



# Unity 技术开放日

UNITY OPEN DAY

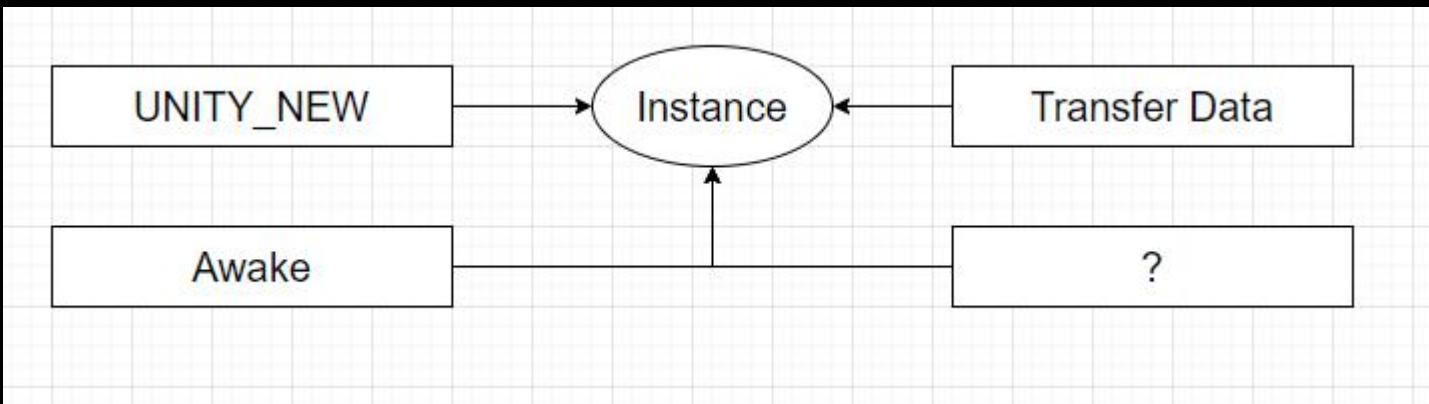
# 揭秘Unity的黑盒世界

Unity大中华区高级技术经理

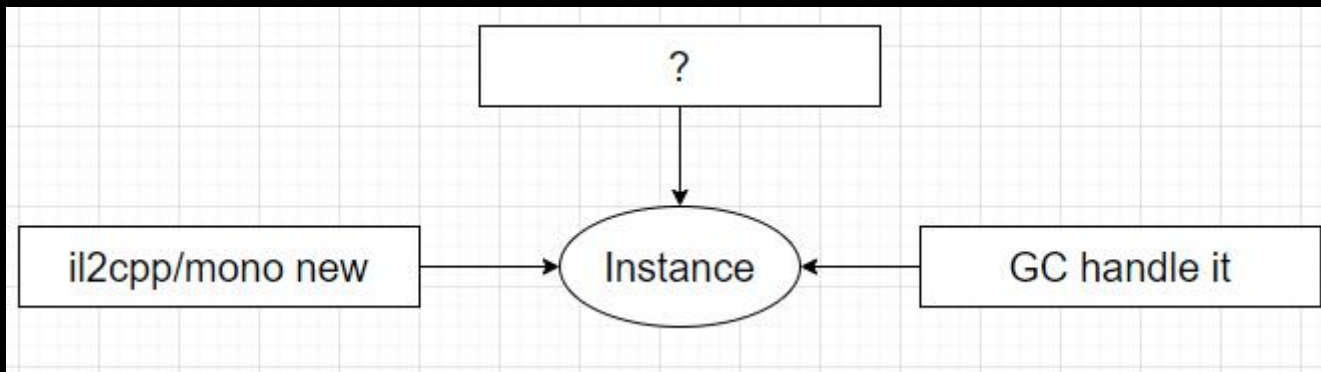
高川

# Native & Managed Objects

# 创建一个Native Object



# 创建一个Managed Object



# 序列化

序列化 != 持久化

# Unity Serialization

- Serialization is used for many things in Unity
  - Inspection in the editor
  - Prefab instantiation



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  - Inspection in the editor
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  - Copy/Paste
  - Undo

