# BLUEPRINTS TO C++
## UNREAL ENGINE 4 - C++ PROGRAMMING GUIDE

EPISODE 2

UPROPERTYS

# OUTLINE

1. UPROPERTY Introduction

2. C++ basic data types

3. Blueprint data types

4. Blueprint unsupported C++ types

5. UPROPERTY specifiers and meta tags

6. Variables and general Topics

7. Tip of the day

# UPROPERTY

UPROPERTY([specifier, specifier, …], [meta=(key=value, key=value, …)])

Type VariableName

Example:

UPROPERTY(EditAnywhere, BlueprintReadOnly, Category="Config", meta=(DisplayName="Minimum Height"))

Int32 MinHeight;

# BLUEPRINT DATA TYPES

- Boolean -> bool ( or uint8 :1)
- Byte -> uint8
- Integer -> int32
- Integer64 -> int64
- Float -> float
- Name -> FName
- String -> FString
- Text -> FText
- Vector -> FVector
- Rotator -> FRotator
- Transform -> FTransform
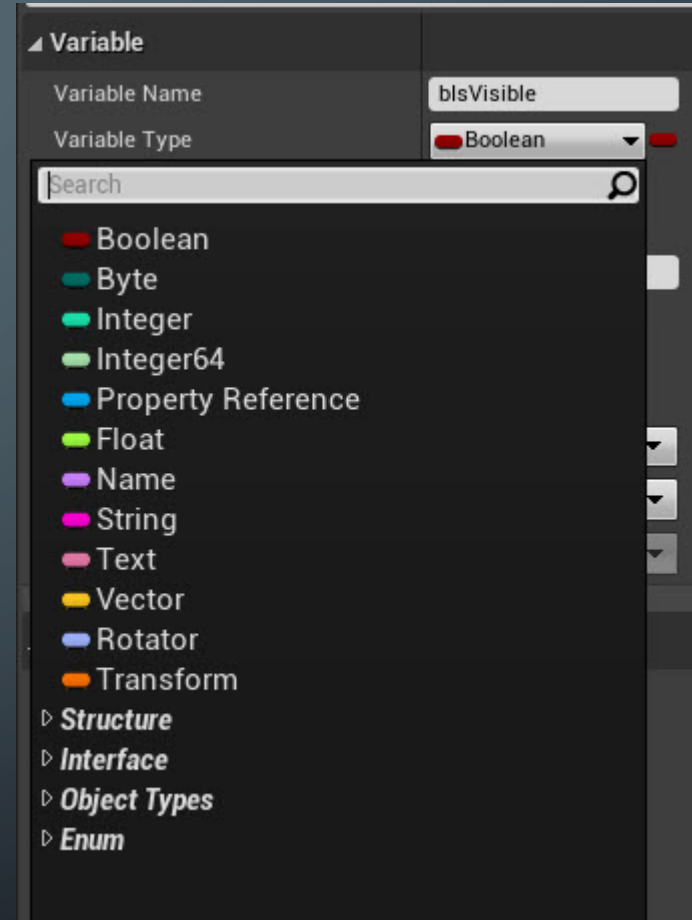
# C++ DATA TYPES

Integers

- uint8 , uint16, uint32, uint64

- int8, int16, int32, int64

Floating Point

- float , double

# BLUEPRINT UNSUPPORTED C++ TYPES

- uint16

- uint32

- uint64

- int8

- int16

- double

# IMPORTANT UPROPERTY SPECIFIERS

1. BlueprintReadOnly

2. BlueprintReadWrite

3. VisibleAnywhere

4. VisibleDefaultsOnly

5. VisibleInstanceOnly

6. EditAnywhere

7. EditDefaultsOnly

8. EditInstanceOnly

9. Category

# IMPORTANT META TAGS

1. DisplayName="Property Name" (Blueprint Displayed Name)

2. Tooltip="This is a tooltip" (Blueprint Displayed Tooltip)

3. ClampMin="N" (float and integers, min value that can be entered)

4. ClampMax="N" (float and integers, max value that can be entered)

5. AllowPrivateAccess="true|false"

# VARIABLES AND GENERAL TOPICS

- Camel Case Naming Convention (variables must begin upper case)

- Exception booleans :  start with lower case b (i.e.  bool bIsUp )

- BlueprintReadOnly and BlueprintReadWrite work only with public/protected Members, unless AllowPrivateAccess="true" meta tag is specified

- Shadowed Variables are not allowed
  - Covered Next Episode: For Function Parameter Name use In/Out Naming Convention

Documentation Link to Properties

https://docs.unrealengine.com/en-US/Programming/UnrealArchitecture/Reference/Properties/Specifiers/index.html

# TIP OF THE DAY

## Category and Subcategories

Category="TopCategory|SubCategory|..."


Example:

UPROPERTY(EditAnywhere, BlueprintReadOnly, Category="Config|Bounds"))

float MinWidth;