Sub-ActionTemplates and the Rusty Door

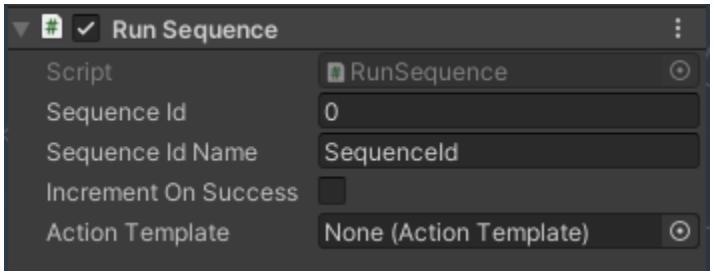
The concept of Sub-ActionTemplates is to reuse the Action Sequence System which normally runs the Triggers ActionTemplates, to conditionally run an ActionTemplate from within an Action. The Sequence System uses the Blackboard component to make variables visible to any Actions being run. This allows data to be either passed into an ActionTemplate from other scripts or to be passed between Actions.

The full lifecycle of the Actions is beyond the scope of this document, but the main points to know are;

- A sequence is run over multiple ‘ticks’ (frames) starting at the first action.
- The sequence will only increment to the next Action if the current Action compleates successfully. If it fails the whole sequence terminates.
- An Action can return a Running status, and the Sequence will call the same Action on the next tick. For example, this could be used to wait for a GUI to be closed. This point is especially important for successfully using Sub-Action Templates.

Actions

Run Sequence



Use to conditionally run Action Templates.

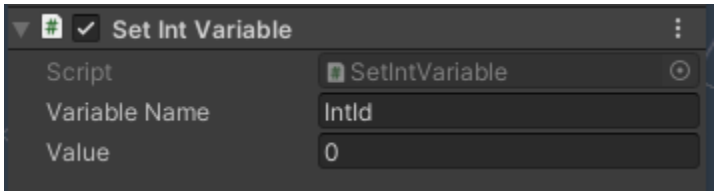
Sequence Id
An integer value, when this equals the value in the Blackboard variable the Action Template will be run.

Sequence Id Name
The variable name that is used in the Blackboard. If it is not present then 0 is used.

Increment On Success

A convenience function to simplify certain behaviours. When set and the Action Template complete successfully the Sequence Id Name variable is incremented and stored to the Blackboard.

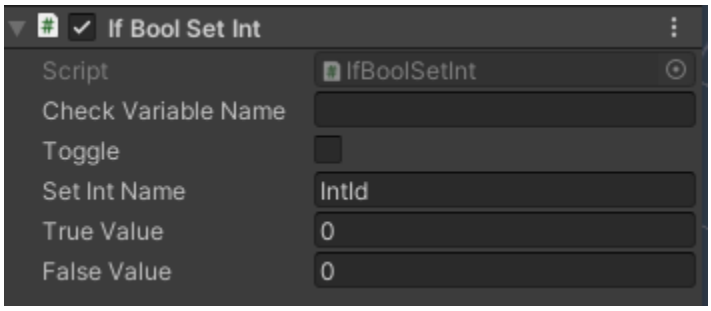
Set Int Variable



Used to set an Integer variable in the Blackboard.

Variable Name
The name of the Blackboard variable that is to be set.
Value
The integer value is to be set in the Blackboard.

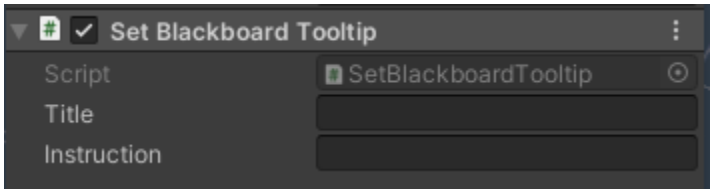
If Bool Set Int



Used to conditionally set an integer in the Blackboard based on the value of a bool variable in the Blackboard.

