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Lab 5

The code is compiled by running the Java program, which allows the connection to the library database to be established. Once the connection is established, a prompt is shown with all the possible actions that the user can execute. When these actions are implemented, the user will be able to see the implementation of the all queries. There aren't any known issues with the code. The only caution that should be taken is that the code can only be exited manually and there is no input for that. Also, if the user inputs anything other than the specified inputs, the program will keep running until the user makes the right inputs.

A dump of all tables in the database that include the structure and data of the tables can be seen below.

Command Prompt - sqlite3 library.db

```
sqlite> .dump
PRAGMA foreign_keys=OFF;
BEGIN TRANSACTION;
CREATE TABLE branch(
branchID INTEGER PRIMARY KEY not null,
brName varchar(255) not null,
address varchar(255) not null
);
INSERT INTO branch VALUES(1,'Toronto Public Library','350 Victoria Street, Toronto, ON');
CREATE TABLE Employee(
empID INTEGER PRIMARY KEY AUTOINCREMENT,
empName VARCHAR(255) NOT NULL,
Position VARCHAR(255) NOT NULL,
Salary REAL NOT NULL,
branchID INT NOT NULL,
CONSTRAINT ck_employee UNIQUE (empName),
CONSTRAINT fk_branch FOREIGN KEY (branchID) REFERENCES branch (branchID)
);
INSERT INTO Employee VALUES(1,'Mazen Bitar','Branch Manager',60000.0,1);
INSERT INTO Employee VALUES(2,'Shireen Taha','Database Manager',55000.0,1);
INSERT INTO Employee VALUES(3,'Farzana Saad','Information Specialist',68000.000000000000001,1);
INSERT INTO Employee VALUES(4,'Annie Yang','Network Administrator',60000.0,1);
INSERT INTO Employee VALUES(5,'Menan Parameswaran','Technical Services Manager',70000.0,1);
INSERT INTO Employee VALUES(6,'Fatima Hasan','Library Technician',48000.000000000000001,1);
INSERT INTO Employee VALUES(7,'Suruchi Arora','Computer Specialist',50000.0,1);
INSERT INTO Employee VALUES(8,'Yanani Saciharan','Administrative Assistant',43000.000000000000001,1);
INSERT INTO Employee VALUES(9,'Stephanie Treacy','Library Assistant',43000.000000000000001,1);
INSERT INTO Employee VALUES(10,'Emilia Cruze','Library Manager',69000.0,1);
CREATE TABLE Devices(
devID INTEGER PRIMARY KEY AUTOINCREMENT,
devName VARCHAR(255) NOT NULL,
Type VARCHAR(255) NOT NULL,
Status VARCHAR(255) NOT NULL,
empID INT NOT NULL,
cusID INT NOT NULL,
CONSTRAINT fk_employee FOREIGN KEY (empID) REFERENCES Employee (empID),
CONSTRAINT fk_customer FOREIGN KEY (cusID) REFERENCES Customer (cusID)
);
INSERT INTO Devices VALUES(1,'Laptop','Dell','In Use',5,6);
INSERT INTO Devices VALUES(2,'Laptop','Acer','In Use',5,1);
INSERT INTO Devices VALUES(3,'Tablet','Apple','Available',5,0);
INSERT INTO Devices VALUES(4,'Tablet','Windows','In Use',5,2);
INSERT INTO Devices VALUES(5,'Desktop Computer','Dell','In Use',5,3);
