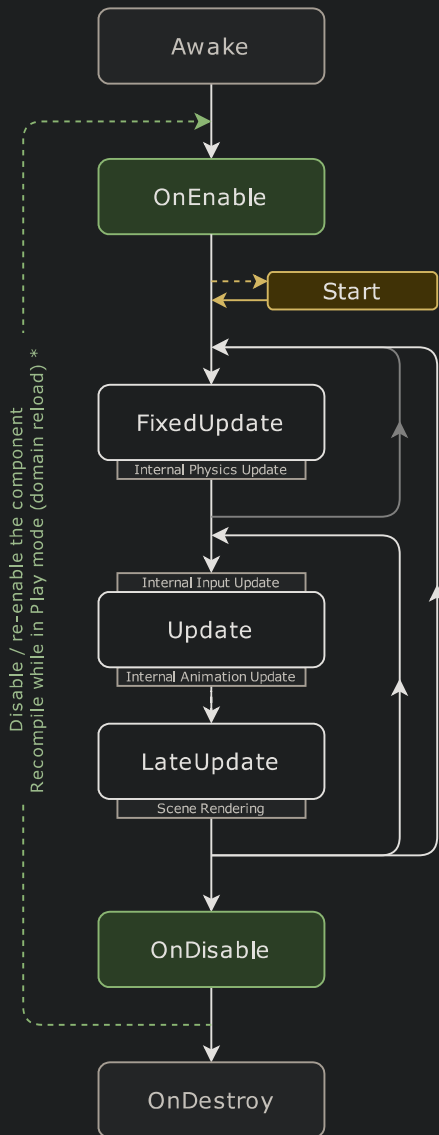# Comprehensive guide of execution of Unity event functions

Cheat sheet for beginners and not-so-beginners (v2) - by Edy (@vehiclephysics)

Awake

Awake is called **once** when the Component is added to an active GameObject or its GameObject becomes active for the first time. Awake is called even if the Component starts disabled.
If the component is created using Instantiate() or AddComponent(), Awake is called if the GameObject is active, and if so OnEnable is called if the Component starts enabled, before the call returns.
Deactivating and reactivating the GameObject or the Component, or recompiling while in Play mode (domain reload)*, does **not** call Awake again.

OnEnable

OnEnable is called whenever the Component becomes enabled in an active GameObject.
Setting Component.enabled=true from scripting calls OnEnable before the assignment returns.

Start

Start is called **once** after the component becomes enabled for the first time, before the first execution cycle. Disabling and re-enabling the component or its GameObject, or recompiling while in Play mode (domain reload)*, does **not** call Start again.

FixedUpdate

Internal Physics Update

FixedUpdate:

- Called at a fixed rate (50 Hz by default, Project Settings > Time > Fixed Timestep).
- **Time.deltaTime** returns the value specified in the Fixed Timestep setting (0.02 by default).
- FixedUpdate will be called for each and every fixed timestep (no skips or time jumps).

Internal Input Update

Update

Internal Animation Update

LateUpdate

Scene Rendering

Update / LateUpdate:

- Called before preparing each visually presented frame.
- **Time.deltaTime** returns the time between each frame presentation (typically 1/display rate).
- Display frames may be skipped if the cpu/gpu load can't keep the display rate.
- LateUpdate is called after all Update and internal animation functions have been called.

FixedUpdate may be called several times between each Update in certain situations.
Typically, Update/LateUpdate are called several times between each FixedUpdate.

Rule of thumb:

- **FixedUpdate:** physics, gameplay, AI, stuff that require fixed time steps and/or would affect gameplay if execution cycles were skipped or jump in time.
- **Update:** input, visual elements, UI, audio, effects... Stuff intended to run smoothly in varying delta time (motion, animation), and may skip execution cycles on high CPU/GPU load without affecting gameplay.
- **LateUpdate:** camera control, post-processing after everything is moved/animated.

OnDisable

OnDisable is called whenever the Component is disabled or its GameObject is deactivated.
Setting Component.enabled=false from scripting calls OnDisable before the assignment returns.

OnDestroy

OnDestroy is called when the Component is deleted from the GameObject, or the GameObject itself is destroyed. This also happens when quitting or exiting play mode.

Disable / re-enable the component
*Recompile while in Play mode (domain reload) ***

* When **recompiling while in Play mode (domain reload)** all the non-serializable fields in the component, both public and private, are reset to their defaults. All non-static public and private fields of serializable types** in the component, even if not marked as [SerializableField], except those marked with [NonSerialized], conserve their values when the execution is resumed.

** **Serializable types** include basic data types (int, string...), some built-in types (Vector3, Quaternion...), structs/classes marked as [Serializable], and references/arrays/lists of serializable types. Search "Script serialization" in the Unity manual for an exhaustive list.