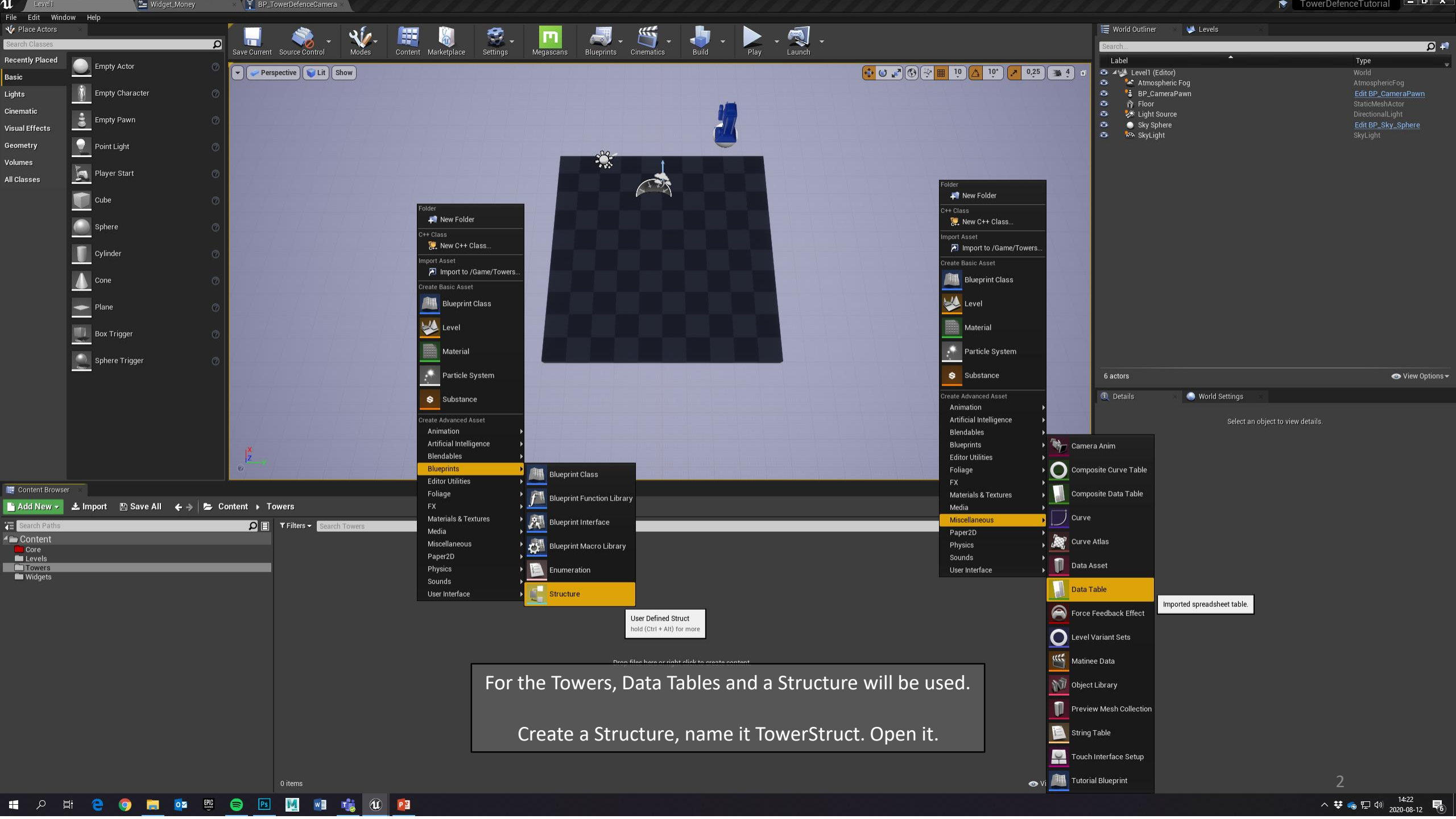


Tower Defence

Towers

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For the Towers, Data Tables and a Structure will be used.
Create a Structure, name it TowerStruct. Open it.

Imported spreadsheet table.

User Defined Struct
hold (Ctrl + Alt) for more

Structure

New Variable

Tooltip

Damage	Float	-	▲	▼	x
FireRate	Float	-	▲	▼	x
Range	Float	-	▲	▼	x
ProjectileSpeed	Float	-	▲	▼	x

Default Values

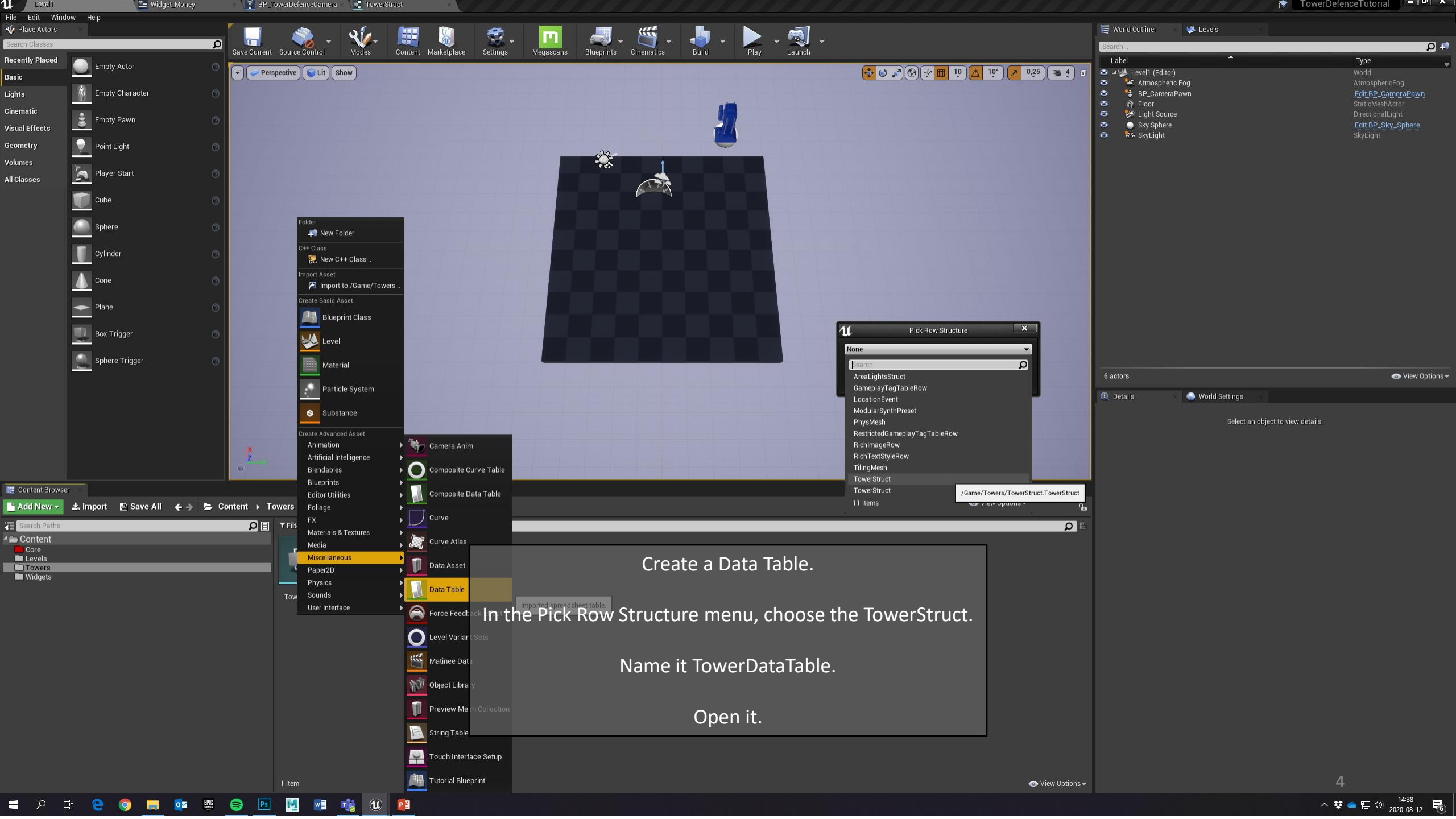
Damage	0.0
FireRate	0.0
Range	0.0
ProjectileSpeed	0.0

Change the Default Variable to a Float, then create 3 additional Variables with the New Variable button.

Name them:

- Damage
- FireRate
- Range
- ProjectileSpeed

Save and exit.



- Folder
 - New Folder
- C++ Class
 - New C++ Class...
- Import Asset
 - Import to /Game/Towers...
- Create Basic Asset
 - Blueprint Class
 - Level
 - Material
 - Particle System
 - Substance
- Create Advanced Asset
 - Animation
 - Camera Anim
 - Artificial Intelligence
 - Blendables
 - Blueprints
 - Editor Utilities
 - Foliage
 - FX
 - Materials & Textures
 - Media
 - Miscellaneous
 - Composite Curve Table
 - Composite Data Table
 - Curve
 - Curve Atlas
 - Data Asset
 - Data Table
 - Force Feedback
 - Level Variants
 - Matinee Data
 - Object Library
 - Preview Mesh Collection
 - String Table
 - Touch Interface Setup
 - Tutorial Blueprint
 - Paper2D
 - Physics
 - Sounds
 - User Interface

Pick Row Structure

None

Search

- AreaLightsStruct
- GameplayTagTableRow
- LocationEvent
- ModularSynthPreset
- PhysMesh
- RestrictedGameplayTagTableRow
- RichImageRow
- RichTextStyleRow
- TilingMesh
- TowerStruct
- TowerStruct
- 11 items