INSERT INTO Devices VALUES(6,'Desktop Computer','Windows','Available',5,0);
INSERT INTO Devices VALUES(7,'Printer','HP','In Use',5,4);
INSERT INTO Devices VALUES(8,'Printer','Dell','Available',5,0);
INSERT INTO Devices VALUES(9,'TV','Samsung','In Use',5,5);
INSERT INTO Devices VALUES(10,'TV','LG','Available',5,0);
INSERT INTO Devices VALUES(12,'Laptop','Dell','Returned',6,6);
INSERT INTO Devices VALUES(13,'Laptop','Acer','Returned',6,1);
INSERT INTO Devices VALUES(14,'Tablet','Windows','Returned',6,2);
INSERT INTO Devices VALUES(15,'Desktop Computer','Dell','Returned',6,3);
INSERT INTO Devices VALUES(16,'Printer','HP','Returned',6,4);
CREATE TABLE Books(
bookID INTEGER PRIMARY KEY AUTOINCREMENT,
Title VARCHAR(255) NOT NULL,
Author VARCHAR(255) NOT NULL,
Publisher VARCHAR(255) NOT NULL,
Genre VARCHAR(255) NOT NULL,
bkStatus VARCHAR(255) NOT NULL,
ISBN VARCHAR(255) NOT NULL,
empID INT NOT NULL,
cusID INT NOT NULL, Rating INT,
CONSTRAINT ck_books UNIQUE (ISBN),
CONSTRAINT fk_employee FOREIGN KEY (empID) REFERENCES Employee (empID),
CONSTRAINT fk_customer FOREIGN KEY (cusID) REFERENCES Customer (cusID)
```

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Command Prompt - sqlite3 library.db

```
);
INSERT INTO Books VALUES(3,'The Ministry of Utmost Happiness','Arundhati Roy','Alfred Knopf','Interpersonal Relations','Returned','9781524733155',6,3,1);
INSERT INTO Books VALUES(4,'Killers of the Flower Moon','David Grann','Doubleday','Crimes','Borrowed','9780385534246',5,1,2);
INSERT INTO Books VALUES(5,'The Hunger Games','Suzanne Collins','Scholastic Press','Science Fiction','Available','9780439023481',0,0,3);
INSERT INTO Books VALUES(6,'The Fault in Our Stars','John Green','Dutton Books','Romance','Borrowed','9780525478812',5,2,4);
INSERT INTO Books VALUES(7,'Divergent','Veronica Roth','Katherine Tegen Books','Science Fiction','Returned','9780062024039',6,3,5);
INSERT INTO Books VALUES(8,'City of Bones','Cassandra Clare','Margaret McElderry Books','Science Fiction','Borrowed','9781416914280',5,4,3);
INSERT INTO Books VALUES(9,'City of Glass','Cassandra Clare','Margaret McElderry Books','Science Fiction','Borrowed','9781416914303',5,4,3);
INSERT INTO Books VALUES(10,'Lady Midnight','Cassandra Clare','Margaret McElderry Books','Paranormal','Borrowed','9781442468351',5,4,4);
INSERT INTO Books VALUES(11,'The Perks of Being a Wallflower','Stephen Chbosky','MTV Books','Romance','Available','9780671027346',0,0,5);
INSERT INTO Books VALUES(12,'The Maze Runner','James Dashner','Delacorte Press','Dystopian','Borrowed','9780385737944',5,3,4);
INSERT INTO Books VALUES(13,'Thirteen Reasons Why','Jay Asher','Razorbill','Mystery','Borrowed','9781595147882',5,6,5);
INSERT INTO Books VALUES(14,'The Lightning Thief','Rick Riordan','Disney Hyperion Books','Fantasy','Borrowed','9780786838653',5,7,4);
INSERT INTO Books VALUES(15,'Uglies','Scott Westerfeld','Simon Pulse','Science Fiction','Borrowed','9780689865381',5,8,5);
