

Design of Index Mechanism Project

Assumption

1. We use hash table in our design.
2. We assume that there is no "@" in the data.
3. We assume all the data are string.
4. We assume that all of the search are not range search.
5. The search is case-sensitive. So input "comedy" will not find the "Comedy".
6. If we want to find a data in more than one attribute, we need to connect these attributes by "I" when we search them. For example, if we want to find all the DVD crime movies in 1977, we should input "1977IDVDICrime" in the console.
7. We assume that the data in the txt file is less than 1000 lines.

Design

There are two files in the project. DB.java and index.java.

DB.java

Read the data from the movie.txt file and then store the data in some order(For test).

This file also includes the display method. We can display all of the attributes in the database and can display some selected rows of the database

index.java

This file implements the method required by the project. Including the put(), get() and remove(). Also we implemented the main method in this file.

We use the hash table to store the index information.

The data pair<k, rid-list> are stored in the hash table. Here k represents the search key. The rid-list represents the list of rid for all records having the search key value.

Validation

In our design, we can create index for any attributes.

```
Please Enter the Attributes You Want to Creat
0-11 Refers to:
0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No
Please use "-" to saparate the attributes (For example Title and Year is 0-1)
```

If we want to Find all DVD movies made in 1977, We should input 1-2 first.

```
Please Enter the Attributes You Want to Creat
0-11 Refers to:
0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No
Please use "-" to saparate the attributes (For example Title and Year is 0-1)
1-2
The attributes you choose are:
Year Format

Index was created successfully!
Please enter the value you want to find|
```

We input "1977|DVD" in the console. Then we can find the result.

```
Please Enter the Attributes You Want to Creat
0-11 Refers to:
0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No
Please use "-" to saparate the attributes (For example Title and Year is 0-1)
1-2
The attributes you choose are:
Year Format

Index was created successfully!
Please enter the value you want to find
1977|DVD
|Not Found!
```

We continue the test.

Find all VHS movies made in 1990.

```
Please Enter the Attributes You Want to Creat
0-11 Refers to:
0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No
Please use "-" to saparate the attributes (For example Title and Year is 0-1)
1-2
The attributes you choose are:
Year Format

Index was created successfully!
Please enter the value you want to find
1990|VHS
|

-----Result-----
Pacific Heights 1990    VHS    Thriller    John Schlesinger    Daniel Pyne    USA    20th Century Fox    $15.00    0286
```

Find all DVD movies made in 2001.

```
Please Enter the Attributes You Want to Creat
0-11 Refers to:
0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No
Please use "-" to saparate the attributes (For example Title and Year is 0-1)
1-2
The attributes you choose are:
Year Format

Index was created successfully!
Please enter the value you want to find
2001|DVD
|

-----Result-----
Amélie 2001    DVD    Comedy    Jean-Pierre Jeunet    Guillaume Laurant    France    Miramax    $15.00    0022
A Beautifull Mind    2001    DVD    Drama    Ron Howard    Akiva Goldsman    USA    Universal Pictures    $15.00    0054
Legally Blonde 2001    DVD    Comedy    Robert Luketic    Karen McCullah Lutz    USA    MGM    $15.00    0231
The Lord of the Rings: The Fellowship of the Ring    2001    DVD    Action    Peter Jackson    Philippa Boyens    USA
Moulin Rouge 2001    DVD    Musical    Baz Luhrmann    Craig Pearce    USA    20th Century Fox    $15.00    0260
```

Find all movies made in 2000.

```
Please Enter the Attributes You Want to Creat
0-11 Refers to:
0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No
Please use "-" to saparate the attributes (For example Title and Year is 0-1)
1
The attributes you choose are:
Year

Index was created successfully!
Please enter the value you want to find
2000

-----Result-----
Crouching Tiger, Hidden Dragon 2000    DVD    Action    Ang Lee    Du Lu Wang    Taiwan    Asia / Columbia Pictures / Good Machine / Sony Pic
Gladiator 2000    DVD    Epic    Ridley Scott    John Logan    USA    DreamWorks / Universal    (Foreign)    $15.00    0169
Malena 2000    DVD    Drama    Giuseppe Tornatore    Giuseppe Tornatore    Italy    Miramax    $15.00    0243
```

Find all movies made in 2005.

Please Enter the Attributes You Want to Creat

0-11 Refers to:

0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No

Please use "-" to saparate the attributes (For example Title and Year is 0-1)

1

The attributes you choose are:

Year

Index was created successfully!

Please enter the value you want to find

2005

-----Result-----
Mr. & Mrs. Smith 2005 DVD Action Doug Liman Simon Kinberg USA 20th Century Fox \$15.00 0261

Find all movies made in 2010.

Please Enter the Attributes You Want to Creat

0-11 Refers to:

0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No

Please use "-" to saparate the attributes (For example Title and Year is 0-1)

1

The attributes you choose are:

Year

Index was created successfully!

Please enter the value you want to find

2010

Not Found!

We can do more than that.

For example, if we want to Find all the VHS comedy.

Please Enter the Attributes You Want to Creat

0-11 Refers to:

0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No

Please use "-" to saparate the attributes (For example Title and Year is 0-1)

2-3

The attributes you choose are:

Format Genre

Index was created successfully!

Please enter the value you want to find

VHS|Comedy

|

-----Result-----
And Mother Makes Four 1977 VHS Comedy Bill Hobin Don Nicholl USA \$0.00
It's Only Money 1977 VHS Comedy Bill Hobin Paul Wayne USA \$0.00
Jack the Giant Killer 1977 VHS Comedy Bill Hobin Dennis Koenig USA \$0.00
A Man About the House 1977 VHS Comedy Bill Hobin Don Nicholl USA \$0.00
No Children, No Pets 1977 VHS Comedy Bill Hobin Paul Wayne USA \$0.00
Roper's Niece 1977 VHS Comedy Bill Hobin Paul Wayne USA \$0.00

Find the DVD crime movies in 1997.

Please Enter the Attributes You Want to Creat

0-11 Refers to:

0.Title 1.Year 2.Format 3.Genre 4.Director 5.Writer 6.Country 7.Studio 8.Price 9.Catalog No
Please use "-" to saparate the attributes (For example Title and Year is 0-1)

1-2-3

The attributes you choose are:

Year Format Genre

Index was created successfully!

Please enter the value you want to find

1997|DVD|Crime

|

-----Result-----

L.A. Confidential	1997	DVD	Crime	Curtis Hanson	Brian Helgeland	USA	Regency Enterprises / Warner Brothers	\$15.00	0225
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