IV) Design Patterns

The design pattern we have implemented is the Builder Pattern. It is a Gang of Four design pattern that is used to create complex objects with constituent parts that must be created using a specific algorithm. An external class, the director, controls the algorithm. An example of this UML diagram can be seen below.

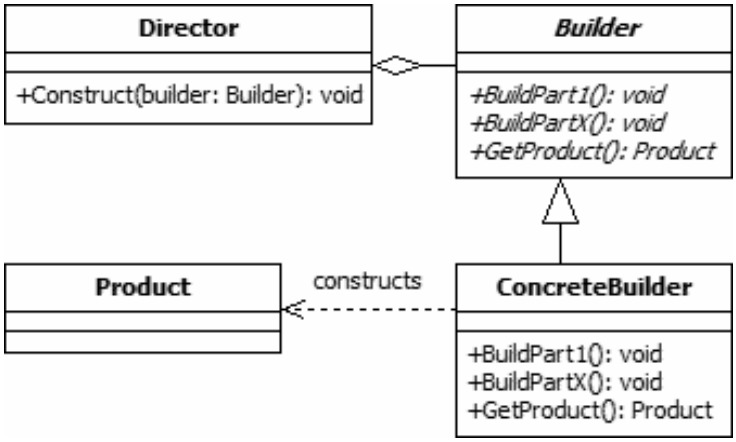

Figure 1: Builder Design Pattern

The builder class defines all of the steps that must be taken to correctly create a product. The director class controls the algorithm that generates the final product object. It calls the methods of the concrete builder in the specific order necessary to generate the desire product object.

Our implementation of the Builder Pattern uses a Director class which is responsible for building a map containing the row objects parsed from the ".csv" files. To do this, the Director calls a Row Builder class, which will build a particular row object (either for a Teaching, Grants, Publications or Presentations ".csv" file) and return it. To build the row object, the Row Builder calls an Attribute Retriever class that will return specific attributes from a given row. For example, the Attribute Retriever may return a name, date, string, integer or boolean depending on the row field requested. These returned attributes are assigned to the member variables of a row object in the Row Builder class.