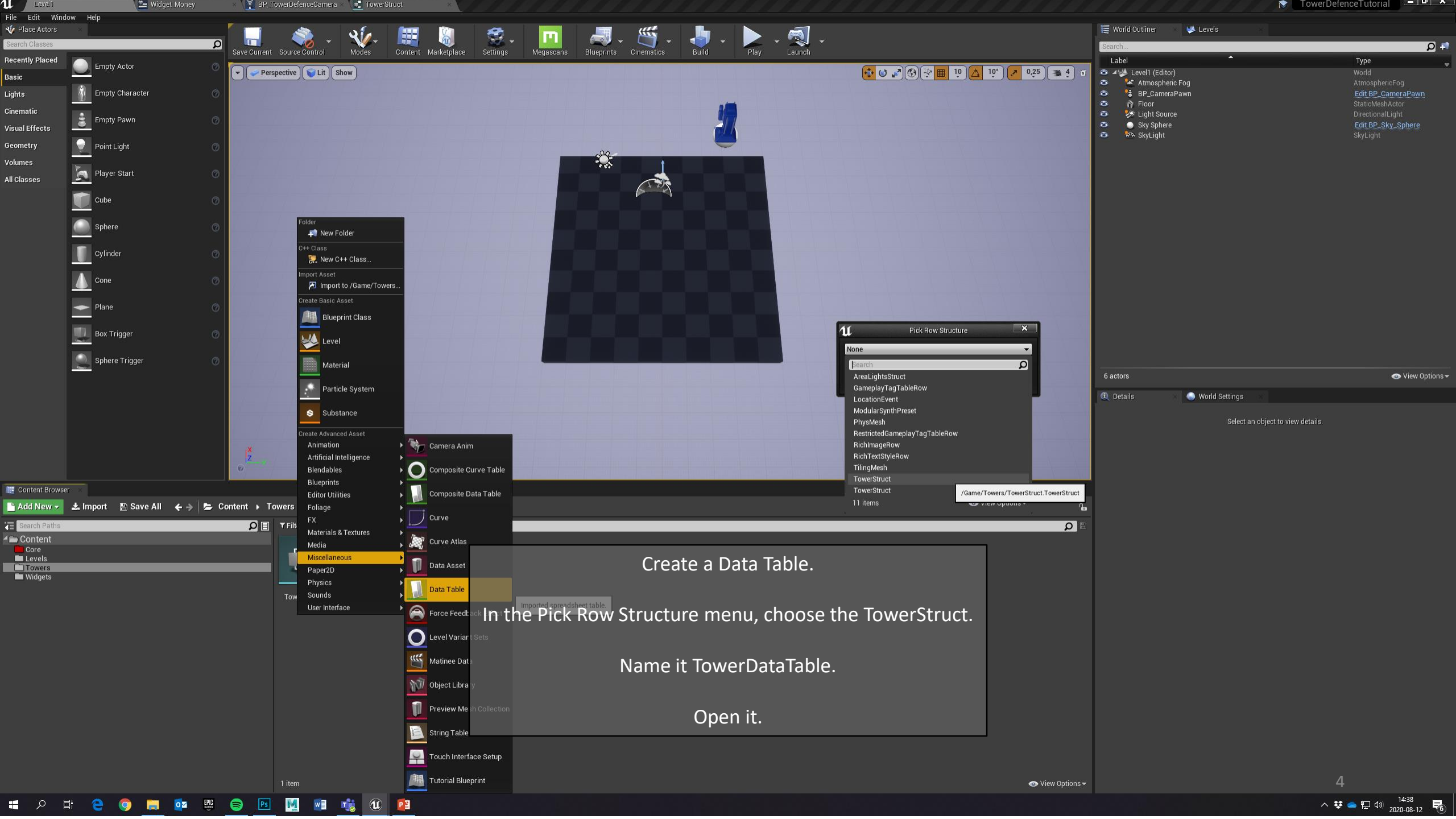
/Game/Towers/TowerStruct.TowerStruct

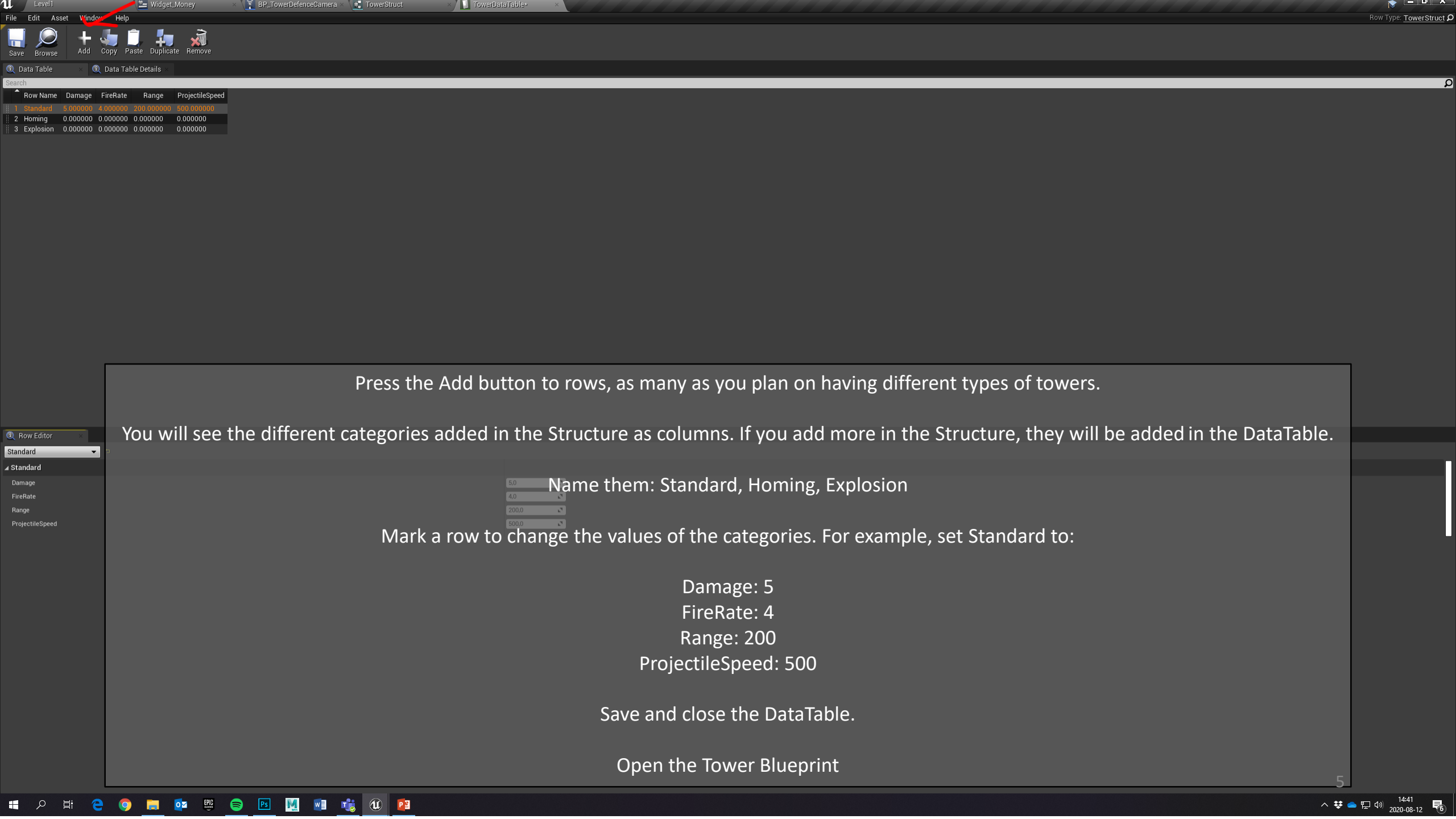
Create a Data Table.

In the Pick Row Structure menu, choose the TowerStruct.

Name it TowerDataTable.

Open it.





Press the Add button to rows, as many as you plan on having different types of towers.

You will see the different Row categories added in the Structure as columns. If you add more in the Structure, they will be added in the DataTable.



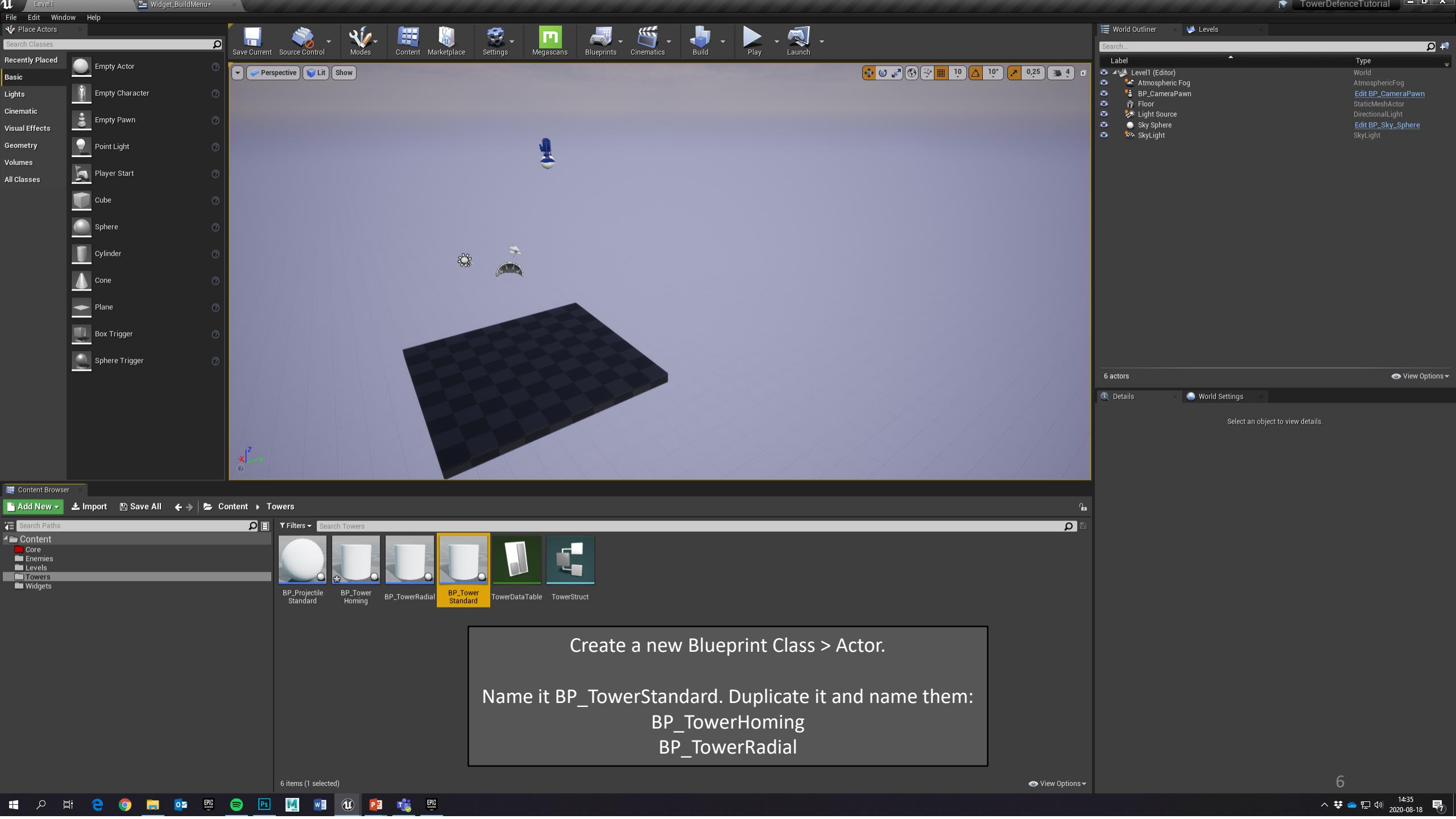
Name them: Standard, Homing, Explosion

Mark a row to change the values of the categories. For example, set Standard to:

Damage: 5
FireRate: 4
Range: 200
ProjectileSpeed: 500

Save and close the DataTable.

Open the Tower Blueprint



File Edit Window Help

Place Actors

Search Classes

Save Current Source Control Modes Content Marketplace Settings Megascans Blueprints Cinematics Build Play Launch

Perspective Lit Show

World Outliner Levels

Search

Label	Type
Level1 (Editor)	World
Atmospheric Fog	AtmosphericFog
BP_CameraPawn	Edit BP_CameraPawn
Floor	StaticMeshActor
Light Source	DirectionalLight
Sky Sphere	Edit BP_Sky_Sphere
SkyLight	SkyLight

6 actors View Options

Details World Settings

Select an object to view details.

