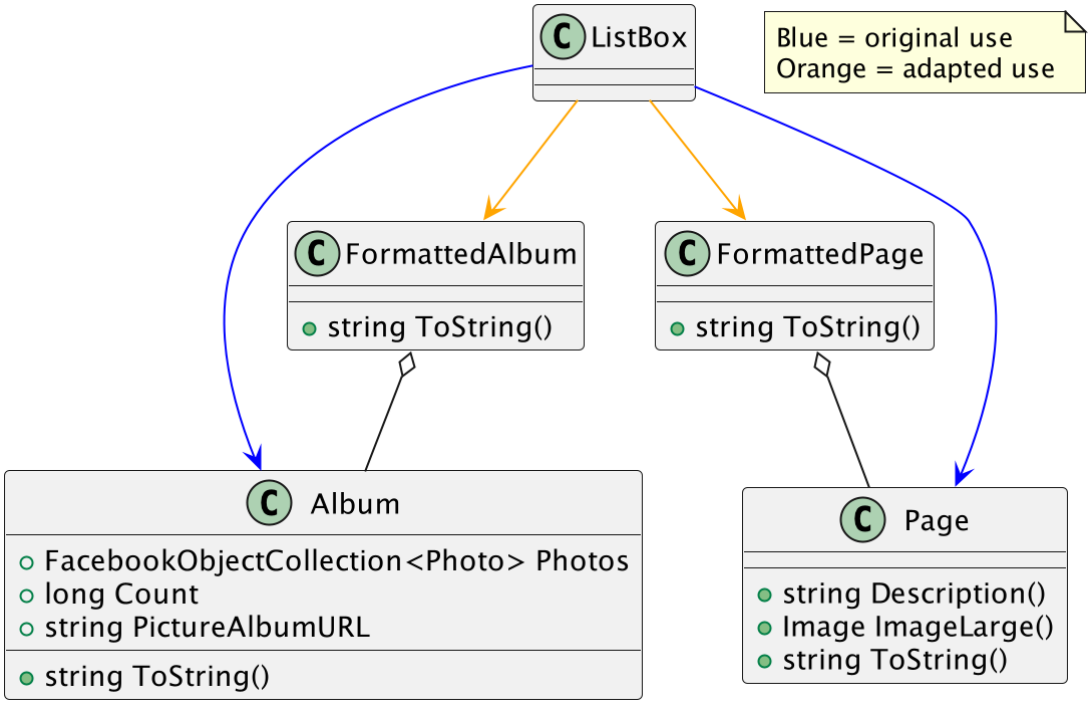
Selected design patterns:

1. Adapter – The adapted pattern is used in order to bridge two legacy components that were not originally linked. Nonetheless the bridging logic is feasible. The recommended way of implementing it is in a different component named 'adapter'.

   In the current project the 2 adapters were made using a similar logic : FormattedPage, FormattedAlbum. Those components compose a Page object and an Album object respectively. They only alter the original classes' ToString method so it will be more human readable and suit the ListBox UI. Therefore it is considered a use of the adapter design pattern.



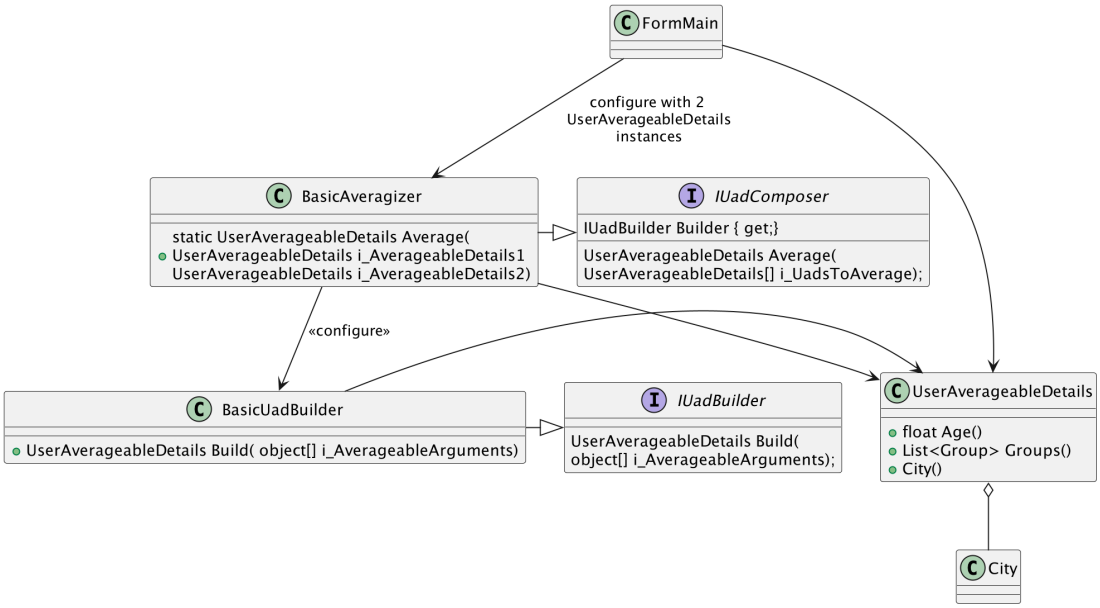
2. Builder – The builder pattern is a method to build complex objects with a comfortable configuration interface. In this way replacing and reusing both the interface and the building component is easy by comparison.

   In the current project it will be used in order to create the 'UserAverageableDetails' objects (also the builder component) using the 'Averageizer' object. This usage is correct since 'averageable details' is not a coherent definition and could be easily expanded, diminished or altered in the future. This may suggest that in the future that the class structure will be changed. For example, a user's favorite musical genre can be considered as 'avereageable':

   MusicAverage(SoulMusic , Jazz) = Funk.

   At this point it is worth considering a replacement of the Builder component.

   Also, the composer may be altered, for instance the 'ClosestCity' property may be calculated in a different way rather than a simple aerial average.



3. Singleton – The Singleton pattern assert the existence of no more than one instance of a specific type. In this way it prevents potential bugs and security problems.

   In the current project the cities data-base was created in a separate file as a singleton- the 'CitiesDataBase' class. This creation method is highly important since the cities supposed to have a unique instance with unique details. Thus a single source of truth paradigm is applied. Unintentionally this separation into a different component also applied another design pattern – the Façade.