The Game Loop

The game loop is the overall flow control of your entire program. It's a infinite loop that's doing a series of actions over and over again until the user quits. Each iteration of game loop is known as frame.

This loop is most often called the main loop also, because it controls the lifetime of an application. As long as this one continues to iterate, the application will stay alive.

What do we do during an iteration of this loop ?

There are three main stages of a basic game loop that are resposible for controlling the loop are :

- Event Handling
- Update Frame
- Render Frame

Event Handling

Example- 1

Events are **things that have happened within the context of the application like-** In an online shopping application, an event might be "User Signed In" or "Item(s) Added to Cart"these are the Inputs are user actions. The user is telling the application that they want it to take some form of action and expect a response from an application that's what known as an event, and handling the multiple events are known as Event Handling.

Example- 2

As one example, consider a game that supports online multiplayer. An important input for such a game is any data received over the Internet, because the state of the game world will directly be affected by this information. Or take the case of a sports game that supports instant replay. When a previous play is being viewed in replay mode, one of the inputs is the saved replay information. In certain types of mobile games, another input might be what's visible by the camera, or perhaps GPS information. So there are quite a few potential input options, depending on the particular game and hardware it's running on.

In SFML the events are divided into 4 parts :

- Window Events
- Keyboard Events
- Mouse Events
- Joystick Events

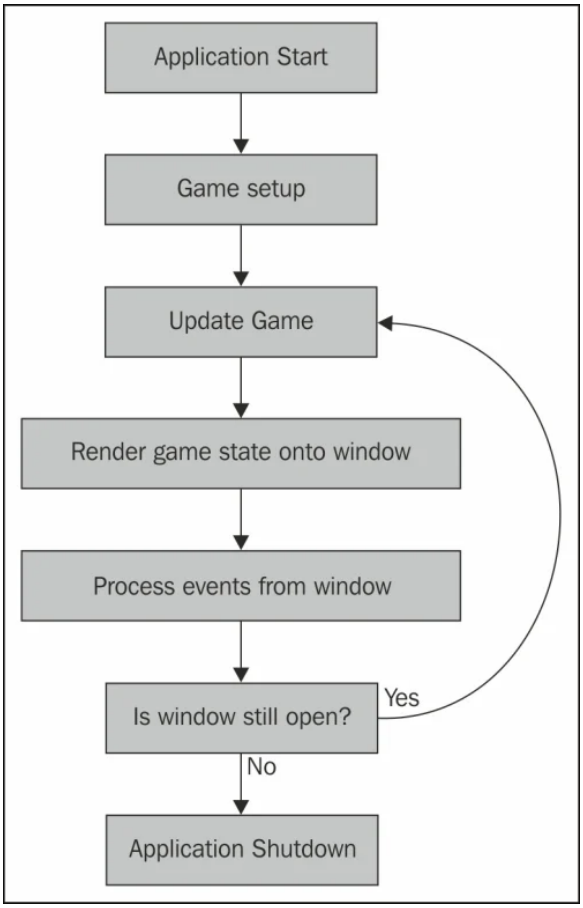
Update Frame

Updating the frame means going through everything(objects, scenes, musics etc.) that are part of your game and updating it according to given condition. This could be hundreds or even thousands of objects that are updating in each frame.

Render Frame

Rendering the frame means display everything on a screen that you have done till.

We can explain this visually with a flow chart to further help you see clearly the logic of our loop.



It accurately describes what our application does at the moment. The only thing left out is the event processing. That functionality could have its own flow chart. But it does one task only in our basic example. It tells the window to close itself if the user requests it.