Content Browser

Add New Import Save All Content Towers

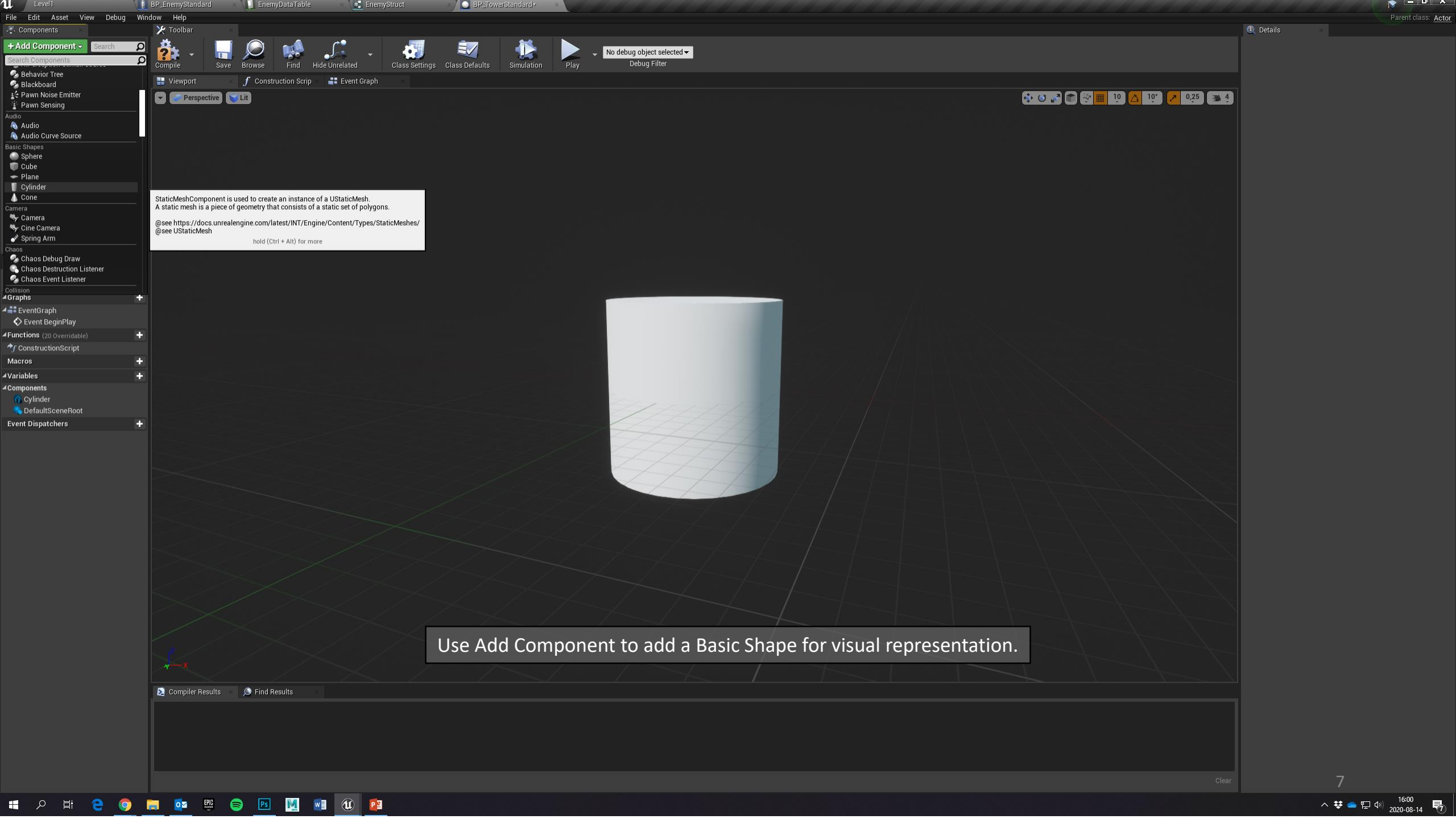
Search Paths Filters Search Towers

BP_Projectile Standard	BP_Tower Homing	BP_TowerRadial	BP_Tower Standard	TowerDataTable	TowerStruct
------------------------	-----------------	----------------	-------------------	----------------	-------------

6 items (1 selected)

Create a new Blueprint Class > Actor.

Name it BP_TowerStandard. Duplicate it and name them:
BP_TowerHoming
BP_TowerRadial



StaticMeshComponent is used to create an instance of a UStaticMesh. A static mesh is a piece of geometry that consists of a static set of polygons.
@see <https://docs.unrealengine.com/latest/INT/Engine/Content/Types/StaticMeshes/>
@see UStaticMesh
hold (Ctrl + Alt) for more

Use Add Component to add a Basic Shape for visual representation.

File Edit Asset View Debug Window Help

Components

+ Add Component Search

BP_TowerStandard(self)

DefaultSceneRoot

Cylinder

Sphere

Drop asset here to add a component.

Toolbar

Compile Save Browse Find Hide Unrelated Class Settings Class Defaults Simulation Play No debug object selected Debug Filter

Viewport Construction Scrip Event Graph

Perspective Lit

My Blueprint

+ Add New Search

Graphs

EventGraph

Event BeginPlay

Functions (20 Overridable)

ConstructionScript

Macros

Variables

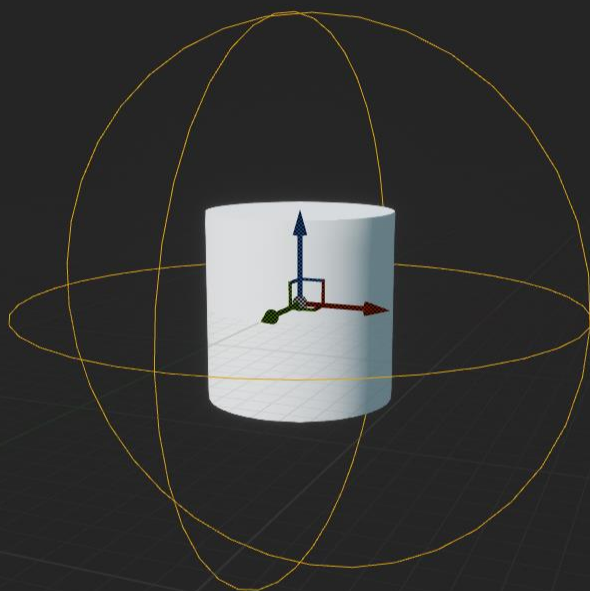
Components

Sphere

Cylinder

DefaultSceneRoot

Event Dispatchers



Add a Sphere Collision.

Go to the Event Graph.