Check Variable Name
The name of the bool variable in the Blackboard that is used for the conditional. If it does not exist false is used.
Toggle
If it is checked the Check Variable will be toggled each time the action is run. Useful for Doors, lights etc.
Set Int Name
The name of the Blackboard that is to be set.
True Value
The value that is used if the bool is true.
FalseValue
The value that is used if the bool is false.

Set Blackboard ToolTip



A convenience action to set the Blackboard variables used by the Component ‘Display Trigger Blackboard Tool Tip’.

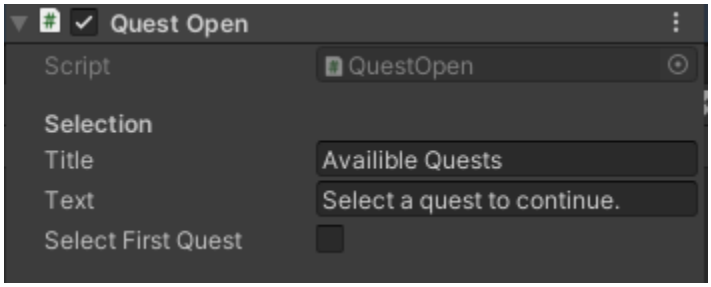
Title

The value that is displayed as the ToolTip Title.

Instruction

The value that is displayed as the ToolTip instruction.

Quest Open



A convenience action that replaces the ‘Quest Window’ component and allows quests to be opened from within the Triggers Action Template.

Quests are populated in the normal way via the ‘Quest Collection’ component.

Title

Title for the Quest Selection window if more than one quest is available.

Text

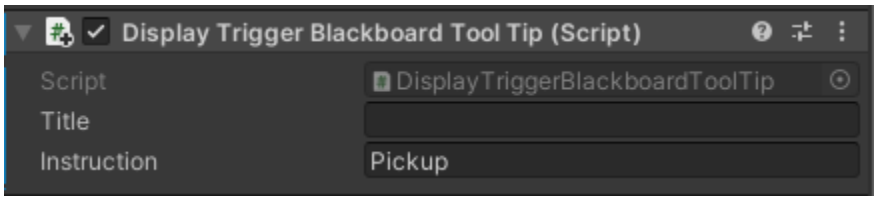
Prompt for the Quest Selection window if more than one quest is available.

Select First Quest

Forces the quest system to only display the first quest if multiple are available. This allows quests to remain hidden till previous ones have been completed.

Components

Display Trigger Blackboard Tool Tip



This component is used with the ‘Set Blackboard ToolTip’ to allow the behaviour flow to change the displayed ToolTip.

Title

The initial value is displayed as the ToolTip Title.

Instruction

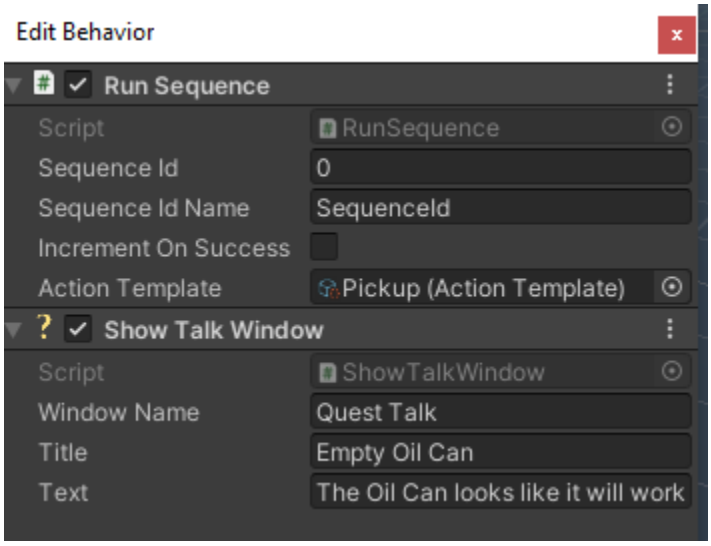
The initial value is displayed as the ToolTip instruction.