INSERT INTO Books VALUES(16,'Graceling','Kristin Cashore','Harcourt','Romance','Borrowed','9780152063962',5,9,3);
INSERT INTO Books VALUES(17,'The Vampire Academy','Richelle Mead','Razorbill','Paranormal','Returned','9781595141743',6,3,4);
INSERT INTO Books VALUES(18,'Throne of Glass','Sarah Maas','Bloomsbury','Fantasy','Returned','9781599906959',6,3,4);
INSERT INTO Books VALUES(20,'Delirium','Lauren Oliver','HarperCollins','Dystopia','Returned','9780061726835',6,9,3);
INSERT INTO Books VALUES(22,'The Selection','Kiera Cass','HarperTeen','Romance','Returned','9780062059932',6,10,4);
INSERT INTO Books VALUES(23,'The Golden Compass','Philip Phullman','Alfred Knopf','Adventure','Returned','9780679879244',6,8,3);
INSERT INTO Books VALUES(24,'Speak','Laurie Anderson','Puffin','Contemporary','Returned','9780141310886',6,7,4);
INSERT INTO Books VALUES(25,'Matched','Ally Condie','Puffin','Science Fiction','Returned','9780525423645',6,6,3);
INSERT INTO Books VALUES(26,'If I Stay','Gayle Forman','Puffin','Romance','Returned','9780525421030',6,5,3);
INSERT INTO Books VALUES(27,'Looking for Alaska','John Green','Puffin','Contemporary','Available','9780142402511',0,0,4);
CREATE TABLE EmployeeRegistersCustomer(
empID INT NOT NULL,
cusID INT NOT NULL,
CONSTRAINT fk_employee FOREIGN KEY (empID) REFERENCES Employee (empID),
CONSTRAINT fk_customer FOREIGN KEY (cusID) REFERENCES Customer (cusID)
);
INSERT INTO EmployeeRegistersCustomer VALUES(2,1);
INSERT INTO EmployeeRegistersCustomer VALUES(2,2);
INSERT INTO EmployeeRegistersCustomer VALUES(2,3);
INSERT INTO EmployeeRegistersCustomer VALUES(2,4);
INSERT INTO EmployeeRegistersCustomer VALUES(2,5);
INSERT INTO EmployeeRegistersCustomer VALUES(2,6);
INSERT INTO EmployeeRegistersCustomer VALUES(2,7);
INSERT INTO EmployeeRegistersCustomer VALUES(2,8);
INSERT INTO EmployeeRegistersCustomer VALUES(2,9);
INSERT INTO EmployeeRegistersCustomer VALUES(2,10);
CREATE TABLE IssueStatus(
issueID INTEGER PRIMARY KEY AUTOINCREMENT,
bookISBN VARCHAR(255) NOT NULL,
bookTitle VARCHAR(255) NOT NULL,
customerID INT NOT NULL,
issueDate VARCHAR(255) NOT NULL,
deviceName VARCHAR(255) NOT NULL,
deviceType VARCHAR(255) NOT NULL,
CONSTRAINT ck_issueStatus UNIQUE (bookISBN)
);
INSERT INTO IssueStatus VALUES(1,'97803855342466','Killers of the Flower Moon',1,'March','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(2,'9780525478812','The Fault in Our Stars',2,'March','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(3,'9781416914280','City of Bones',4,'March','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(4,'9781416914303','City of Glass',4,'March','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(5,'9781442468351','Lady Midnight',4,'March','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(6,'9780385737944','The Maze Runner',3,'April','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(7,'9781595147882','Thirteen Reasons Why',6,'April','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(8,'9780786838653','The Lightning Thief',7,'April','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(9,'9780689865381','Uglies',8,'April','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(10,'9780152063962','Graceling',9,'April','Not Applicable','Not Applicable');