Details

Search Details

Variable

Variable Name Sphere

Tooltip

Category Default

Editable when Inherited

Transform

Location X: 0.0 Y: 0.0 Z: 0.0

Rotation X: 0.0° Y: 0.0° Z: 0.0°

Scale X: 1.0 Y: 1.0 Z: 1.0

Mobility Static Stationary Movable

Sockets

Parent Socket None

Shape

Sphere Radius 150.0

Navigation

Area Class NavArea_Obstacle

Dynamic Obstacle

Fill Collision Underneath

Rendering

Visible

Hidden in Game

Physics

Simulate Physics

MassInKg 1296.473511

Linear Damping 0.01

Angular Damping 0.0

Enable Gravity

Constraints

Ignore Radial Impulse

Ignore Radial Force

Apply Impulse on Damage

Replicate Physics to

Collision

Simulation Generates

Phys Material Override None

Generate Overlap Events

Can Character Step Up Yes

Collision Presets OverlapAllDynamic

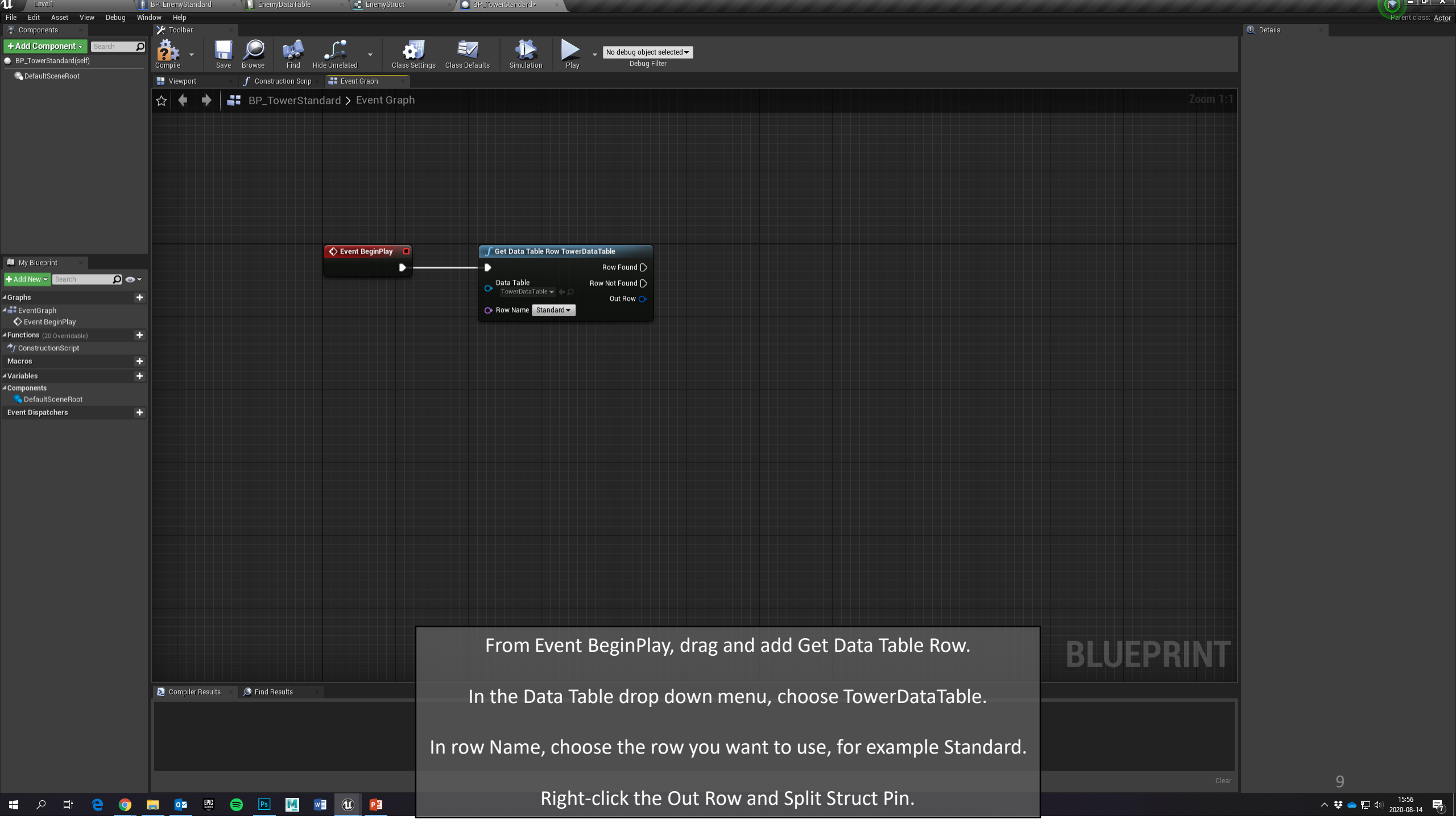
Tags

Component Tags 0 Array elements

Component Replication

Component Replicate

Cooking

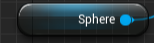
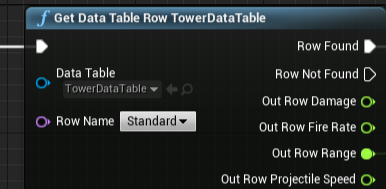
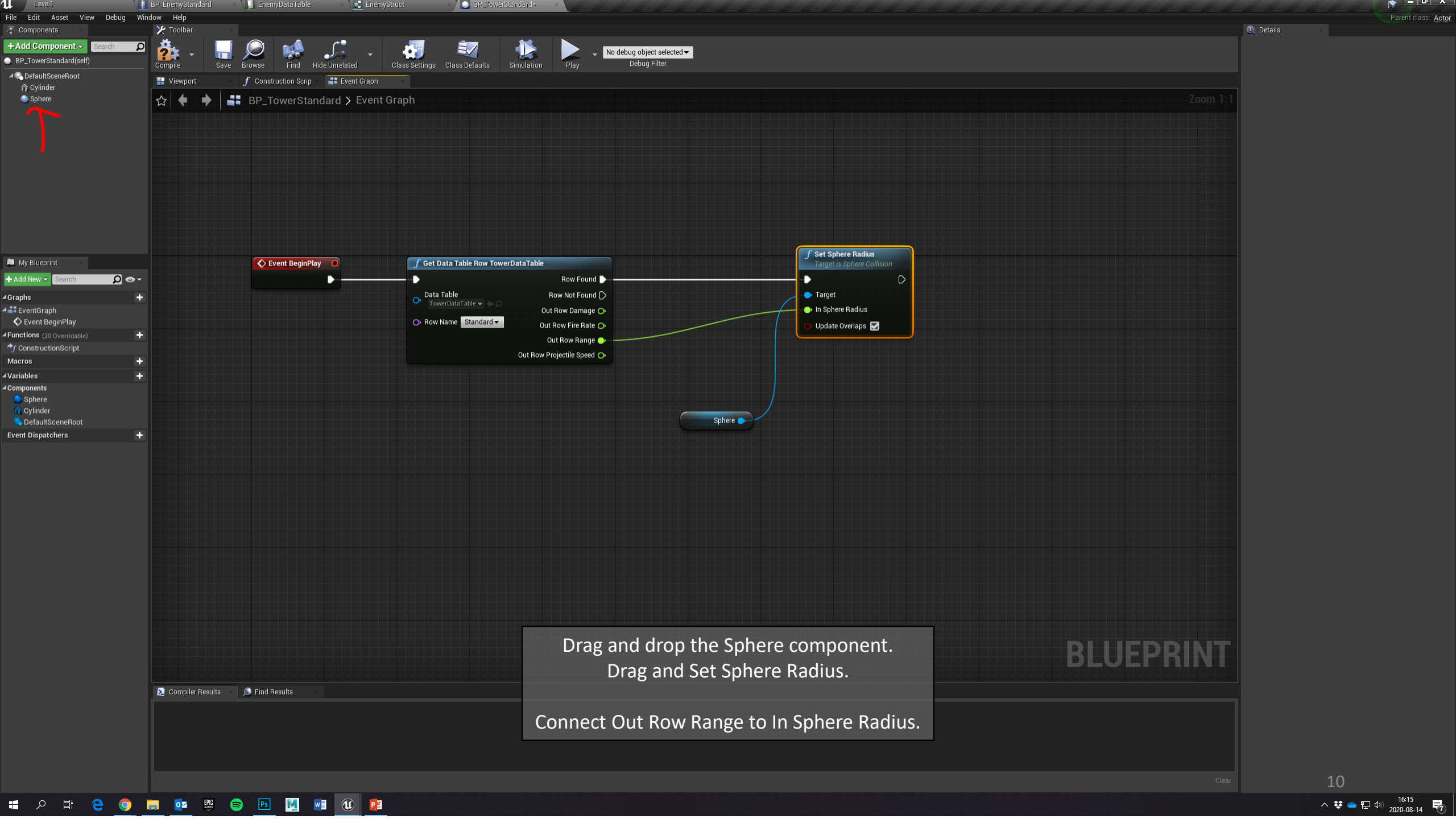


From Event BeginPlay, drag and add Get Data Table Row.

In the Data Table drop down menu, choose TowerDataTable.

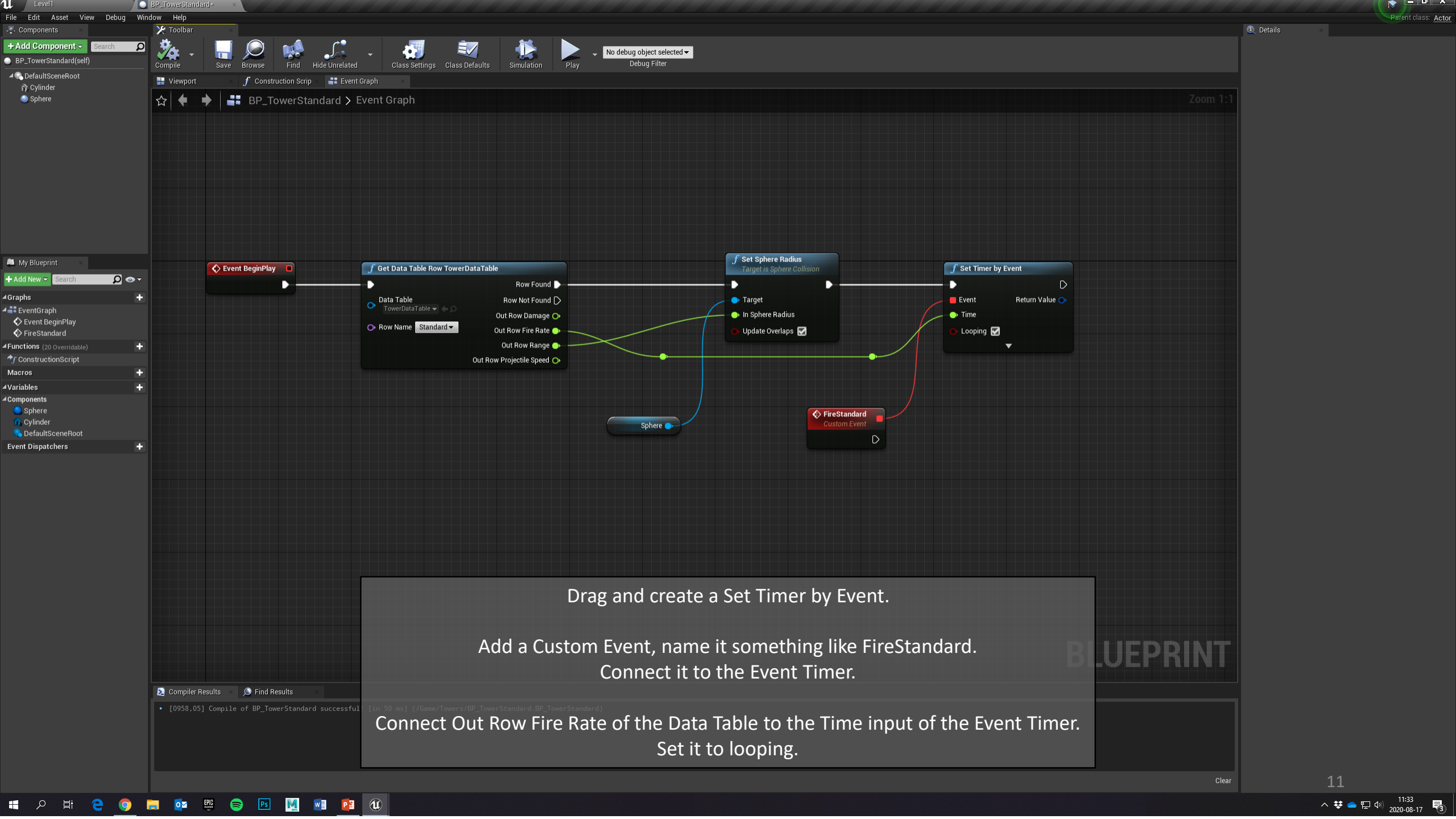
In row Name, choose the row you want to use, for example Standard.

Right-click the Out Row and Split Struct Pin.



Drag and drop the Sphere component.
Drag and Set Sphere Radius.
Connect Out Row Range to In Sphere Radius.

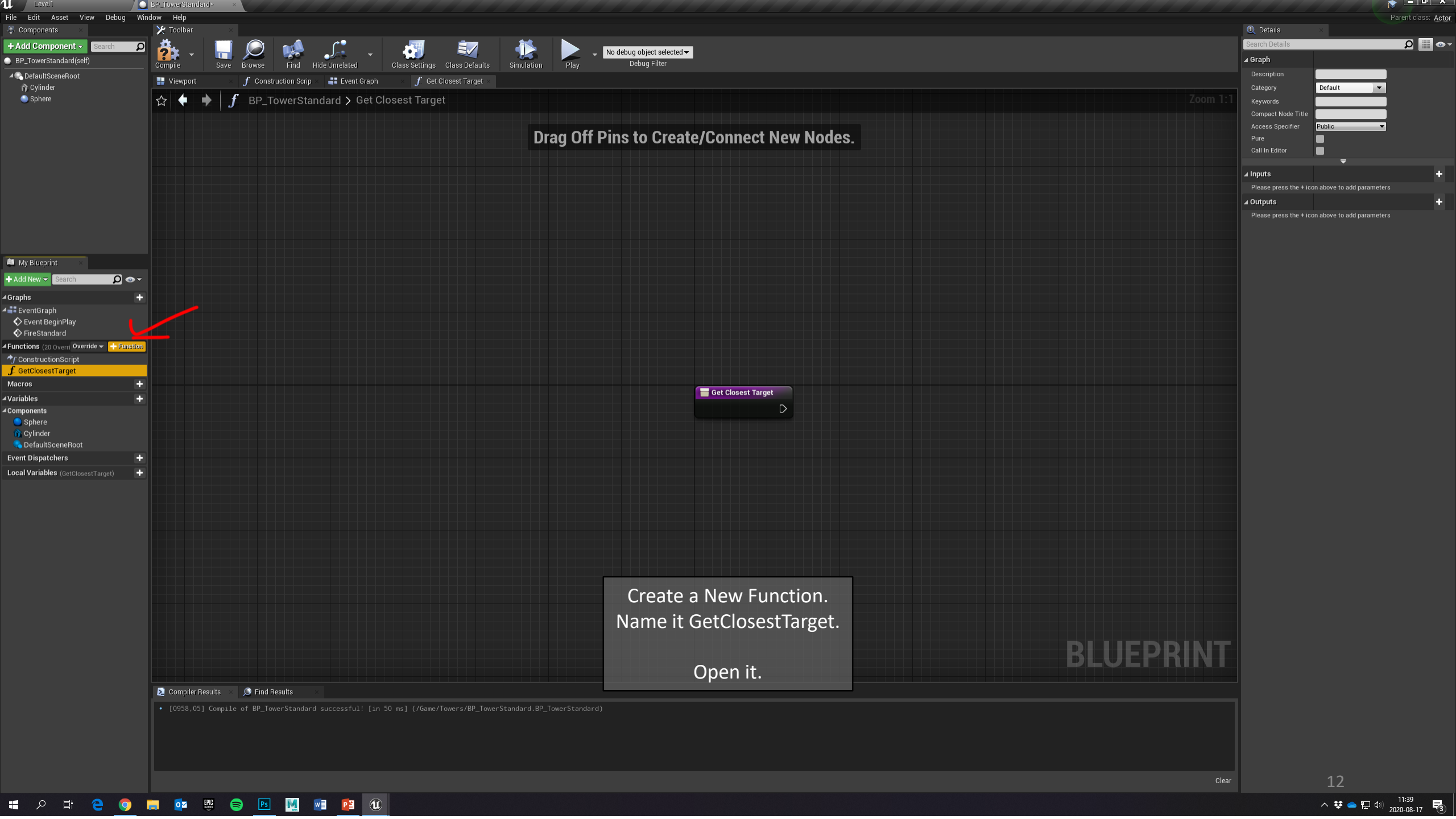
BLUEPRINT



Drag and create a Set Timer by Event.