Examples

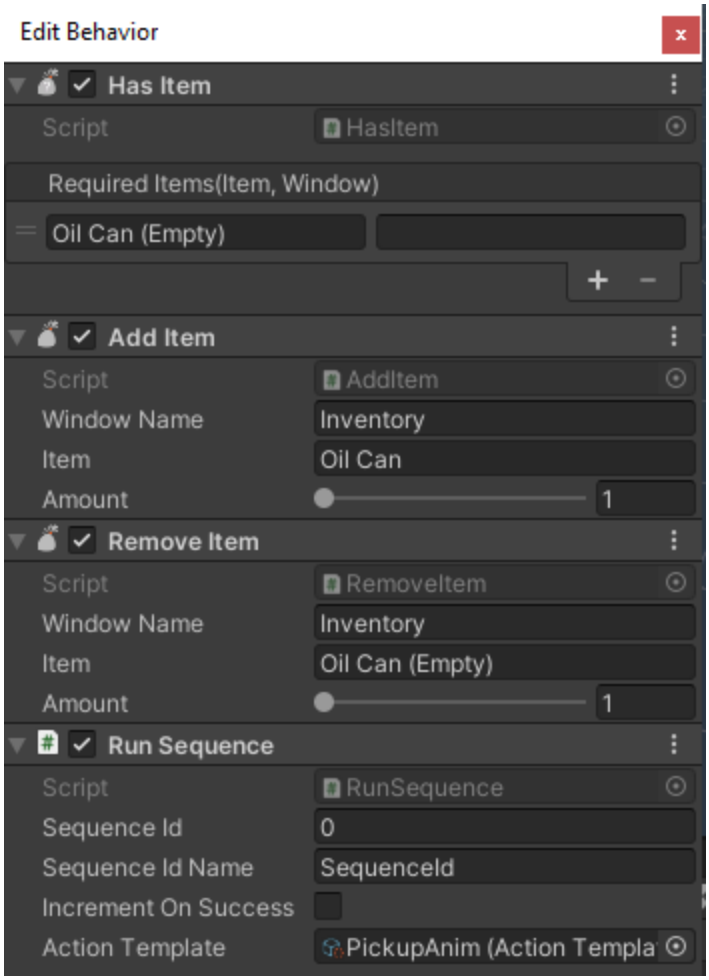
These examples are from the Rusty Door quest chain that is shown in the Demo scene.

Extending (chaining) Action Templates

It is sometimes desirable to extend or run multiple Action Templates. For the ‘Oil Can’ I wanted to display the Quest Talk window after pickup.



A more complicated example is the use case for the ‘Motor Oil’, where I wanted to appear to fill up the ‘Oil Can’.