# Unity Serialization

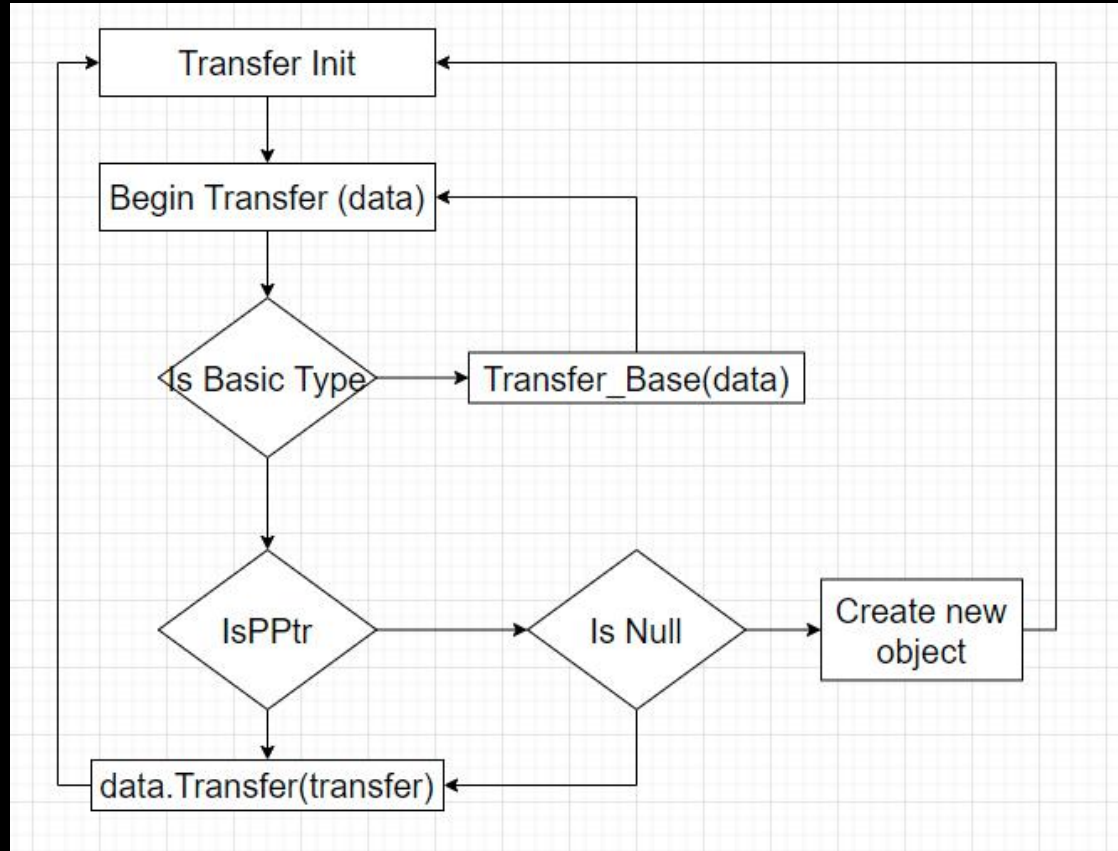
- Serialization is used for many things in Unity
  - Inspection in the editor
  - Prefab instantiation
  - Copy/Paste
  - Undo
  - Dependency collection
  - Asset garbage collection

# Built-in Serialization

- Native Serialization
- Managed Serialization
- Blobfication

# Design


## – WorkFlow



# Design

## — WorkFlow

Root in Prefab Asset


  **GameObject**  Static

Tag **Untagged** Layer **Default**

**Transform**

Position	X	638.3854	Y	392.2732	Z	-316.6173
Rotation	X	0	Y	0	Z	0
Scale	X	1	Y	1	Z	1