INSERT INTO IssueStatus VALUES(11,'Not Applicable','Not Applicable',6,'March','Laptop','Dell');
INSERT INTO IssueStatus VALUES(12,'NA','Not Applicable',1,'April','Laptop','Acer');
CREATE TABLE EmployeeUpdatesIssueStatus(
empID INT NOT NULL,
issueID INT NOT NULL,
CONSTRAINT fk_employee FOREIGN KEY (empID) REFERENCES Employee (empID),
```

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Command Prompt - sqlite3 library.db

```
CREATE TABLE EmployeeUpdatesIssueStatus(
empID INT NOT NULL,
issueID INT NOT NULL,
CONSTRAINT fk_employee FOREIGN KEY (empID) REFERENCES Employee (empID),
CONSTRAINT fk_issueStatus FOREIGN KEY (issueID) REFERENCES IssueStatus (issueID)
);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,1);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,2);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,3);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,4);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,5);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,6);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,7);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,8);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,9);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,10);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,11);
INSERT INTO EmployeeUpdatesIssueStatus VALUES(5,12);
CREATE TABLE ReturnStatus(
returnID INTEGER PRIMARY KEY AUTOINCREMENT,
bkISBN VARCHAR(255) NOT NULL,
bkTitle VARCHAR(255) NOT NULL,
custID INT NOT NULL,
returnDate VARCHAR(255) NOT NULL,
devicName VARCHAR(255) NOT NULL,
devicType VARCHAR(255) NOT NULL,
CONSTRAINT ck_returnStatus UNIQUE (bkISBN)
);
INSERT INTO ReturnStatus VALUES(2,'9781524733155','The Ministry of Utmost Happiness',3,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(3,'9780062024039','Divergent',3,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(4,'9780061726835','Delirium',9,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(5,'9780141310886','Speak',7,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(6,'9780525423645','Matched',6,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(7,'9780525421030','If I Stay',5,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(8,'9780679879244','The Golden Compass',8,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(9,'9780062059932','The Selection',10,'April','Not Applicable','Not Applicable');
INSERT INTO ReturnStatus VALUES(10,'Not Applicable','Not Applicable',3,'April','Desktop Computer','Dell');
INSERT INTO ReturnStatus VALUES(11,'NA','Not Applicable',4,'April','Printer','HP');
CREATE TABLE EmployeeUpdatesReturnStatus(
empID INT NOT NULL,
