CS542 Homework2 Design Report

Following instructions provided in the course website, we accomplished this task using the Java programming language and implemented our index as a hash map.

In the DB class, we first define several variables use to store keys, indexes and corresponding information. Then we read data from cs542.db and store them into a hash map we created. Besides, we read the index file and store them into a separate hash map we created. The “put” method is design for add the index entry. If the index already exists, then add the key in to INDEX\_LIST\_OF\_KEYS and KEY\_LIST\_OF\_INDEXES. Then, update index film. The “get” method is responsible for use the index to retrieve the key. And the “remove” method can use given key to deletes the index. First, use KEY\_LIST\_OF\_INDEXES get the indexes. Then use KEY\_LIST\_OF\_INDEXES and KEY\_FILM to remove the associated entry, update cs542.db. For each index, delete the associated key in INDEX\_LIST\_OF\_KEYS. If this entry is empty after deleting the key, then delete the index, otherwise, only delete the key. After doing all of these, update the index file.

Besides, we assume the combination of title and year is unique. So we create a key format which is “Title|Year”.

In the test class, we design three test cases. The first two are design for test the two function from the project request. The third one is design for test the remove function.

**Test result:**

In the first test case, we use “Year|Format” as the index:

*String index = attributes[Film.Attributes.Year.ordinal()] + "|" + attributes[Film.Attributes.Format.ordinal()];*

They are stored in the “indexFile” together.

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In the second test case, we use “Year” as the index:

*String index = attributes[Film.Attributes.Year.ordinal()];*

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In the third test case, we use “Year” as the index and use “Title|Year” as the key. And we use the key to remove certain item. The following result shows the change after the item was removed.

