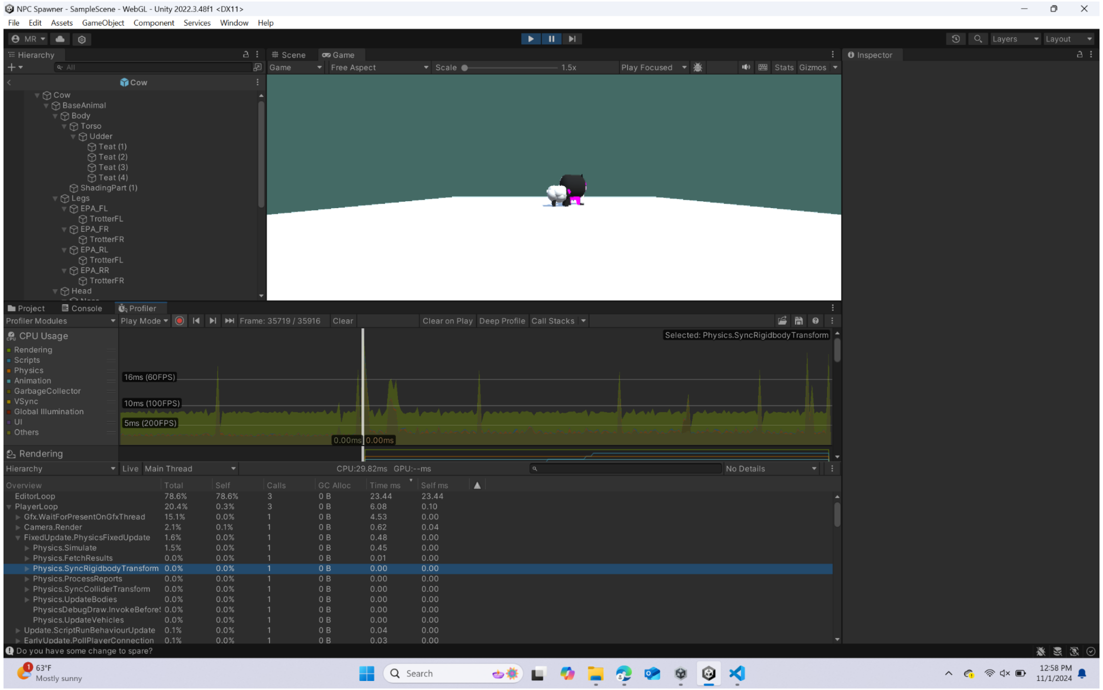
Looking at the code I opened from the prefabs, I found the part where the animal rotates:

```
        private void OnCollisionEnter(Collision collision)
        {
            if (!collision.gameObject.CompareTag("Ground") && canRotate)
// If the animal collides with something that is not the ground, spin it around.
            {
                StartCoroutine(SpinMeRound());
            }
        }
```

It looks like the rotation comes from when the animals collide with each other…

I put the colliders back on and it didn't really change the profiler, but the animals still weren't spinning.

Fix:I asked ChatGPT for code to have it rotate without being connected to a rigidbody or collider. This had the consequence of moving the rotate code to update instead of calling the OnCollision, as the animal objects were always colliding anyway.