returnID INT NOT NULL,
CONSTRAINT fk_employee FOREIGN KEY (empID) REFERENCES Employee (empID),
CONSTRAINT fk_returnStatus FOREIGN KEY (returnID) REFERENCES ReturnStatus (returnID)
);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,2);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,3);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,4);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,5);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,6);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,7);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,8);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,9);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,10);
INSERT INTO EmployeeUpdatesReturnStatus VALUES(6,11);
CREATE TABLE IF NOT EXISTS "Customer"(
cusID INTEGER PRIMARY KEY AUTOINCREMENT,
cusName VARCHAR(255) NOT NULL,
cusAddress VARCHAR(255) NOT NULL,
RegistrationDate VARCHAR(255) NOT NULL,
branchID INT NOT NULL,
fineFee REAL,
CONSTRAINT ck_customer UNIQUE (cusName),
CONSTRAINT fk_branch FOREIGN KEY (branchID) REFERENCES branch (branchID)
);
INSERT INTO Customer VALUES(1,'Peter Randall','500 Kingston Rd, Toronto, ON','January 1, 2018',1,0.0);
INSERT INTO Customer VALUES(2,'Lailah Bradley','315 St Germain Ave, Toronto, ON','January 2, 2018',1,1.0);
```

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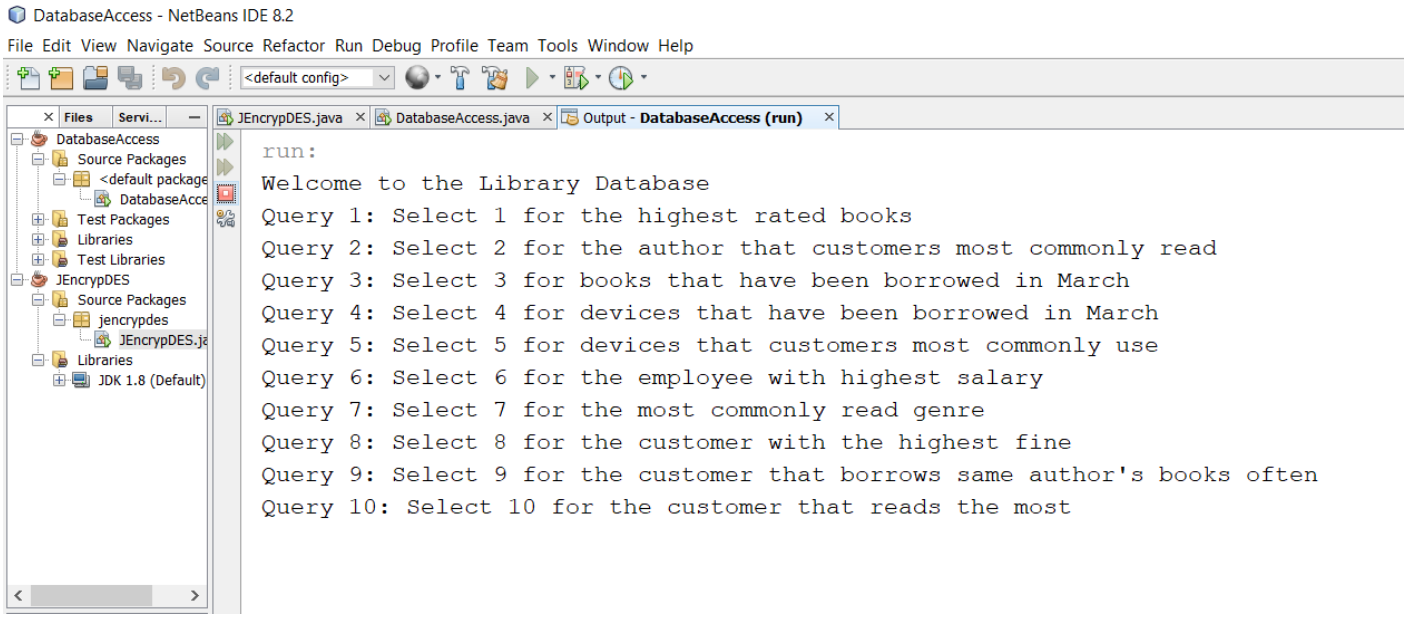
```
INSERT INTO Customer VALUES(1,'Peter Randall','500 Kingston Rd, Toronto, ON','January 1, 2018',1,0.0);
INSERT INTO Customer VALUES(2,'Lailah Bradley','315 St Germain Ave, Toronto, ON','January 2, 2018',1,1.0);
INSERT INTO Customer VALUES(3,'Sam Valencia','48 St Clair Ave, Toronto, ON','January 3, 2018',1,2.0);
INSERT INTO Customer VALUES(4,'Terrance Sawyer','234 Willow Ave, Toronto, ON','January 4, 2018',1,3.0);
INSERT INTO Customer VALUES(5,'Veronica Page','26 Goodwood Park, Toronto, ON','January 5, 2018',1,4.0);
INSERT INTO Customer VALUES(6,'Alexandra Udinov','94 Queen St E, Toronto, ON','January 6, 2018',1,5.0);
INSERT INTO Customer VALUES(7,'Owen Matthews','24 Waverly Rd, Toronto, ON','January 7, 2018',1,3.5);
INSERT INTO Customer VALUES(8,'Michael Bishop','55 Berkeley St, Toronto, ON','January 8, 2018',1,4.5);
INSERT INTO Customer VALUES(9,'Nikita Meyers','70 Broadview Ave, Toronto, ON','January 9, 2018',1,6.0);
INSERT INTO Customer VALUES(10,'Ryan Fletcher','65 Don Mills Rd, Toronto, ON','January 10, 2018',1,9.0);
DELETE FROM sqlite_sequence;
INSERT INTO sqlite_sequence VALUES('Employee',10);
INSERT INTO sqlite_sequence VALUES('Devices',16);
INSERT INTO sqlite_sequence VALUES('Books',27);
INSERT INTO sqlite_sequence VALUES('Customer',10);
INSERT INTO sqlite_sequence VALUES('IssueStatus',12);
INSERT INTO sqlite_sequence VALUES('ReturnStatus',11);
COMMIT;
sqlite>
```

The screenshots of the program can be seen below. Each screenshot shows the execution of each option (query) and the result of each query.



