

# PROTOTYPES AND INPUT

DEMONSTRATION: DEBUGGING, USER INPUT, HIERARCHY

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# DEBUG AND PROFILING

- Messages
- Live Editor
- Break Points
- Unit Tests

→ Demonstration

# PROFILING WINDOW



# DEBUGGING ECS

- Entities & Systems Hierarchy
- Entity Debugger
- Burst Compiled Code

The screenshot displays the Unity Entity Debugger interface. On the left, a tree view shows the 'All Entities (Default World)' hierarchy, including 'Initialization' and 'Update' system groups. The main area is a table of entities with columns for 'Index' and 'Name'. On the right, a 'Chunk Info' panel shows 'Matching entities: 151' and 'Matching chunks: 25', with a list of components like 'BoxCollider', 'LocalToWorld', 'MeshFilter', 'MeshRenderer', etc.

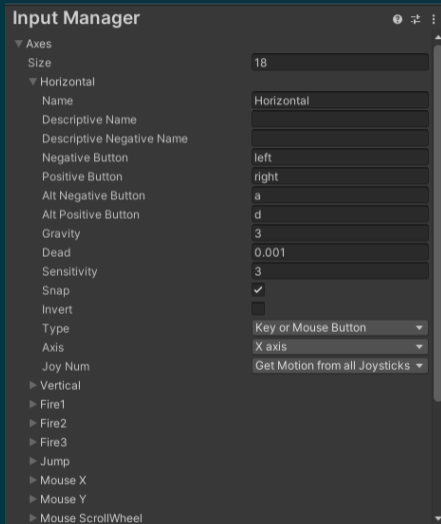
Systems	main (ms)	Filter	Index	Name
All Entities (Default World)			1	Ground
Initialization			2	WorldTime
InitializationSystemGroup			0	GameObject Scene: Main
BeginInitializationEntityCommandBufferSys	0.00		3	Bullet
DebugStreamClear	0.00		6	Entity 6
ConvertToEntitySystem	0.00		8	Entity 8
RetainBlobAssetSystem	not run		10	Entity 10
UpdateWorldTimeSystem	0.00		12	Entity 12
LiveLinkEditorSystemGroup			14	Entity 14
EditorSubSceneLiveLinkSystem	0.00		5	Enemy
EditorCompanionGameObjectUpdateSys	not run		7	Enemy
SceneSystemGroup			9	Enemy
GameObjectSceneSystem	0.00		11	Enemy
ResolveSceneReferenceSystem	0.00		13	Enemy
EndInitializationEntityCommandBufferSys	0.00		15	Player
Update			16	Enemy
SimulationSystemGroup			18	Enemy
BeginSimulationEntityCommandBufferSys	0.00		31	Enemy
FixedStepSimulationSystemGroup			22	Enemy
BeginFixedStepSimulationEntityComm	0.00			

# USER INPUT

# INPUT MODULE

- Default **Input** Method
- “The Old Way”
- Stateless & Axis-Based
- Input Manager

```
void ProcessInput()
{
    if (Input.GetKeyDown(KeyCode.W)) { MoveForward(); }
    if (Input.GetButtonDown("Jump")) { DoJump(); }
    if (Input.GetAxis("Horizontal") > 0.0) { MoveCamera(); }
}
```

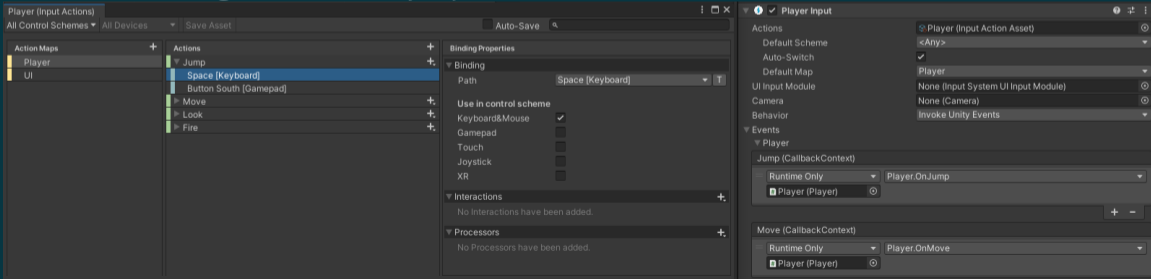


# INPUT SYSTEM

- **Input System** Package
- “The New Way”
- Stateless & Action-Based
- Mapping, Bindings, Virtual
- Higher Complexity
- Rebinding, Local Multiplayer

```
public void OnMove(InputAction.CallbackContext ctx)
{ DoMove( ctx.ReadValue<Vector2>()); }
```

```
public void OnJump(InputAction.CallbackContext ctx)
{ if (ctx.started) { DoJump(); } }
```



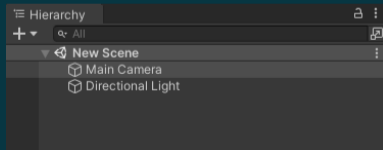


# SCENE HIERARCHY

# USING GAMEOBJECT

- The Main Hierarchy
- Hybrid **OOP** with **Components**
  - ▶ **GameObject** = (Almost) Empty Container
  - ▶ **Component** as Base
  - ▶ **Behavior** can be Enabled
  - ▶ **MonoBehavior** adds Functionality
- Editor Integration

→ Demonstration



- The Experimental Hierarchy
- Pure **Entity-Component-System**

- ▶ **Entity** = Identifier
- ▶ **Component** = Pure Data
- ▶ **System** = Logic & Behavior
- ▶ **World** = Entity Groups

- **Creation vs Conversion** Workflow

→ **Demonstration**



## ADDITIONAL RESOURCES

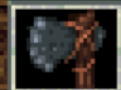
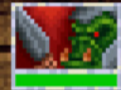
- [Manual] Unity User Manual
- [Manual] Unity Learn
- [YouTube] Luna Meier: Entity Interaction

LUMBER: 3700

GOLD: 2100

Thanks For  
Your Attention!

Warcraft: Orcs & Humans



# REFERENCES I