Add a Custom Event, name it something like FireStandard.
Connect it to the Event Timer.

Connect Out Row Fire Rate of the Data Table to the Time input of the Event Timer.
Set it to looping.



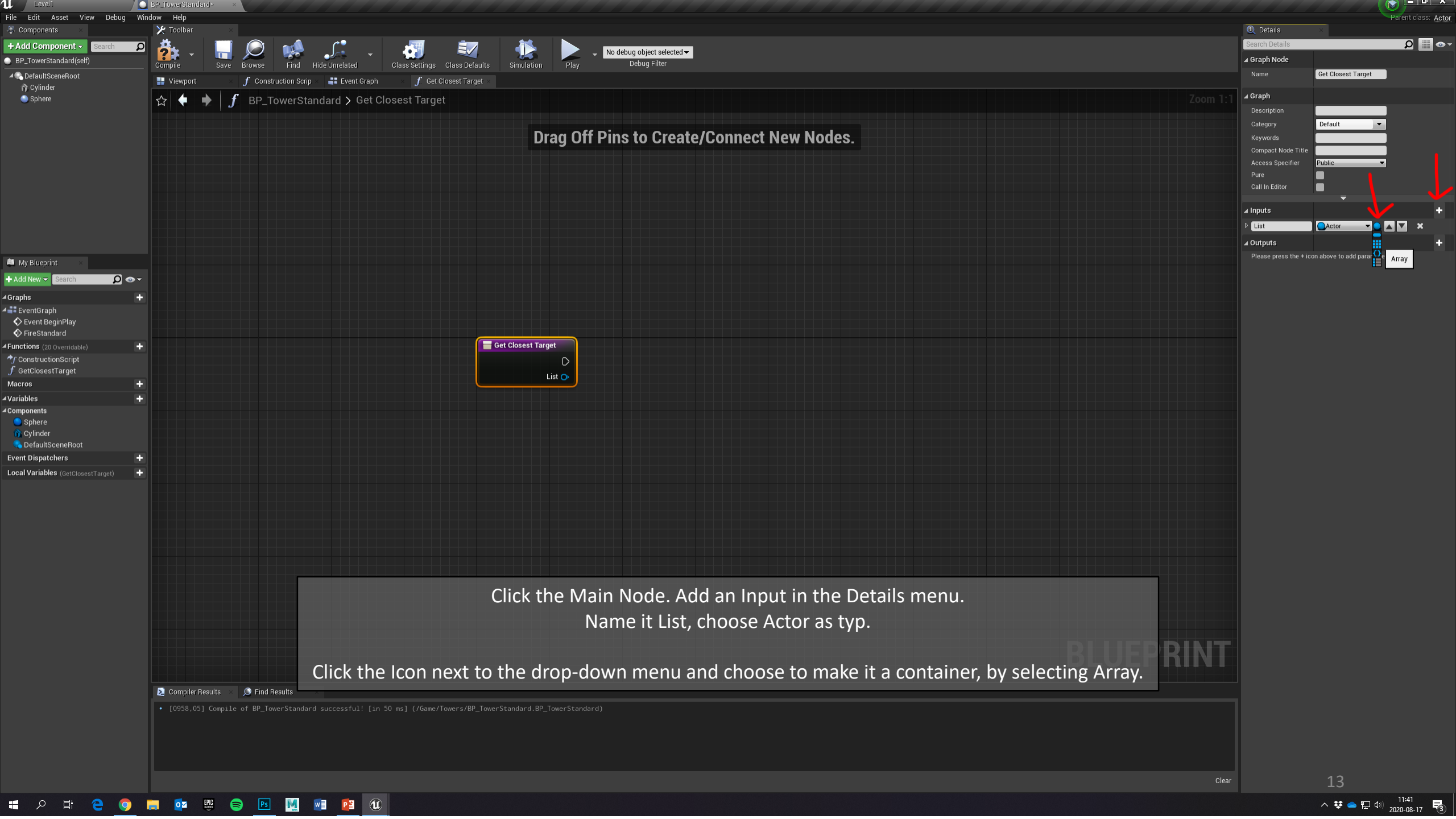
Drag Off Pins to Create/Connect New Nodes.

Create a New Function.
Name it GetClosestTarget.

Open it.

BLUEPRINT

[0958.05] Compile of BP_TowerStandard successful! [in 50 ms] (/Game/Towers/BP_TowerStandard.BP_TowerStandard)



Drag Off Pins to Create/Connect New Nodes.

Get Closest Target
List

Click the Main Node. Add an Input in the Details menu.
Name it List, choose Actor as type.
Click the Icon next to the drop-down menu and choose to make it a container, by selecting Array.

Details

Search Details

Graph Node

Name: Get Closest Target

Graph

Description: [Empty]

Category: Default

Keywords: [Empty]

Compact Node Title: [Empty]

Access Specifier: Public

Pure: [Unchecked]

Call In Editor: [Unchecked]

Inputs

List: Actor

Outputs

Please press the + icon above to add parameters

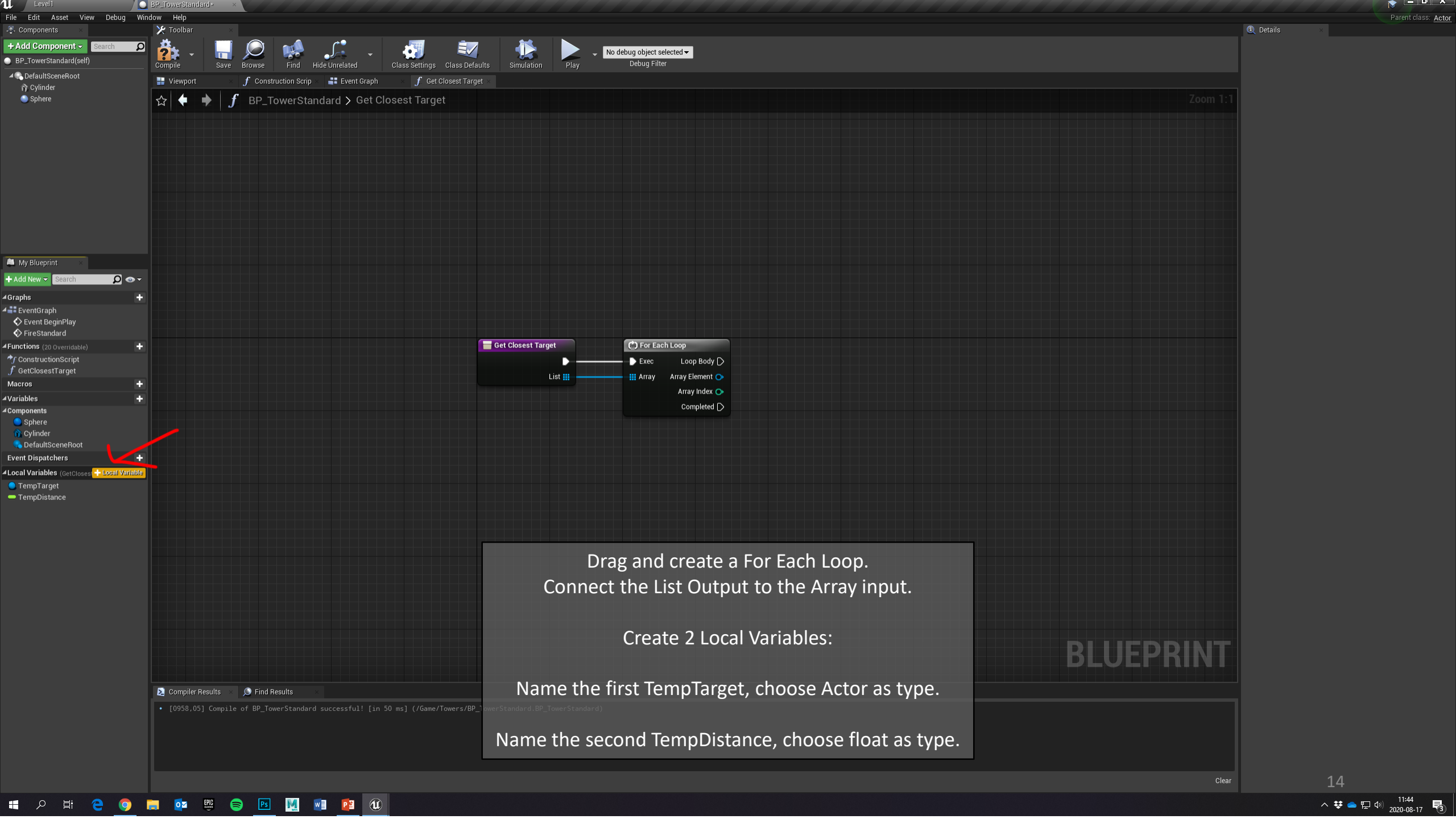
Array

Compiler Results

Find Results

[0958,05] Compile of BP_TowerStandard successful! [in 50 ms] (/Game/Towers/BP_TowerStandard.BP_TowerStandard)