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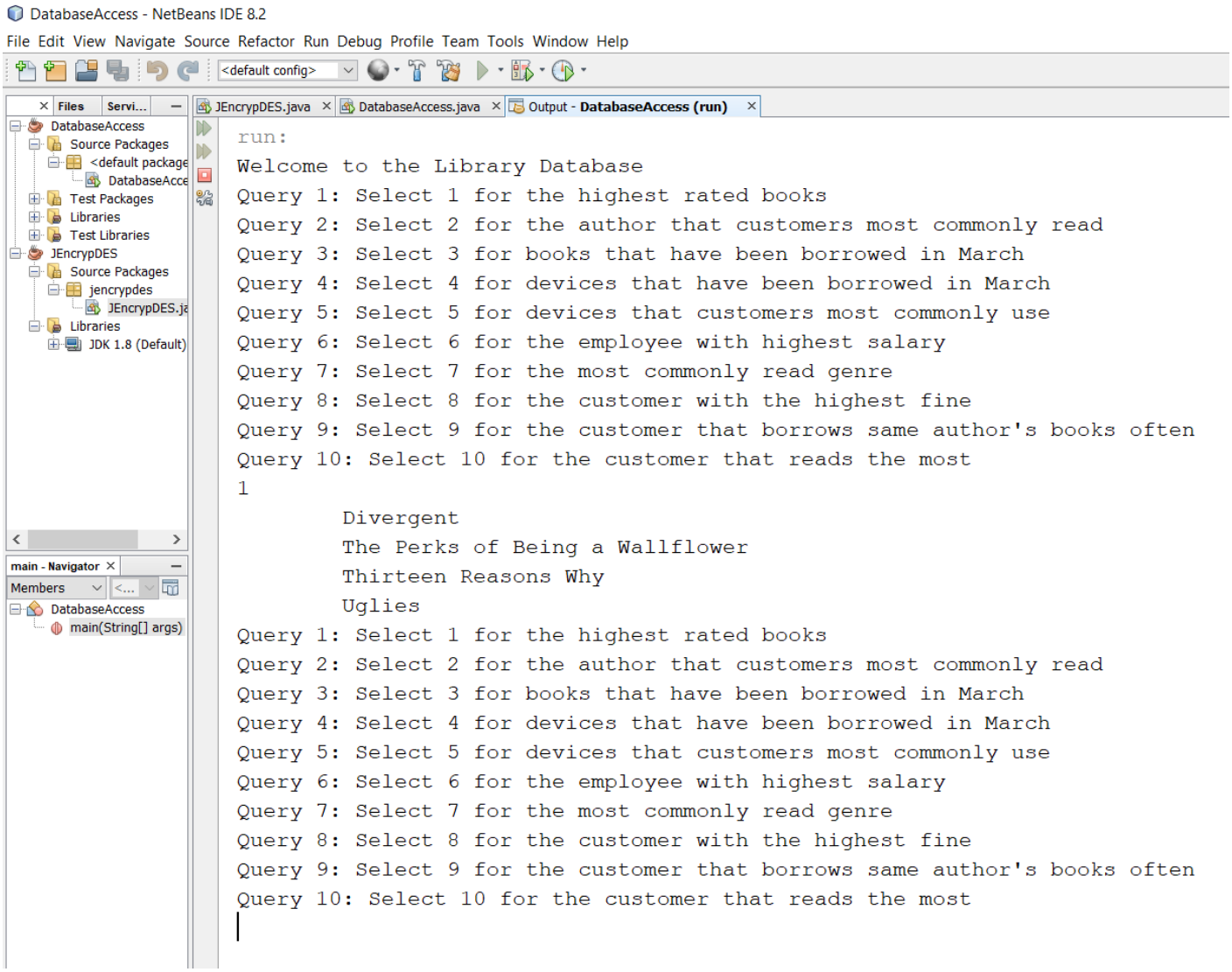