**Box Collider**

Edit Collider 

Is Trigger

Material **None (Physic Material)**

Center	X	0	Y	0	Z	0
Size	X	1	Y	1	Z	1

**Test Script (Script)**

Script **TestScript**

**Add Component**

```
YAML 1.1
%TAG !u! tag:unity3d.com,2011:
--- !u1 !7223703268976162979
GameObject:
  m_ObjectHideFlags: 0
  m_CorrespondingSourceObject: {fileID: 0}
  m_PrefabInstance: {fileID: 0}
  m_PrefabAsset: {fileID: 0}
  serializedVersion: 6
  m_Component:
  - component: {fileID: 4389956071922597883}
  - component: {fileID: 4812761673591224576}
  - component: {fileID: 7555090594444051124}
  m_Layer: 0
  m_Name: GameObject
  m_TagString: Untagged
  m_Icon: {fileID: 0}
  m_NavMeshLayer: 0
  m_StaticEditorFlags: 0
  m_IsActive: 1
--- !u4 !4389956071922597883
Transform:
  m_ObjectHideFlags: 0
  m_CorrespondingSourceObject: {fileID: 0}
  m_PrefabInstance: {fileID: 0}
  m_PrefabAsset: {fileID: 0}
  m_GameObject: {fileID: 7223703268976162979}
  m_LocalRotation: {x: 0, y: 0, z: 0, w: 1}
  m_LocalPosition: {x: 638.3854, y: 392.27322, z: -316.61728}
  m_LocalScale: {x: 1, y: 1, z: 1}
  m_Children: []
  m_Father: {fileID: 0}
  m_RootOrder: 0
  m_LocalEulerHint: {x: 0, y: 0, z: 0}
--- !u6 !4812761673591224576
BoxCollider:
  m_ObjectHideFlags: 0
  m_CorrespondingSourceObject: {fileID: 0}
  m_PrefabInstance: {fileID: 0}
  m_PrefabAsset: {fileID: 0}
  m_GameObject: {fileID: 7223703268976162979}
  m_Material: {fileID: 0}
  m_IsTrigger: 0
  m_Enabled: 1
  serializedVersion: 2
  m_Size: {x: 1, y: 1, z: 1}
  m_Center: {x: 0, y: 0, z: 0}
--- !u114 !7555090594444051124
MonoBehaviour:
  m_ObjectHideFlags: 0
  m_CorrespondingSourceObject: {fileID: 0}
  m_PrefabInstance: {fileID: 0}
  m_PrefabAsset: {fileID: 0}
  m_GameObject: {fileID: 7223703268976162979}
  m_Enabled: 1
  m_EditorHideFlags: 0
  m_Script: {fileID: 11500000, guid: ee0d6289845b19d4da7093dee915726c, type: 3}
  m_Name:
  m_EditorClassIdentifier:
```

# Design

- TransferFunctions
  - StreamedBinaryRead
  - StreamedBinaryWrite
  - SafeBinaryRead
  - YAMLRead
  - YAMLWrite
  - RemapPPtrtransfer
  - GenerateTypeTreeTransfer
  - BlobWrite

# PPtr

- What is PPtr
- InstanceID<->ObjectPtr

# Managed Serialization Overview

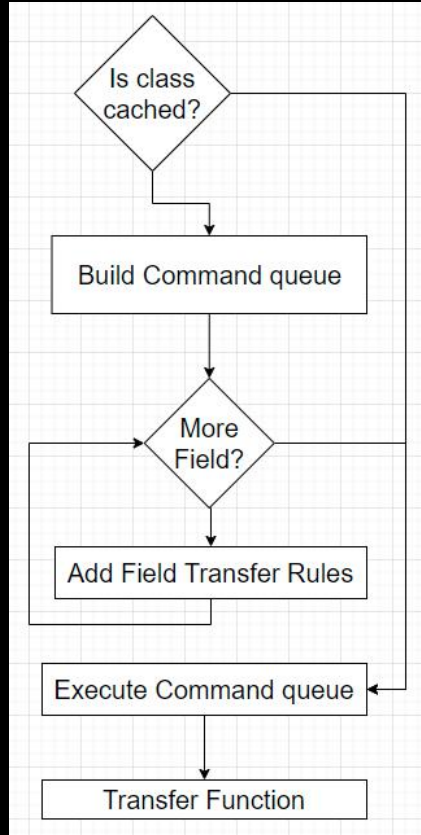
- Supports reading and writing binary, Yaml and JSON formats.
- Can handle most common data types, including:
  - lists
  - arrays
  - value types
  - reference types (via [SerializeReference])



# Managed Serialization Overview

- No transfer function
- Built on top of the unity serialization system
- Save fields based on rules
- No back-compatibility support(version)

# Workflow



# Blobfication

- What is a blob?
  - a chunk of memory
  - relocatable with memcpy
  - contains no virtual classes

# Blobfication

- Pros
  - tightly pack data
  - reduce duplicate data
  - makes assets completely relocatable
  - read from disk directly instead of serializing
  - simplify streaming
  - lays out memory nicely