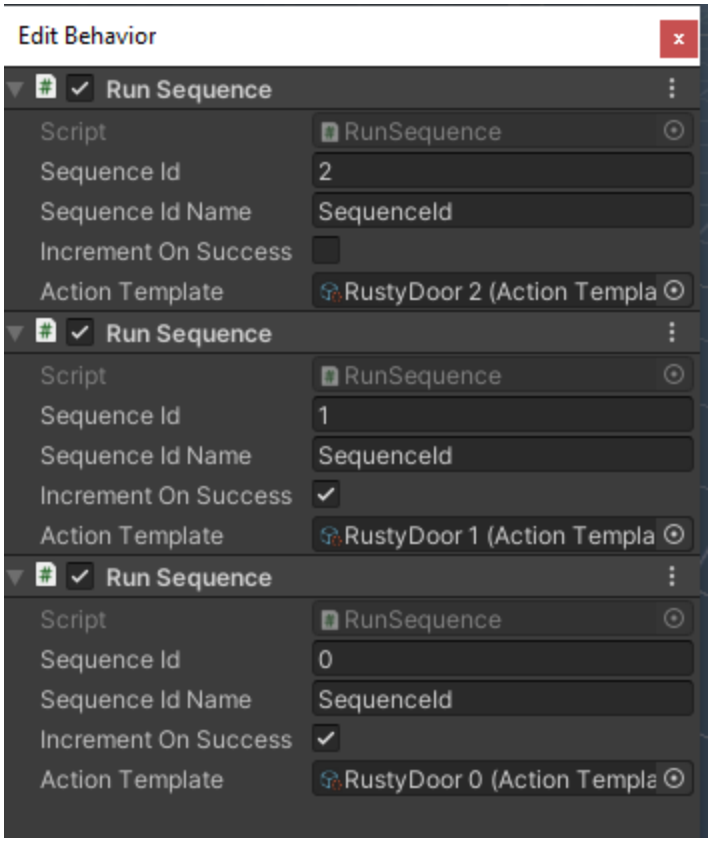


Sequentially Changing Behaviour

In the case of the RustyDoor I wanted the use case to be;

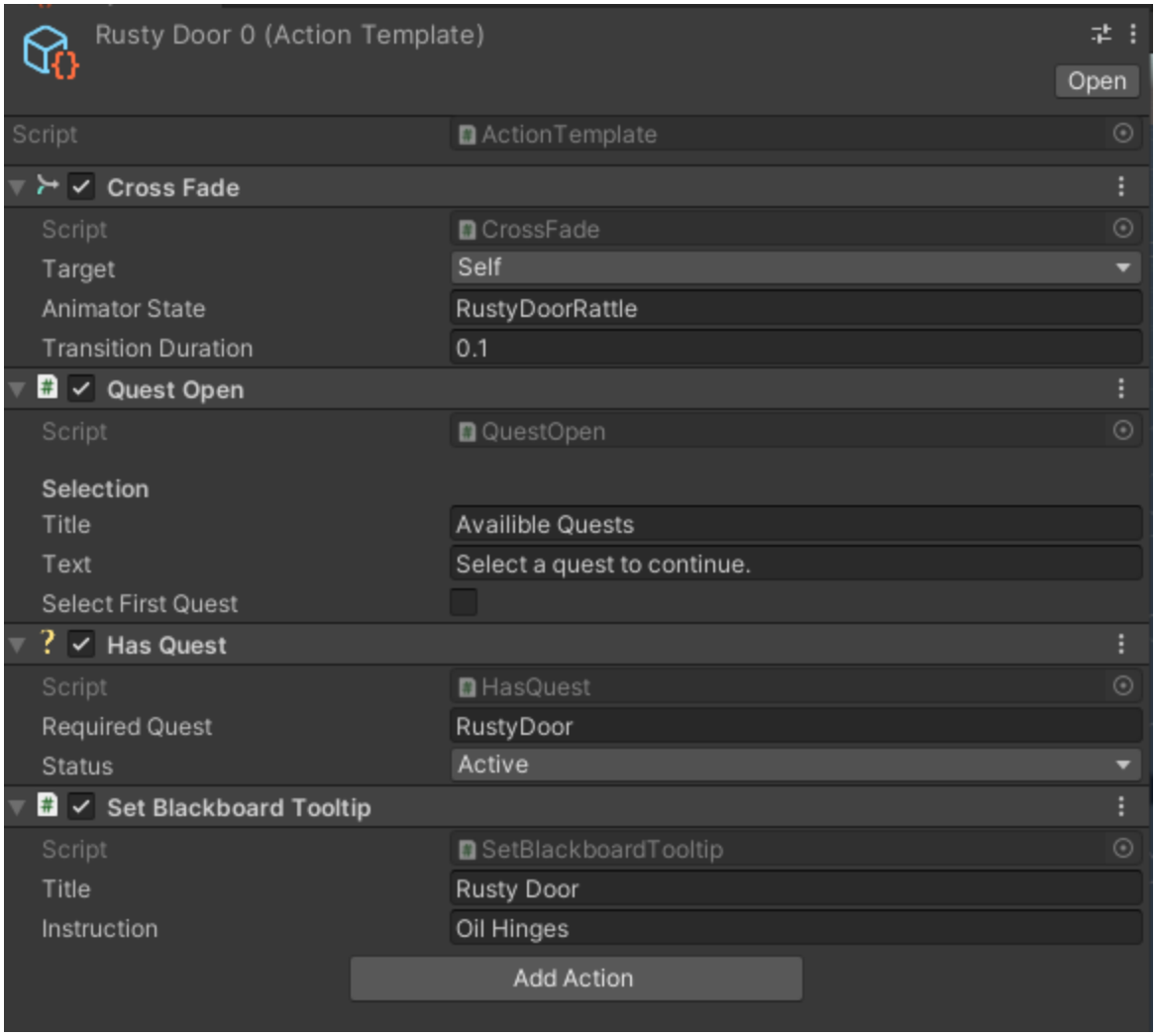
1. The door is stuck and a quest to find oil is available.
2. The door is waiting to be oiled.
3. The door is free to open and close.

