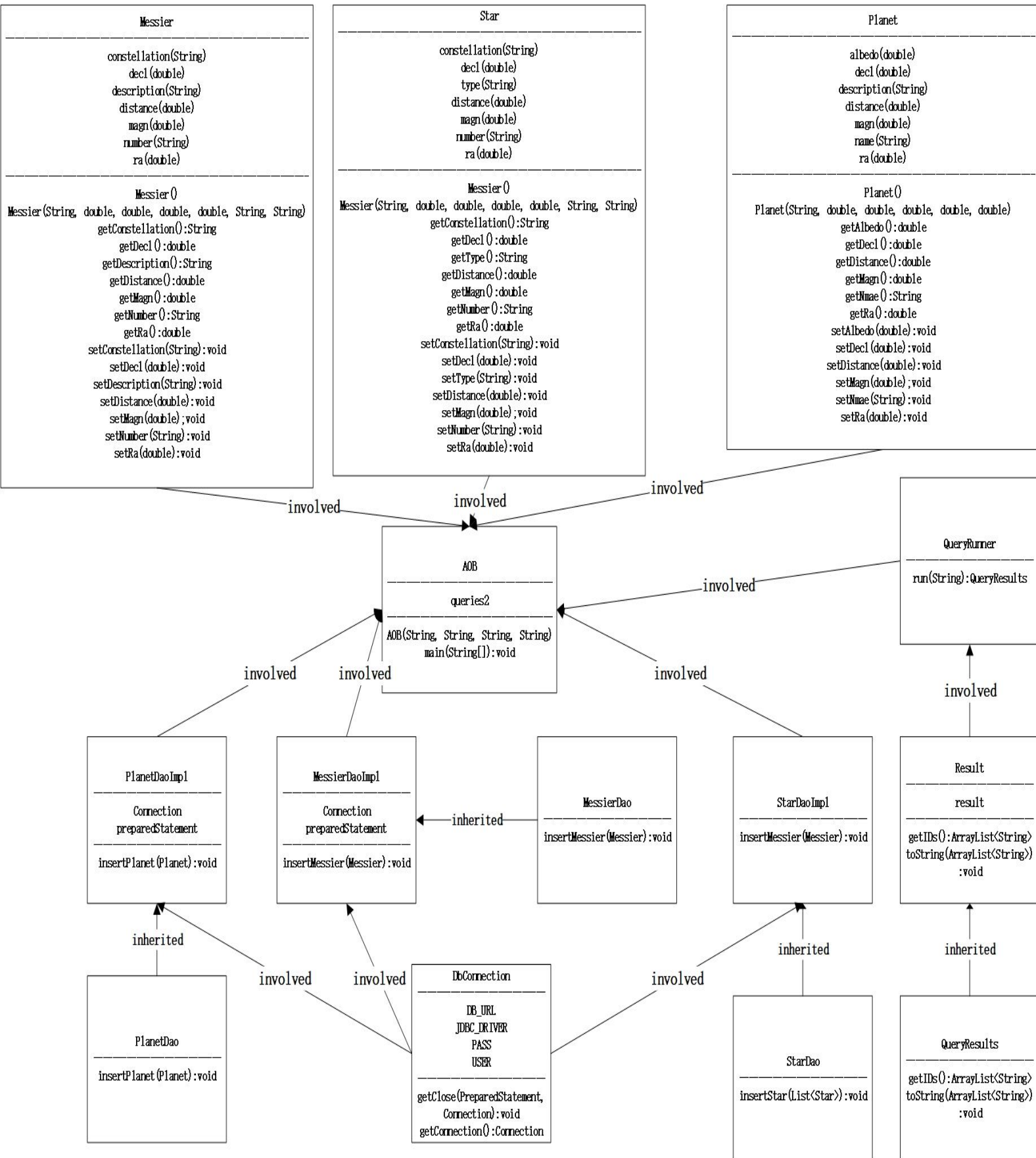


Design Document for Stage2

Design Diagram



Justification of classes design

- **Planet, Star, Messier:** These three classes are used to store the data from **planets.txt, starts.txt and messiers.txt**. Once the data is in the class, it can easily use the contents to insert into the database and to query the specific results.
- **PlanetDaoImpl, StarDaoImpl, MessierDaoImpl:** These three classes are the implementation classes of the **PlanetDao, StarDao and MessierDao** interface. The use of these classes are to insert the contents of the Class **Planet, Star and Messier** into the database. The implementation of querying through the database is more convenient.
- **DbConnection:** The use of this class is to connect MySQL in Java to make the implementation of inserting data more convenient.
- **QueryRunner:** The role of this class is to implement the query function through the **run(String q)** method.
- **Result:** This class is the implementation class of the **QueryResults** interface, which has two methods. **getIDs()** method is to store the obtained query results into the **ArrayList<String>**. **toString(ArrayList<String> result)** method is to output query results.
- **AOB:** The role of this class is to input the contents of the txt file and output the final query results.

Collections frameworks

- **List<Star> stars, List<Planet> planets, List<Messier> messiers:** The role of these three lists are to store the data from **planets.txt, starts.txt and messiers.txt**. The storing method is that store each line of data in the txt file as a new **Star/Planet/Messier** object. Then use **add()** method to store the new object into the corresponding list. In the class **StarDaoImpl**, the use of the **insertStar(List<Star> stars)** method is to insert the element of the stars list into database.
- **List<String> queries, List<String> queries2:** The use of **queries** is to store the data from **queries.txt**. Each line in the txt file is stored in the **queries** as an element of the list. The use of **queries2** is to store the changed query statement. In my program, I use **StringBuffer** to add **"*from"** to the seventh position of each queries element to turn each queries element into a syntactically correct query statement.
- **ArrayList<String> result:** This list is used to store the results obtained after the query function. The list is in the class **Result**, it is the return value of **getIDs()** method. In the **QueryRunner** class whose main function is the implementation of query, create a new **Result** object and use **getIDs()** method to accept all query results. Because the return value of the **getIDs()** method is **ArrayList<String> result**, all the query results are stored into the list. What's more, the use of **toString(ArrayList<String> result)** method is to output all the query results.

What I have learnt

- **Database connection:** In this assignment, I use **JDBC** to connect database in Java and create a new database and three database table. Then I insert all the data into this new database and obtain the query results. The process of the connection is a new knowledge for me.
- **Insert:** In this assignment, I insert three kinds of data from three different classes (**Star, Messier, Planet**). After the database connection is successful, I use **Connection** and **PreparedStatement** attributes to achieve the implementation of inserting data.