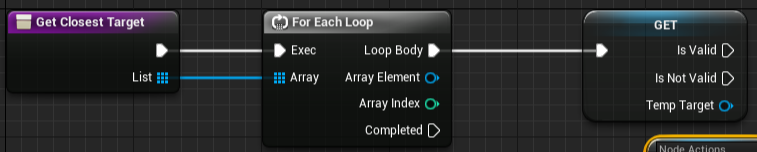
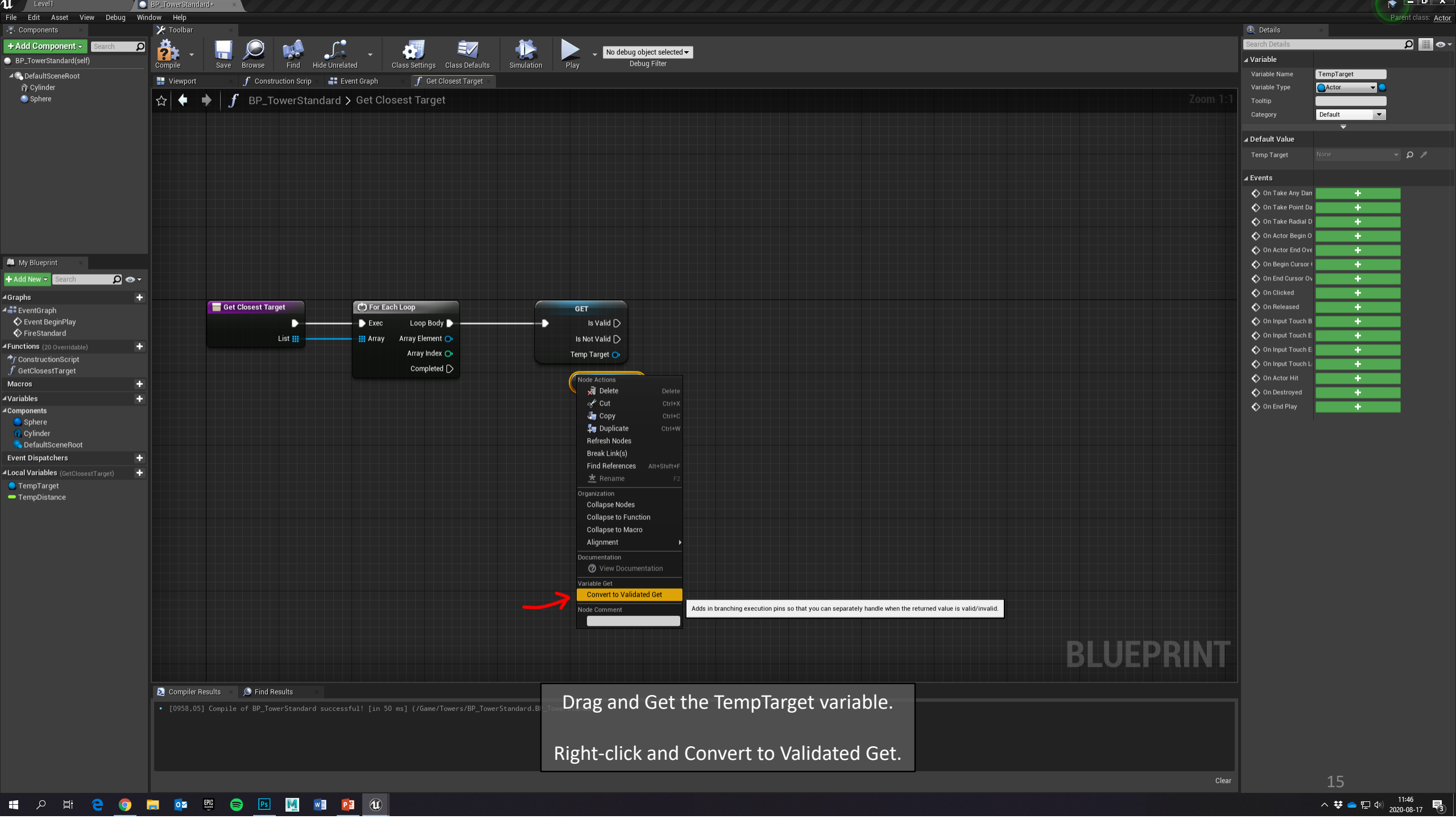
Clear



Drag and create a For Each Loop.
Connect the List Output to the Array input.

Create 2 Local Variables:
Name the first TempTarget, choose Actor as type.
Name the second TempDistance, choose float as type.

BLUEPRINT



- Node Actions
 - Delete
 - Cut
 - Copy
 - Duplicate
 - Refresh Nodes
 - Break Link(s)
 - Find References
 - Rename
- Organization
 - Collapse Nodes
 - Collapse to Function
 - Collapse to Macro
 - Alignment
- Documentation
 - View Documentation
- Variable Get
 - Convert to Validated Get**
- Node Comment

Adds in branching execution pins so that you can separately handle when the returned value is valid/invalid.

Drag and Get the TempTarget variable.
Right-click and Convert to Validated Get.

Details

Search Details

Variable

Variable Name: TempTarget

Variable Type: Actor

Tooltip:

Category: Default

Default Value

Temp Target: None

Events

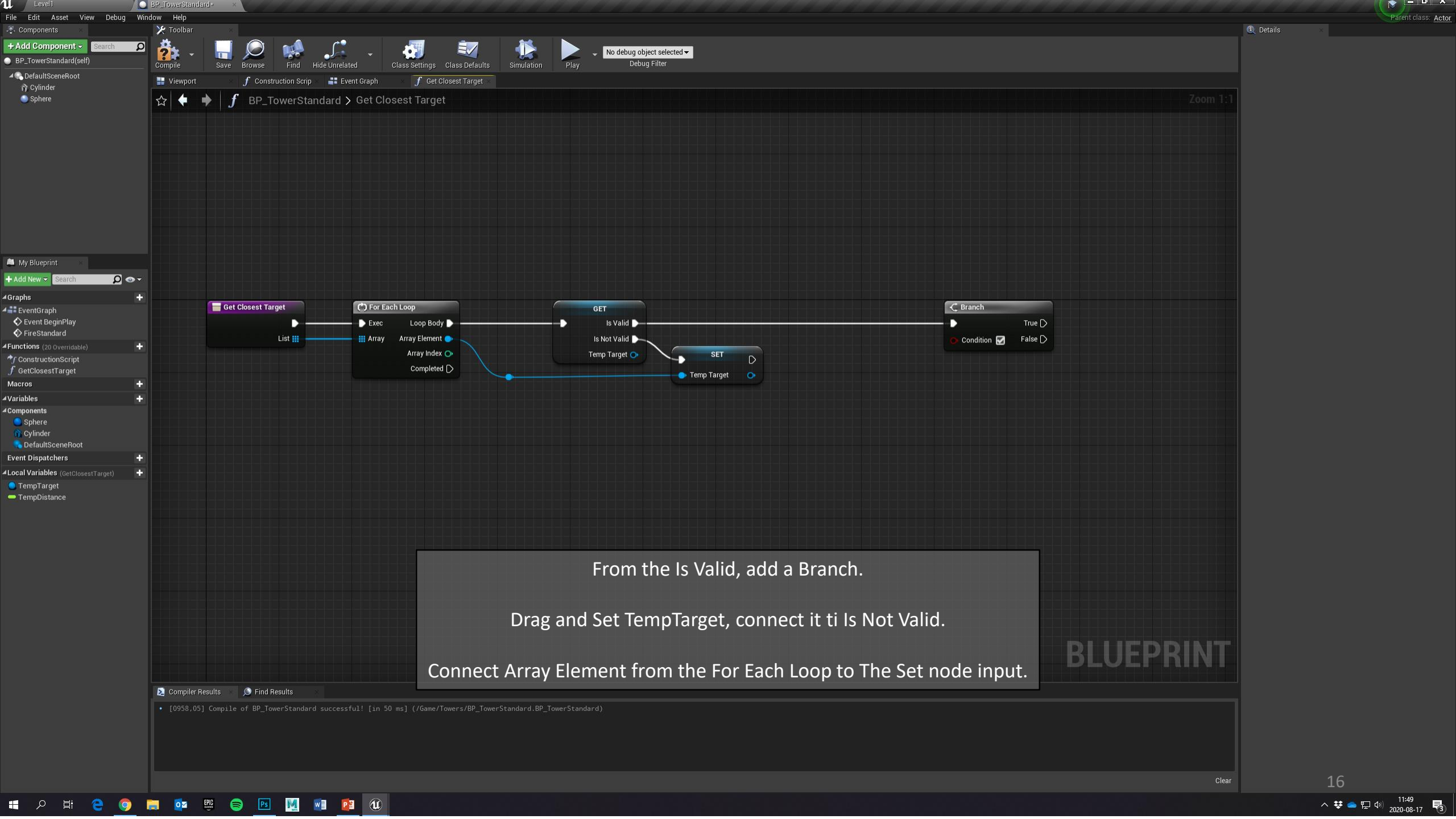
- On Take Any Dan
- On Take Point Da
- On Take Radial D
- On Actor Begin O
- On Actor End Ove
- On Begin Cursor I
- On End Cursor Ov
- On Clicked
- On Released
- On Input Touch B
- On Input Touch E
- On Input Touch E
- On Input Touch L
- On Actor Hit
- On Destroyed
- On End Play

Compiler Results

Find Results

- [0958,05] Compile of BP_TowerStandard successful! [in 50 ms] (//Game/Towers/BP_TowerStandard.BP_TowerStandard)

BLUEPRINT



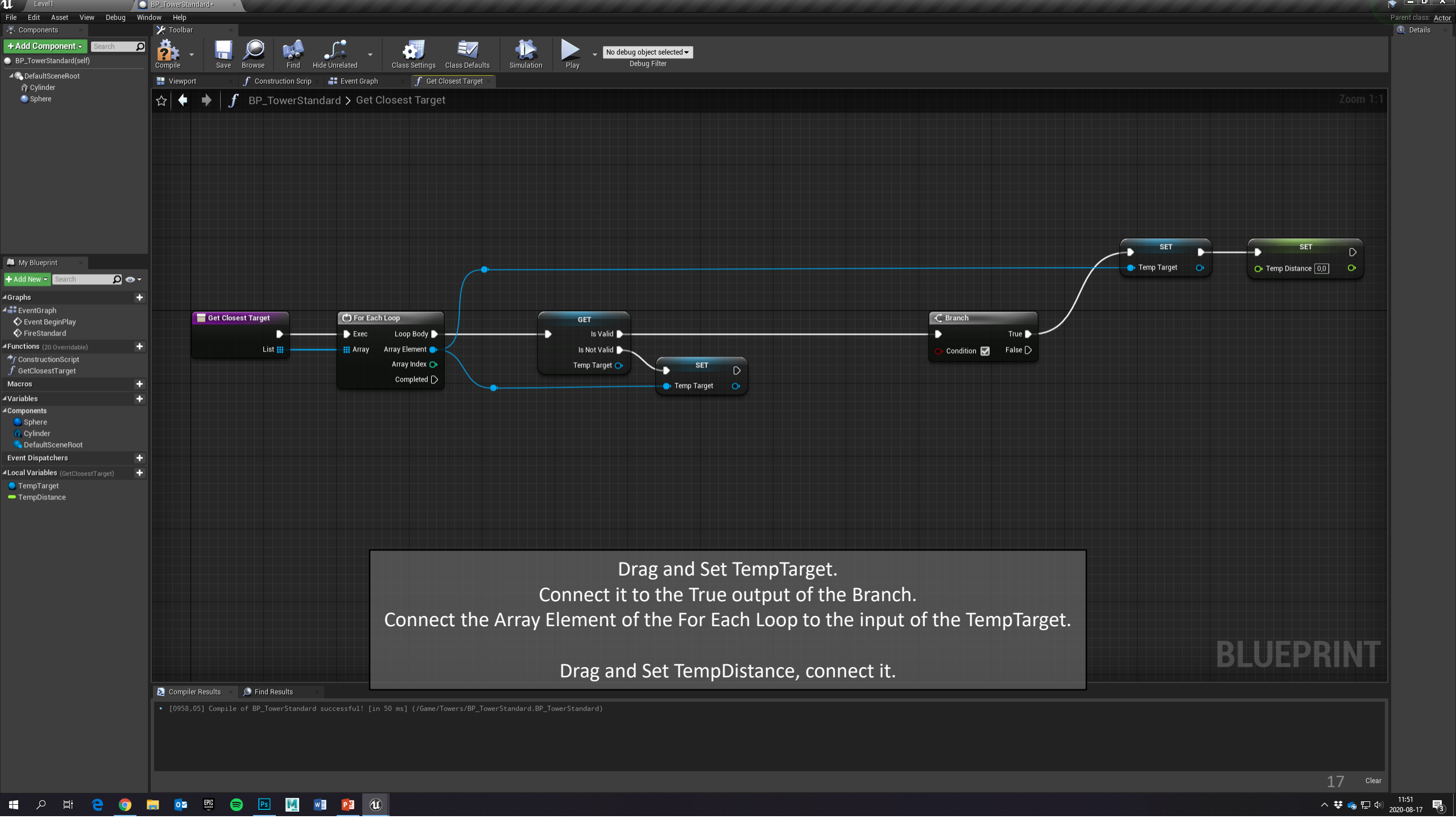
From the Is Valid, add a Branch.