To do this I created three Action Templates to control each state. To iterate through the states I used the ‘Increment on Success’ on the first two. This means that only when each Action Template has been completed will the state change. The last ‘Run Sequence’ does not have ‘Incrrement on Success’ set so the Door can be toggled open/closed.
Note: They are placed in reverse sequence order, this is so they do not all run on the first Trigger event. As they are in reverse order, a higher value can only be run the next trigger.



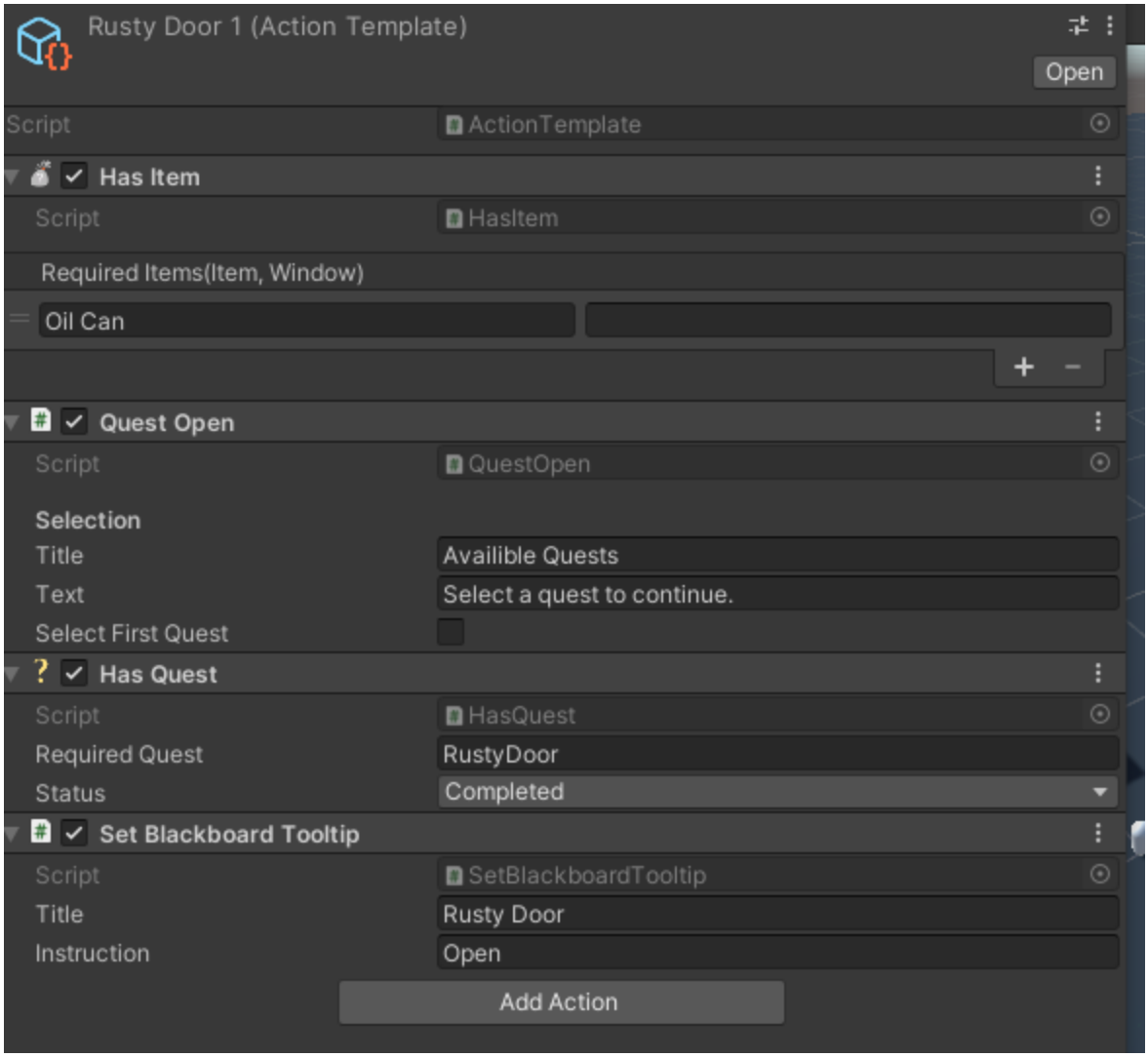
Template ‘RustyDoor 0’

