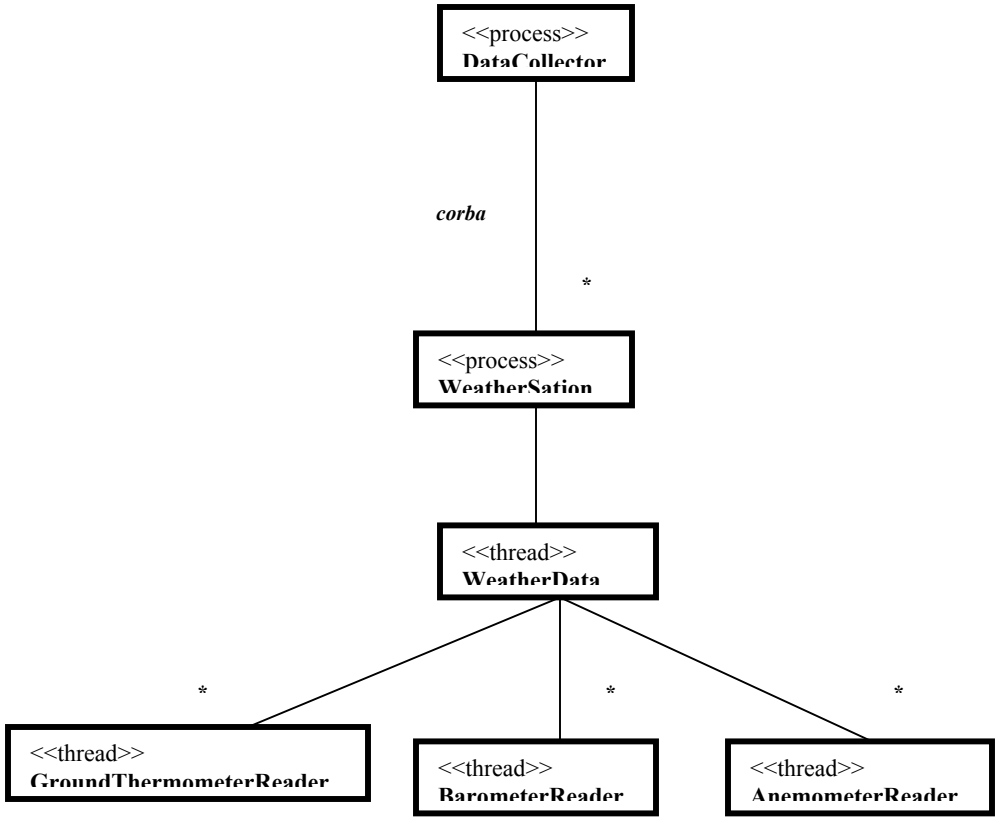
Lab 3: Solutions

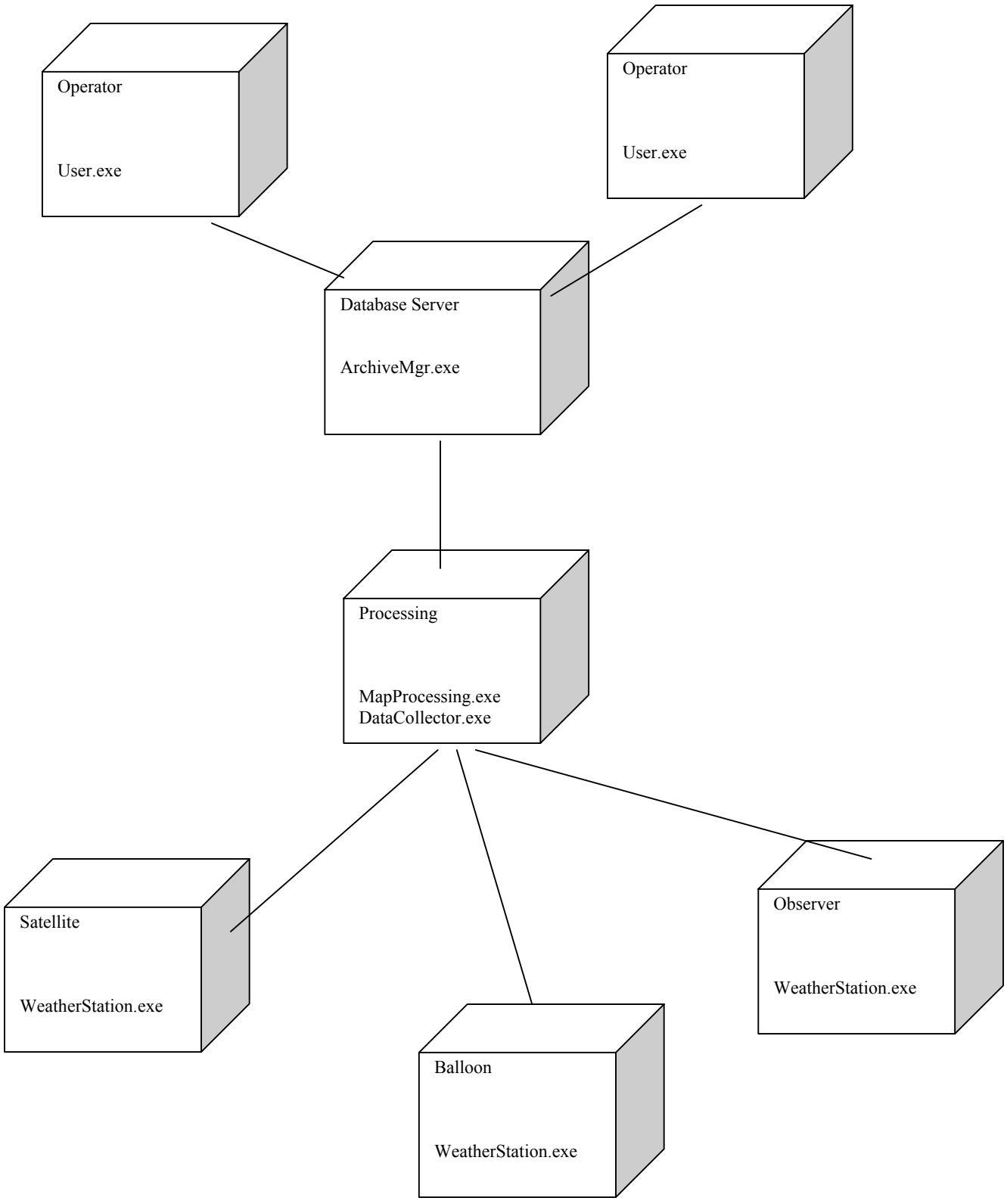
A. Process and Deployment Views

1. The runtime entities are the processes and threads involved in the system. They correspond directly to the active classes that can be identified from the design (class) diagram. You may decide to convert each active class in one process, which requires designing appropriate interprocess mechanisms for each pair of related processes, and is more expensive. You may integrate some threads, in which case you'll have to design appropriate synchronization mechanism. We adopt the following strategy (see figure):



Data collection service (*DataCollector*) and weather stations (*WeatherStation*) are designed as independent processes. Every *WeatherStation* process carries the main thread of control, which is dedicated for receiving incoming requests. These requests are then spawned as specific threads for actual data collection from the instruments, via an independent *WeatherData* thread. For every kind of instrument *XXX*, there is a specific *XXXReader* thread that is spawned. The *XXXReader* thread will collect readings from all the related instruments and then return the minimum, maximum, and average values.

2. Deployment diagram:



B. Implementation View

1. ***Executable release:*** below is an overview of the executable release.