# Blobfication

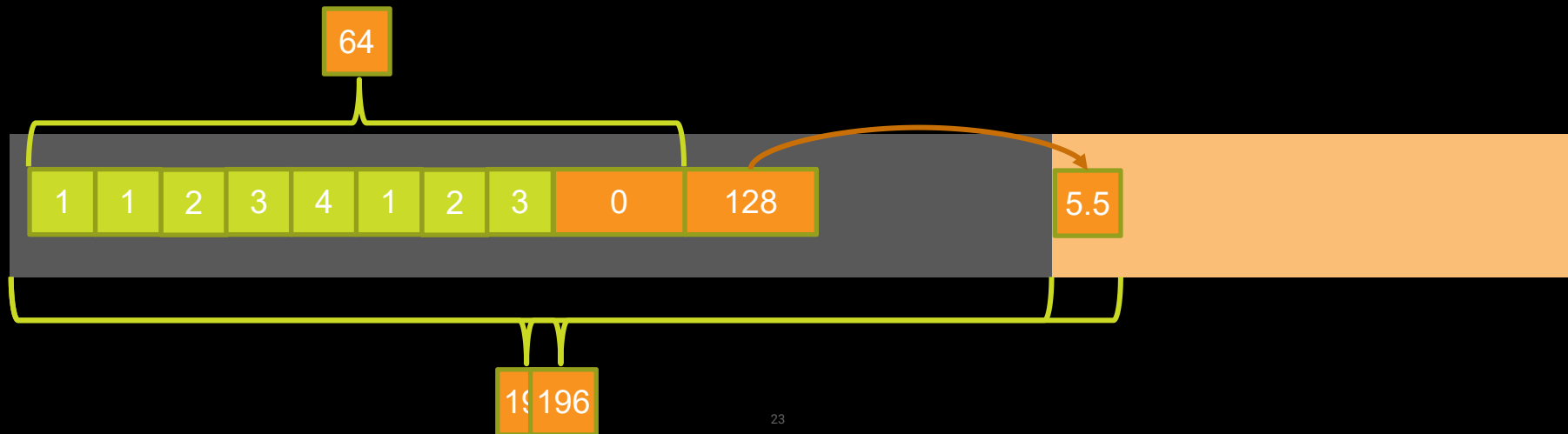
- Cons
  - Code must be written data oriented
  - Can't use virtual functions
  - Can't use STL
  - No container type support

# OffsetPtr

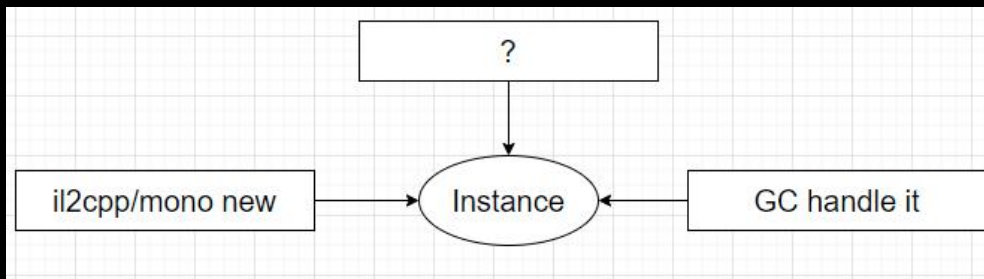
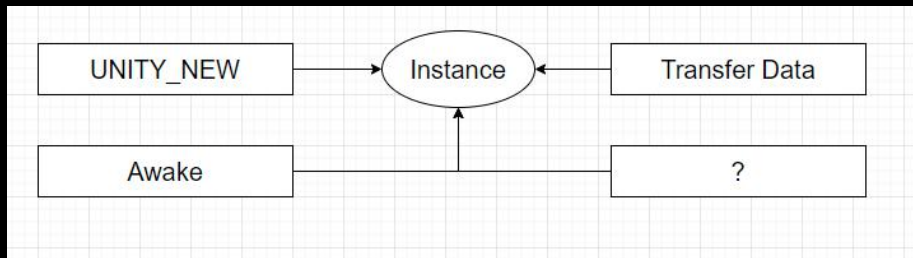
# Workflow

```
int          intValue1;  
math::float4 float4Value;  
Vector3f    vector3;  
  
OffsetPtr<float> nullPtr;  
  
OffsetPtr<float> floatPtr;
```

```
sourceData.intValue1 = 1;  
sourceData.float4Value = math::float4(1, 2, 3, 4);  
sourceData.vector3 = Vector3f(1, 2, 3);  
sourceData.nullPtr = NULL;  
sourceData.floatPtr = new float;  
*sourceData.floatPtr = 5.5F;
```