Template ‘RustyDoor 0’ Ensures that the RustyDoor quest is given and will only allow the state to change if it has been accepted.
It first plays the animation of the stuck door. Note: The audio is played via an event on the animation.
After that, it opens the Quest Window, and if the quest is accepted, it then moves on to set the displayed ToolTip.
If the quest is not accepted the ‘Has Quest’ check will fail, which causes the whole behaviour to fail and the state will not progress.



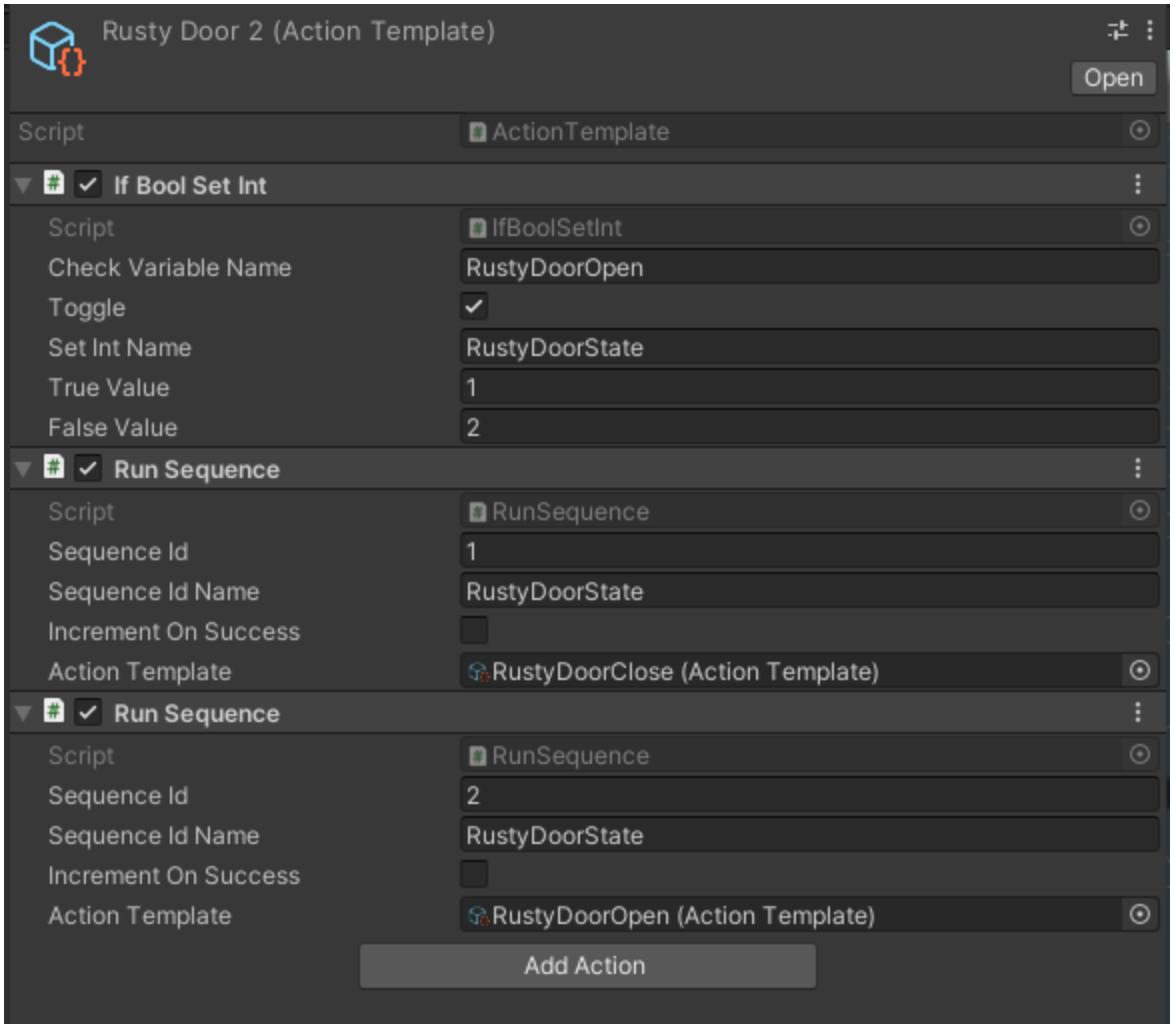
Template ‘RustyDoor 1’