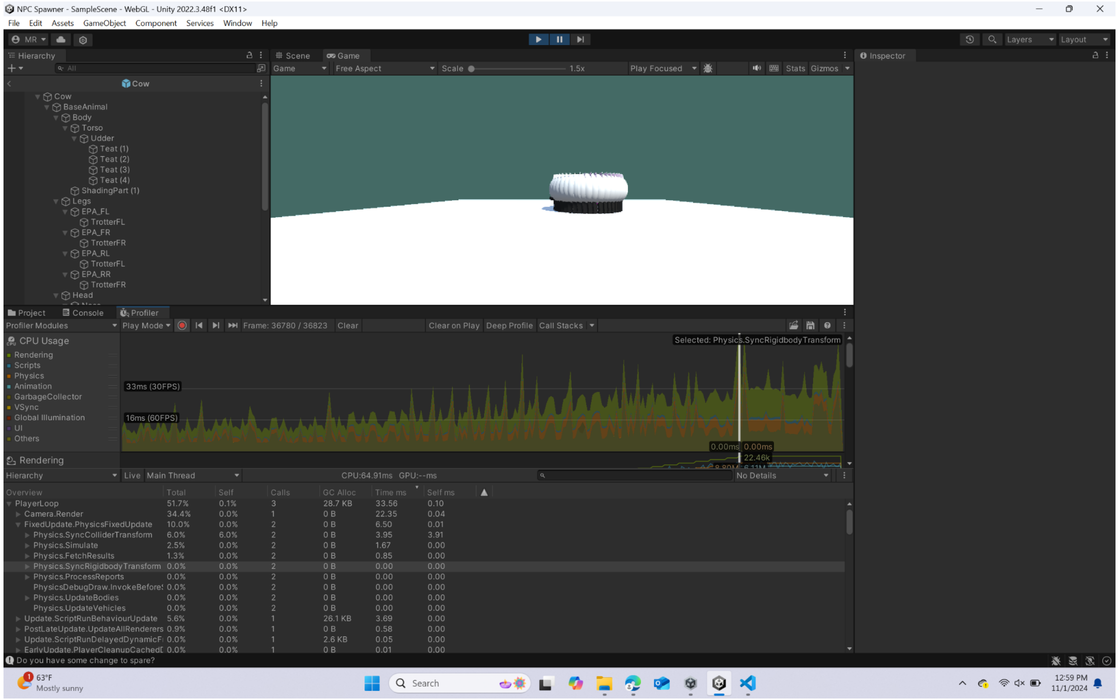
Frame: 35719 / 35916

Selected: Physics.SyncRigidbodyTransform

CPU:29.82ms GPU:--ms

Overview	Total	Self	Calls	GC Alloc	Time ms	Self ms
EditorLoop	78.6%	78.6%	3	0 B	23.44	23.44
PlayerLoop	20.4%	0.3%	3	0 B	6.08	0.10
Gfx.WaitForPresentOnGfxThread	15.1%	0.0%	1	0 B	4.53	0.00
Camera.Render	2.1%	0.1%	1	0 B	0.62	0.04
FixedUpdate.PhysicsFixedUpdate	1.6%	0.0%	1	0 B	0.48	0.00
Physics.Simulate	1.5%	0.0%	1	0 B	0.45	0.00
Physics.FetchResults	0.0%	0.0%	1	0 B	0.01	0.00
Physics.SyncRigidbodyTransform	0.0%	0.0%	1	0 B	0.00	0.00
Physics.ProcessReports	0.0%	0.0%	1	0 B	0.00	0.00
Physics.SyncColliderTransform	0.0%	0.0%	1	0 B	0.00	0.00
Physics.UpdateBodies	0.0%	0.0%	1	0 B	0.00	0.00
PhysicsDebugDraw.InvokeBefore!	0.0%	0.0%	1	0 B	0.00	0.00
Physics.UpdateVehicles	0.0%	0.0%	1	0 B	0.00	0.00
Update.ScriptRunBehaviourUpdate	0.1%	0.0%	1	0 B	0.04	0.00
EarlyUpdate.PollPlayerConnection	0.1%	0.0%	1	0 B	0.03	0.00

Do you have some change to spare?



Frame: 36780 / 36823

Selected: Physics.SyncRigidbodyTransform

CPU:64.91ms GPU:--ms

Overview	Total	Self	Calls	GC Alloc	Time ms	Self ms
PlayerLoop	51.7%	0.1%	3	28.7 KB	33.56	0.10
Camera.Render	34.4%	0.0%	1	0 B	22.35	0.04
FixedUpdate.PhysicsFixedUpdate	10.0%	0.0%	2	0 B	6.50	0.01
Physics.SyncColliderTransform	6.0%	6.0%	2	0 B	3.95	3.91
Physics.Simulate	2.5%	0.0%	2	0 B	1.67	0.00
Physics.FetchResults	1.3%	0.0%	2	0 B	0.85	0.00
Physics.SyncRigidbodyTransform	0.0%	0.0%	2	0 B	0.00	0.00
Physics.ProcessReports	0.0%	0.0%	2	0 B	0.00	0.00
PhysicsDebugDraw.InvokeBefore!	0.0%	0.0%	2	0 B	0.00	0.00
Physics.UpdateBodies	0.0%	0.0%	2	0 B	0.00	0.00
Physics.UpdateVehicles	0.0%	0.0%	2	0 B	0.00	0.00
Update.ScriptRunBehaviourUpdate	5.6%	0.0%	1	26.1 KB	3.69	0.00
PostLateUpdate.UpdateAllRenderers	0.9%	0.0%	1	0 B	0.58	0.00
Update.ScriptRunDelayedDynamicFi	0.0%	0.0%	1	2.6 KB	0.05	0.00
EarlyUpdate.PlayerCleanupCachedI	0.0%	0.0%	1	0 B	0.01	0.00

Do you have some change to spare?

Here, we can see the PlayerLoop is roughly 20% on just the first spawn, and got as high as 50% when spam clicking the spawn button (which is also good because spamming s didn't break the game like it did originally), and still the Physics.SyncRigidbodyTransform was at 0, because there was no rigidbody or colliders on the prefabs.

This was really interesting because I thought the animation was what was breaking these prefabs, and while the animation was expensive, it's not what was breaking the game.