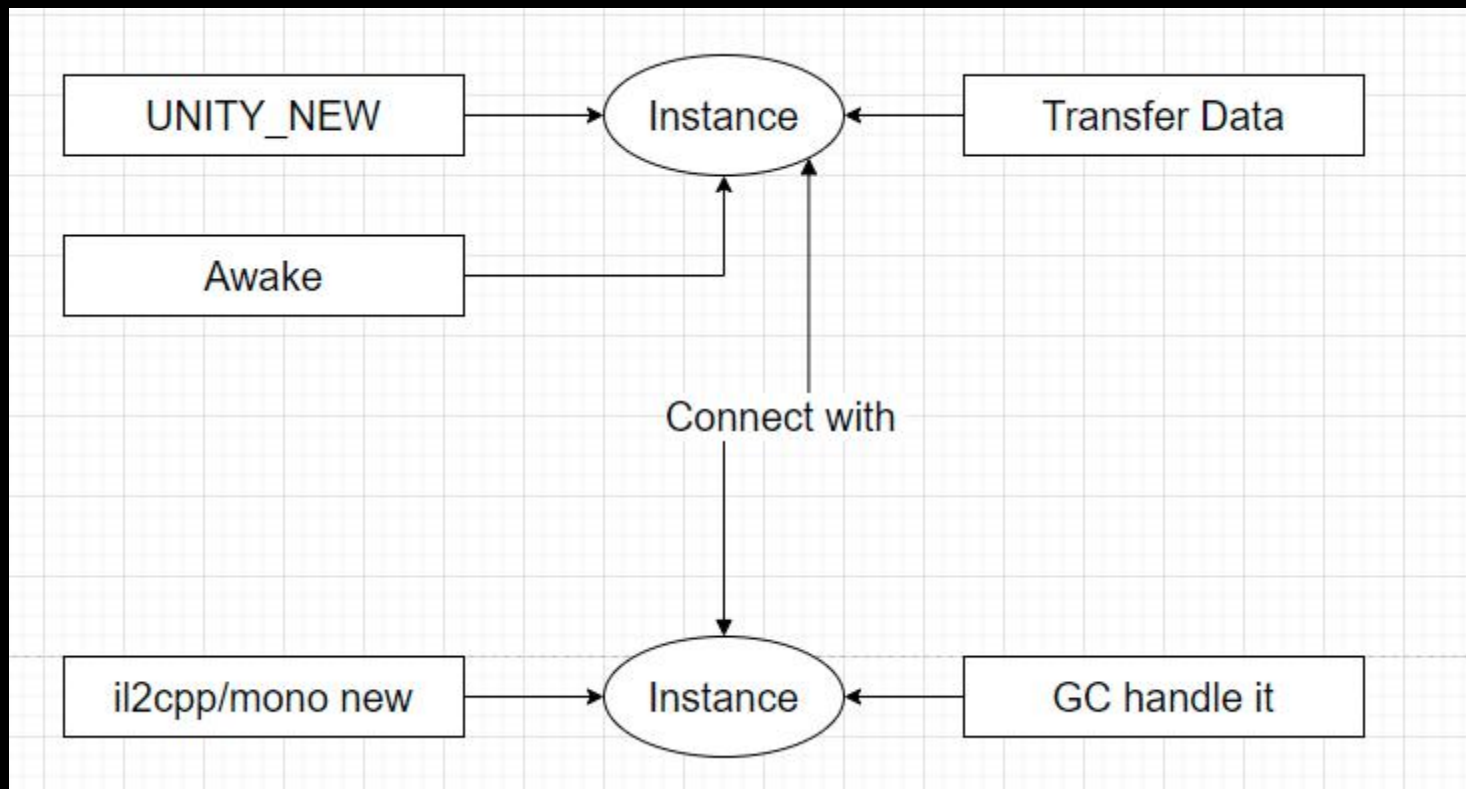


# Native 与 Managed Object 关系





# Native 与 Managed Object 关系



# Native 与 Managed Object 关系

一个栗子！

# Unity开发者社区：学

Unity 中文课堂



Unity 技术专栏



Unity企业服务：学

Unity 源码培训

&

Unity 原理培训

[julia.mao@unity3d.com](mailto:julia.mao@unity3d.com)



# Unity开发者社区：问



成都UnityUserGroup



该二维码7天内(9月24日前)有效，重新  
进入将更新



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10.5万 粉丝	597 投稿	20.3万 获赞
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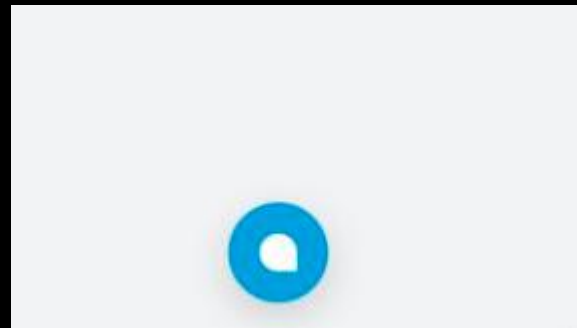
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# Unity开发者社区：问

Unity 问答



Unity Hub



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Unity大中华区高级技术经理

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谢谢