Template ‘RustyDoor 1’ handles the completion of the quest. The requirement for the ‘Oil Can’ fufils the hinge oiling. Then the quest window is opened to complete the quest.
After this it is checked that the quest has been completed before setting the prompt to open the door.



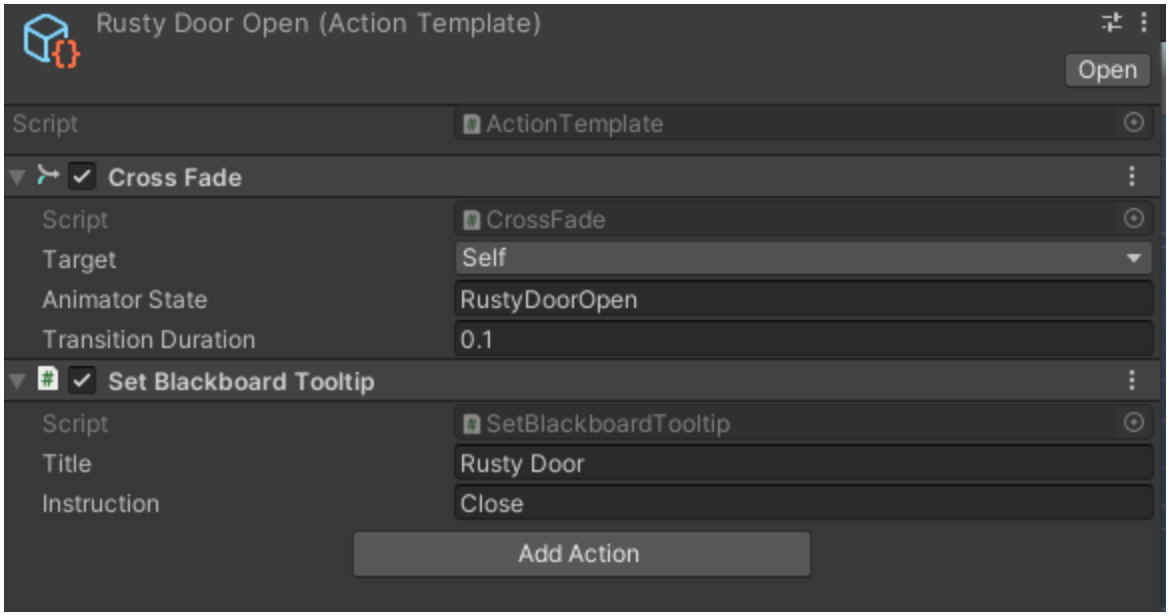
Template ‘RustyDoor 2’

