Assignment on Virtual Reality and Physically-Based-Simulation - Sheet 3
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Exercise 1

As we are only two people, one person played twice, while the other one played only once at each delay-setting.

Performance with No Delay (0s):
Attempts: 1-2
Completion times were consistent and relatively fast, with an average time of about 17.9 seconds. This suggests only minimal disruptions to the performance when there is no input delay.

Performance with Slight Delay (0.15s):
Attempts: 3
Completion times increased, with an average of about 21.2 seconds. We required more precise timing and adjustments, leading to slightly longer completion times.

Performance with even higher Delay (0.25s):
Attempts: 11
The most significant performance drop occurred at this delay, with an average time of about 28.3 seconds. The delay made precise movements much harder to execute, leading to longer times and likely a higher risk of failure during attempts, as even slight adjustments to jumps or mouse movements took too long to process while completing the runs.

Our results highlight a negative correlation between input delay and performance in time-sensitive gaming tasks. While we could adjust partially to slight delay in several input actions , higher delays overall impacted our ability to perform efficiently.

Exercise 2

The VR-Pawn Blueprint contains several key components:

Input Mapping for Grabbing:
The action IA_Grab starts the grab event. This input can be mapped to any input method, such as a keyboard key, controller button, or VR motion controller.

Get Grab Component Near Motion Controller:
This function performs a SphereTrace around the location of the motion controller to detect nearby objects.
It identifies all actors containing a grab component and returns the closest one.

Is Valid Check:
Ensures that the detected component exists before proceeding.

Try Grab:
Attaches the detected component to the motion controller based on the specified grab type Free, Snap and Custom
The function also calls the On Grabbed Event Dispatcher to notify other parts of the Blueprint about the change in grab status.

Is Held? Check:
Verifies whether an object is successfully held by the motion controller.

Finally, the object is bound as the currently held item.
If the object was previously held by the other hand, it reassigns the control to the new motion controller.

Grabbable objects, such as the cubes on the table, are configured in their Details Panel which makes them interactable for a motion controller.

Grab Component:
The object must include a Grab Component, which acts as the interface for the VR-Pawn to detect and interact with the object.

Physics Properties:
The object is also defined as a Physics Actor with enabled Physics Simulation, to allow the object to respond to physical forces (gravity and collisions) and has to be set as "Movable", to allow manipulation in the virtual space.