Drag and Set TempTarget, connect it ti Is Not Valid.

Connect Array Element from the For Each Loop to The Set node input.

BLUEPRINT

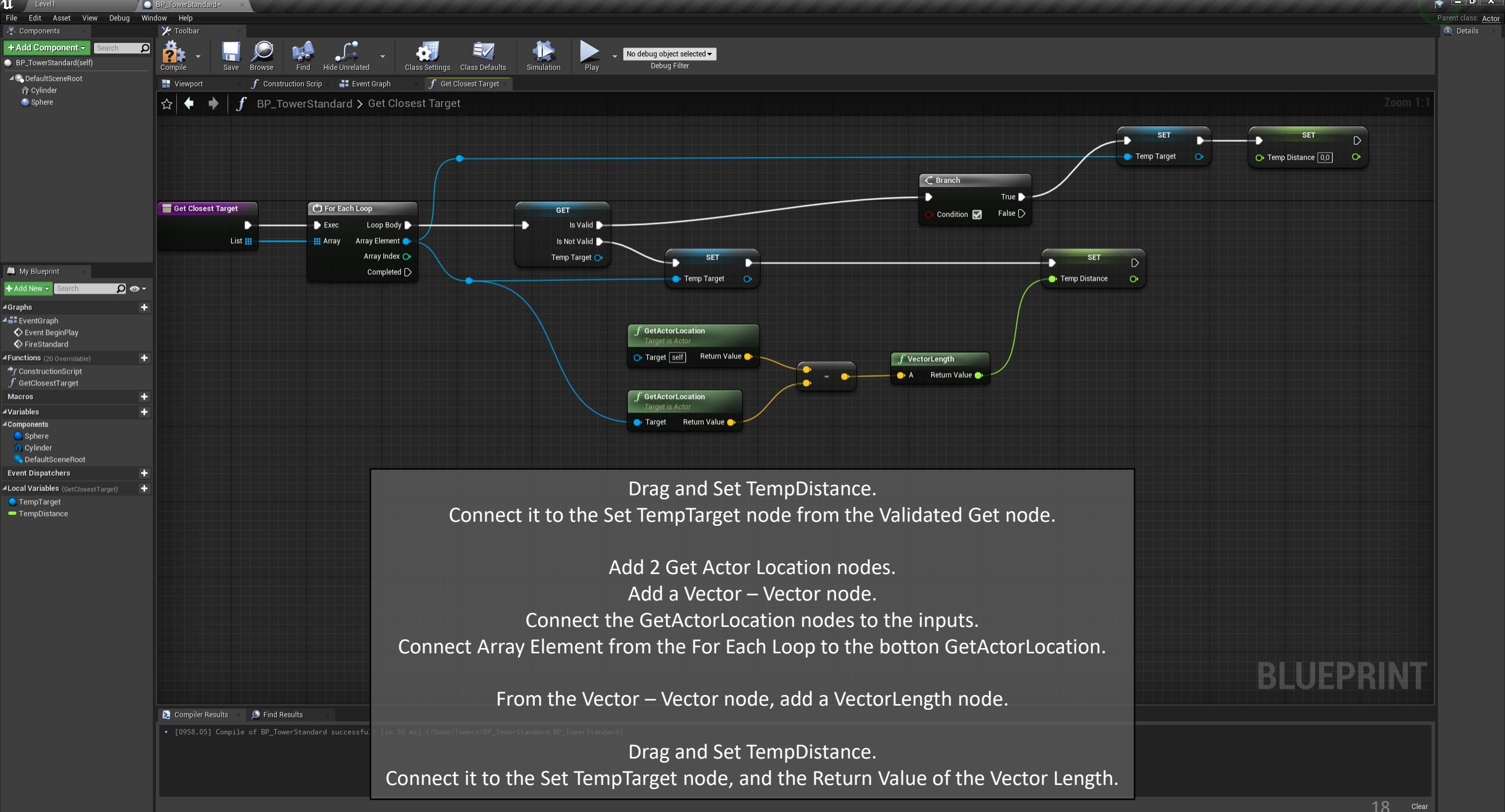
Compiler Results Find Results
• [0958,05] Compile of BP_TowerStandard successful! [in 50 ms] (/Game/Towers/BP_TowerStandard.BP_TowerStandard)



Drag and Set TempTarget.
Connect it to the True output of the Branch.
Connect the Array Element of the For Each Loop to the input of the TempTarget.
Drag and Set TempDistance, connect it.

BLUEPRINT

Compiler Results Find Results
• [0958,05] Compile of BP_TowerStandard successful! [in 50 ms] (/Game/Towers/BP_TowerStandard.BP_TowerStandard)



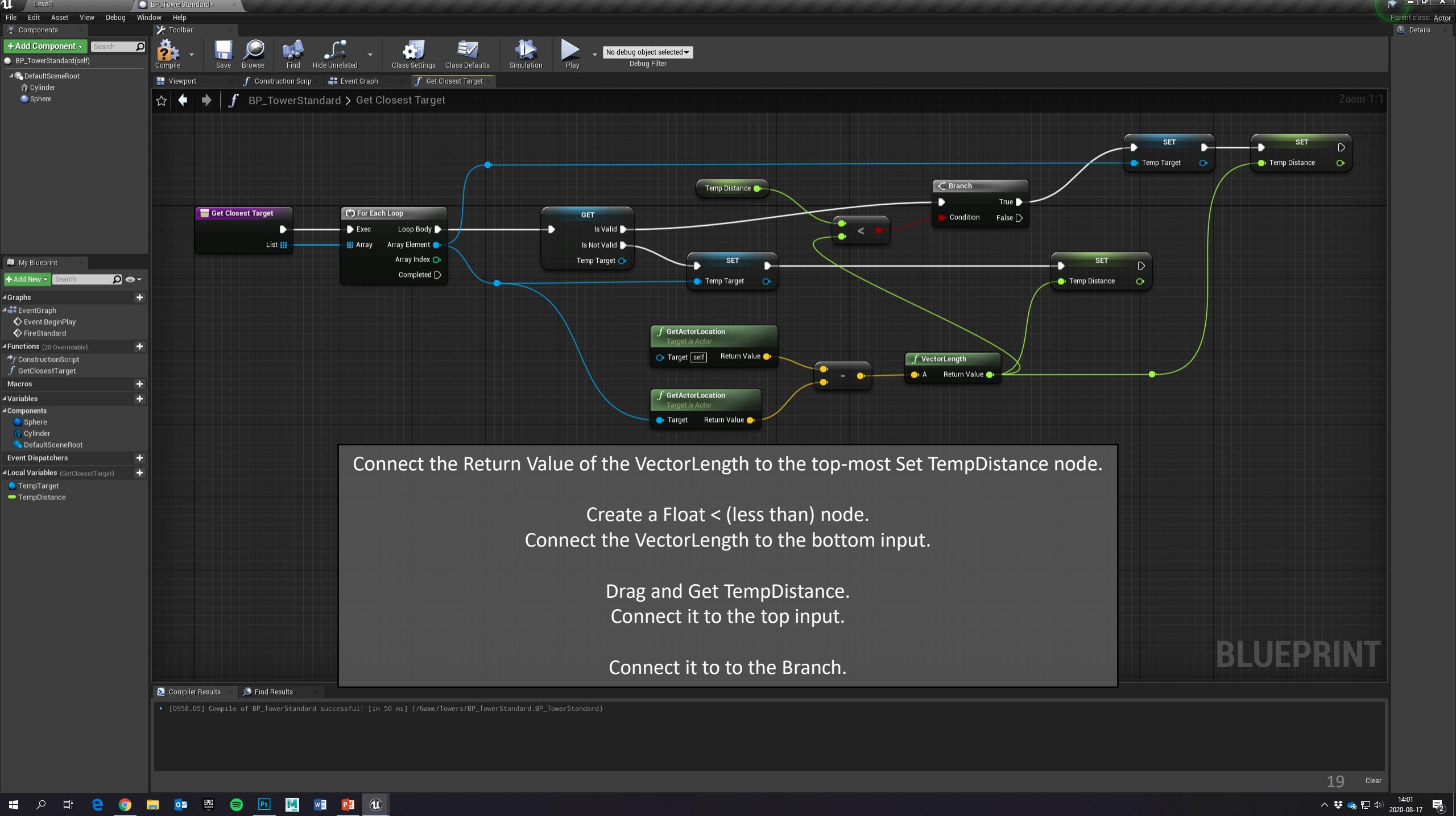
Drag and Set TempDistance.
Connect it to the Set TempTarget node from the Validated Get node.

Add 2 Get Actor Location nodes.
Add a Vector – Vector node.
Connect the GetActorLocation nodes to the inputs.
Connect Array Element from the For Each Loop to the bottom GetActorLocation.

From the Vector – Vector node, add a VectorLength node.

Drag and Set TempDistance.
Connect it to the Set TempTarget node, and the Return Value of the Vector Length.

BLUEPRINT



Connect the Return Value of the VectorLength to the top-most Set TempDistance node.

Create a Float < (less than) node.
Connect the VectorLength to the bottom input.