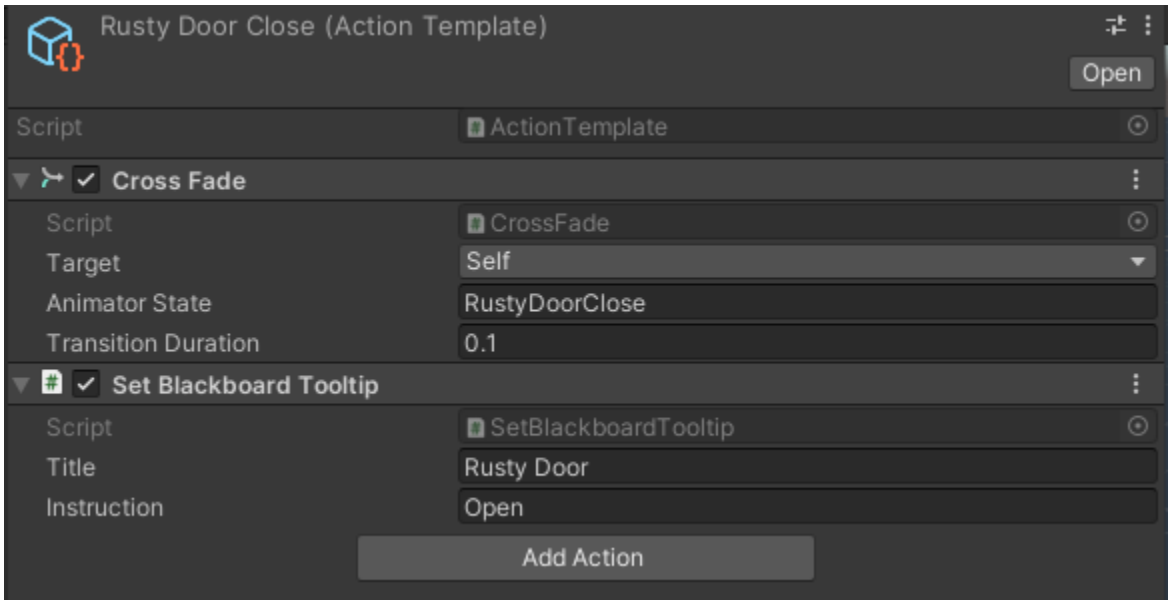
Template ‘RustyDoor 2’ handles the opening and closing of the door. In this I use the IfBoolSetInt with the toggle set to open and close the door via RustyDoorOpen and RustyDoorClose templates.



Templates ‘RustyDoorOpen’ and ‘RustyDoorClose’

These templates simply play the open/close animation and set the ToolTip appropriately.


Rusty Door Open (Action Template)
Open
Script
ActionTemplate
Cross Fade
Script
CrossFade
Target
Self
Animator State
RustyDoorOpen
Transition Duration
0.1
Set Blackboard Tooltip
Script
SetBlackboardTooltip
Title
Rusty Door
Instruction
Close
Add Action


Rusty Door Close (Action Template)
Open
Script
ActionTemplate
Cross Fade
Script
CrossFade
Target
Self
Animator State
RustyDoorClose
Transition Duration
0.1
Set Blackboard Tooltip
Script
SetBlackboardTooltip
Title
Rusty Door
Instruction
Open
Add Action