Deterministic Replay

Complex Game Systems

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# Identify what your system is by name and description.

The modular system that I will be creating is a deterministic replay system. Deterministic replay is a technique that provides the user with deterministic executions of computer programs while nondeterministic factors are still present.

The system that I will create will record the position, rotation, animation states, and other relevant information of the player-controlled character and any other moving object. That information can then at a later date be used to replay the player’s movement, displaying a ghost of the player that follows the player’s previous inputs.

# Outline the objective and use of your system.

The objective of the system is to

This can be used in multiple applications. In a racing game you could record your fastest time and then play against it, giving yourself some competition and as a tool to see how you could get better. Another application is in a platformer game where all attempts are recorded and then when the player beats the level, they then can view a replay of all their previous attempts dying.

# If applicable, describe and reference any 3rd party libraries that your system relies on, otherwise Identify you are not using any.

I will not be using any 3rd party libraries for this system.

No 3rd party libraries will be used.

* System.IO

# Identify and Outline the mathematical operations involve, allowing your system to function as intended.

The system is very light in mathematical operations. The only mathematical operation that occurs is when the change between the new frame and the old frame is added to the current value for each variable recorded.

# Explain what advance algorithm/s you will be implementing (diagram/s could be used to help support your explanation).

# Illustrate how your system should be integrated into an application.

# Prove how you will design your complex system to be modular. (diagram/s could be used to help support your explanation).

# Provide a reference list of the sites used following the Harvard Referencing method.

<https://www.tutorialsteacher.com/csharp/csharp-queue>

<https://www.youtube.com/watch?v=ilOQstDnX2I&ab_channel=TreverMock>

<https://www.kodeco.com/7728186-creating-a-replay-system-in-unity>