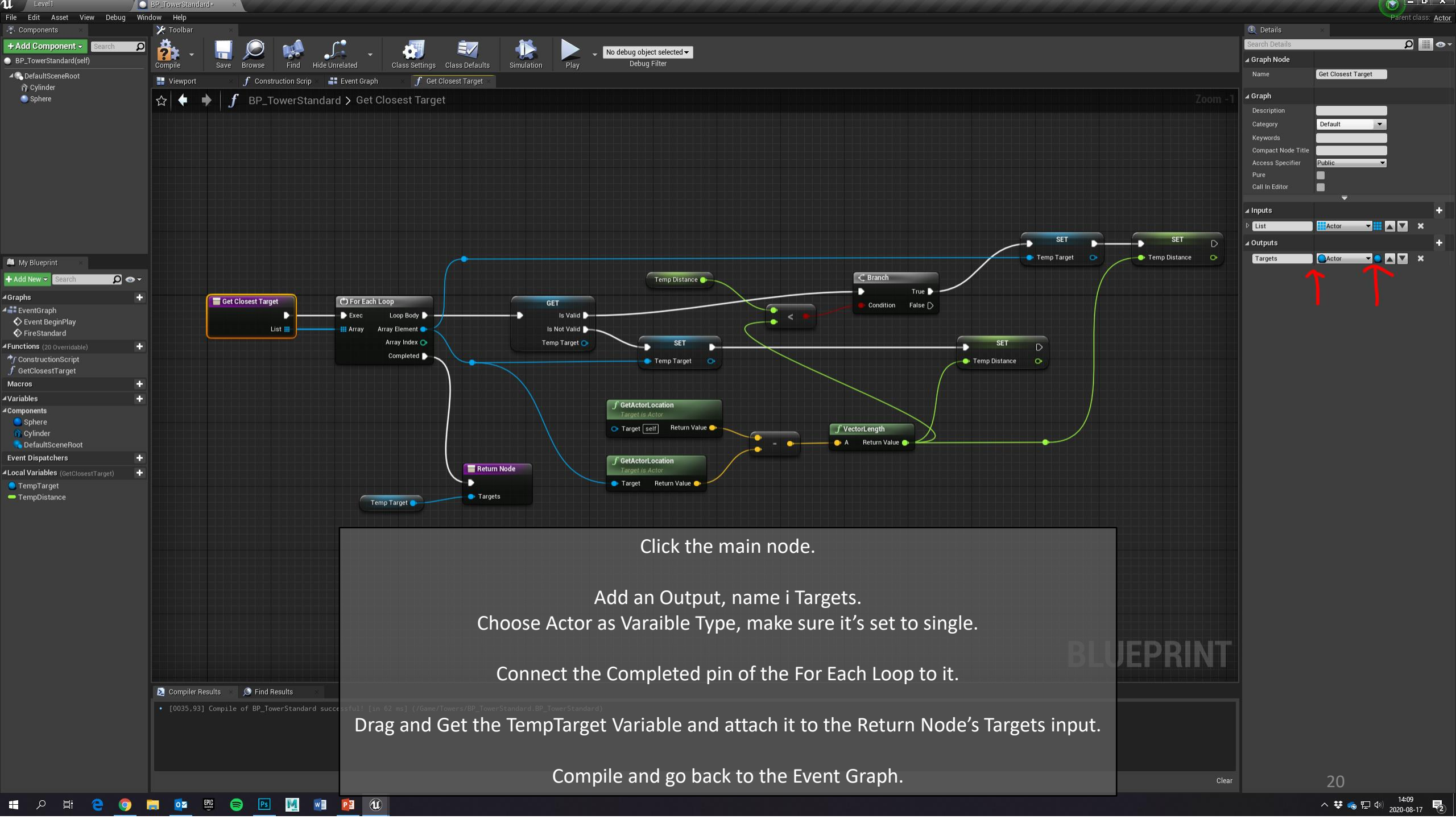
Drag and Get TempDistance.
Connect it to the top input.

Connect it to to the Branch.

BLUEPRINT

Compiler Results Find Results

- [0958,05] Compile of BP_TowerStandard successful! [in 50 ms] (/Game/Towers/BP_TowerStandard.BP_TowerStandard)



Click the main node.

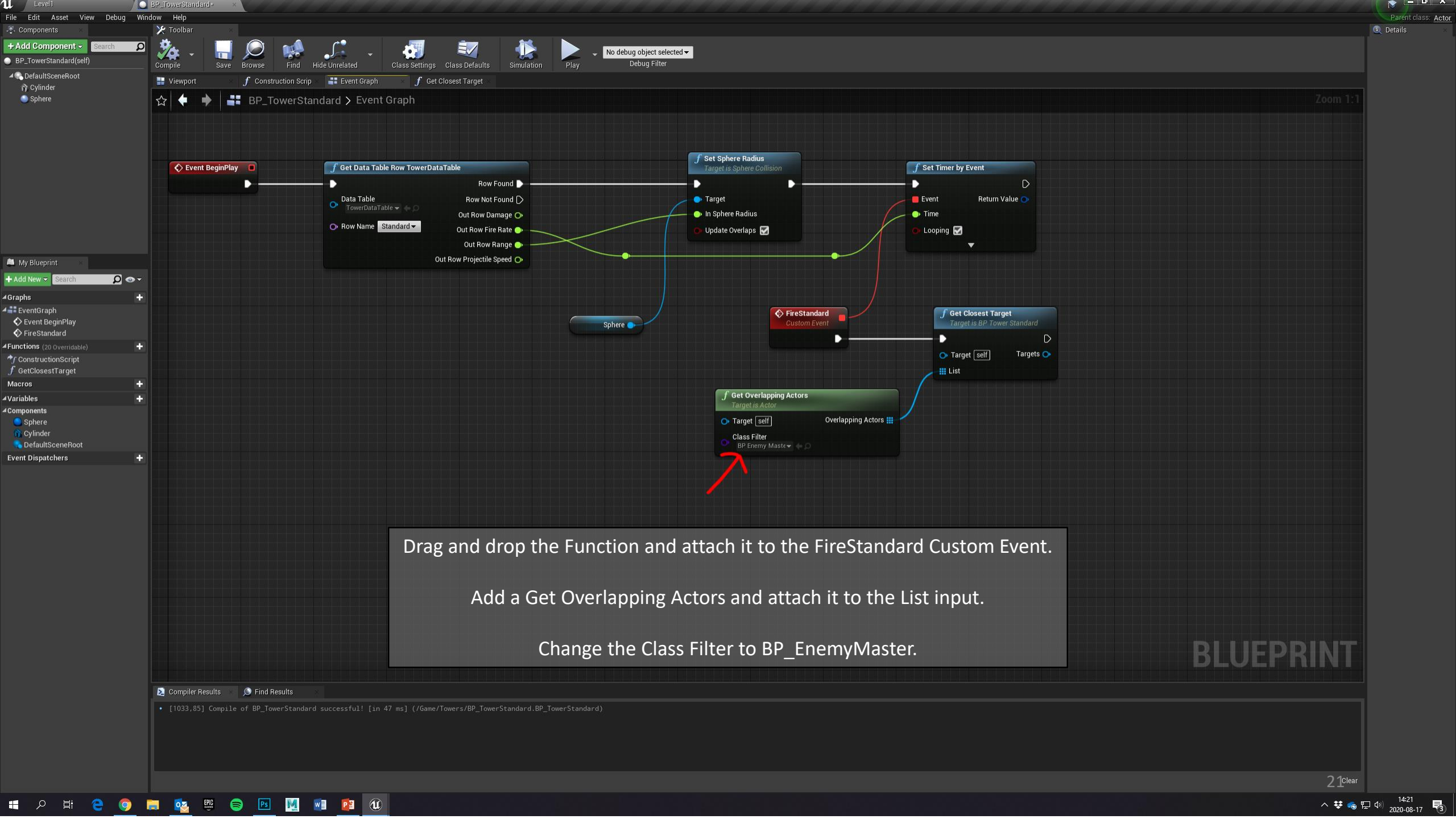
Add an Output, name it Targets.
Choose Actor as Variable Type, make sure it's set to single.

Connect the Completed pin of the For Each Loop to it.

Drag and Get the TempTarget Variable and attach it to the Return Node's Targets input.

Compile and go back to the Event Graph.

BLUEPRINT



Drag and drop the Function and attach it to the FireStandard Custom Event.

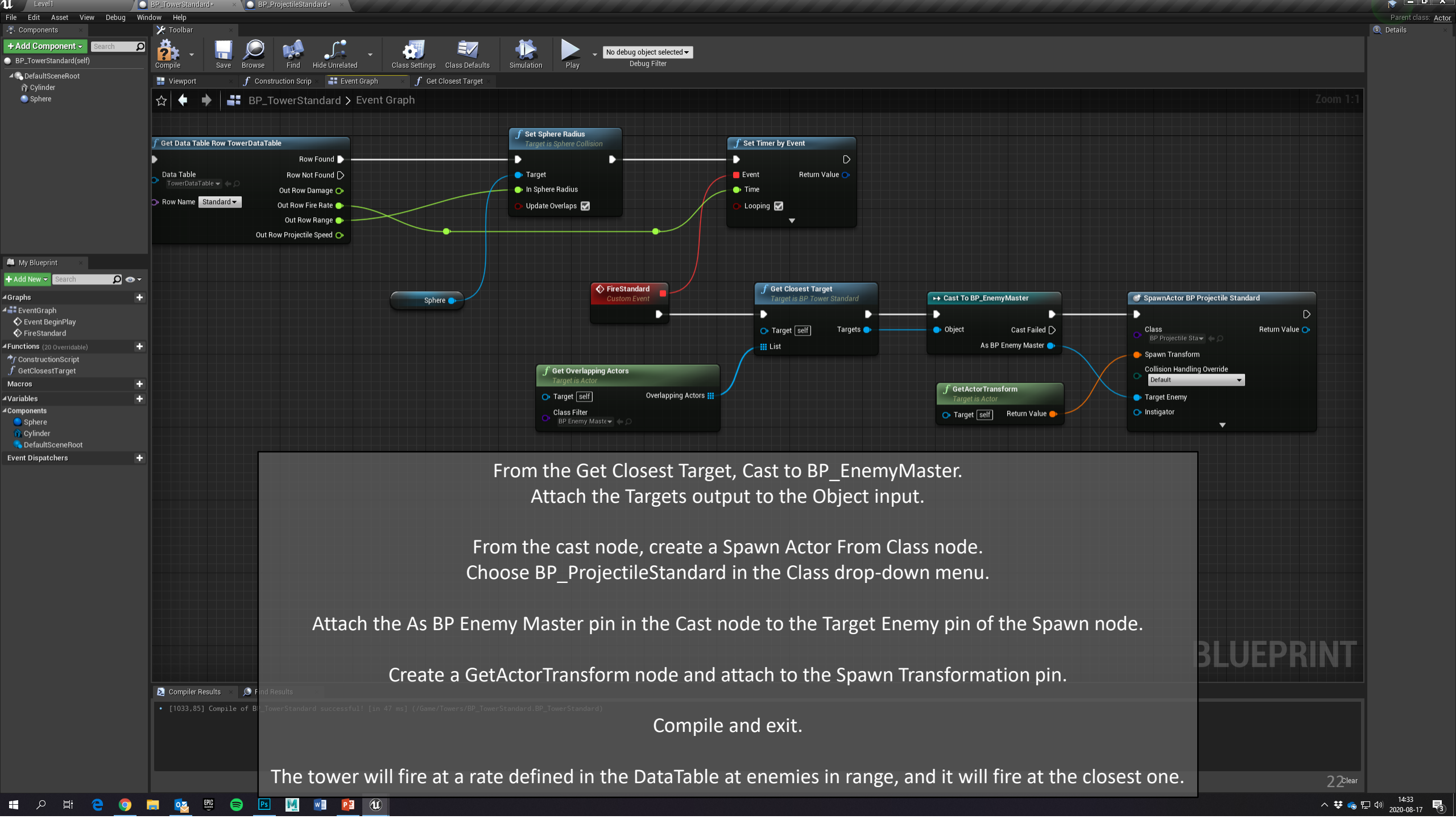
Add a Get Overlapping Actors and attach it to the List input.

Change the Class Filter to BP_EnergyMaster.

BLUEPRINT

Compiler Results Find Results

[1033,85] Compile of BP_TowerStandard successful! [in 47 ms] (C:/Game/Towers/BP_TowerStandard.BP_TowerStandard)



From the Get Closest Target, Cast to BP_EnemyMaster.
Attach the Targets output to the Object input.

From the cast node, create a Spawn Actor From Class node.
Choose BP_ProjectileStandard in the Class drop-down menu.

Attach the As BP Enemy Master pin in the Cast node to the Target Enemy pin of the Spawn node.

Create a GetActorTransform node and attach to the Spawn Transformation pin.

Compile and exit.

The tower will fire at a rate defined in the DataTable at enemies in range, and it will fire at the closest one.