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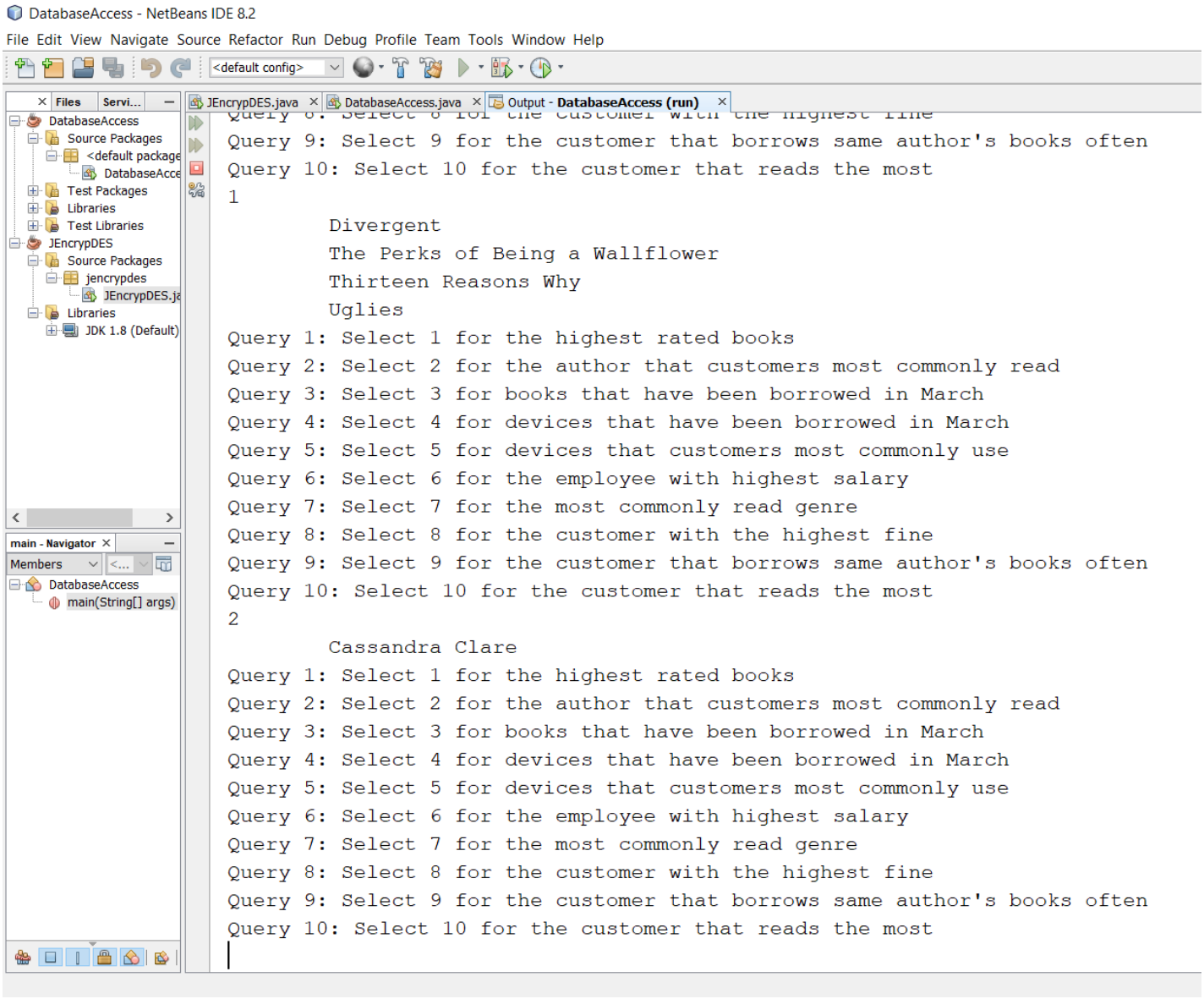

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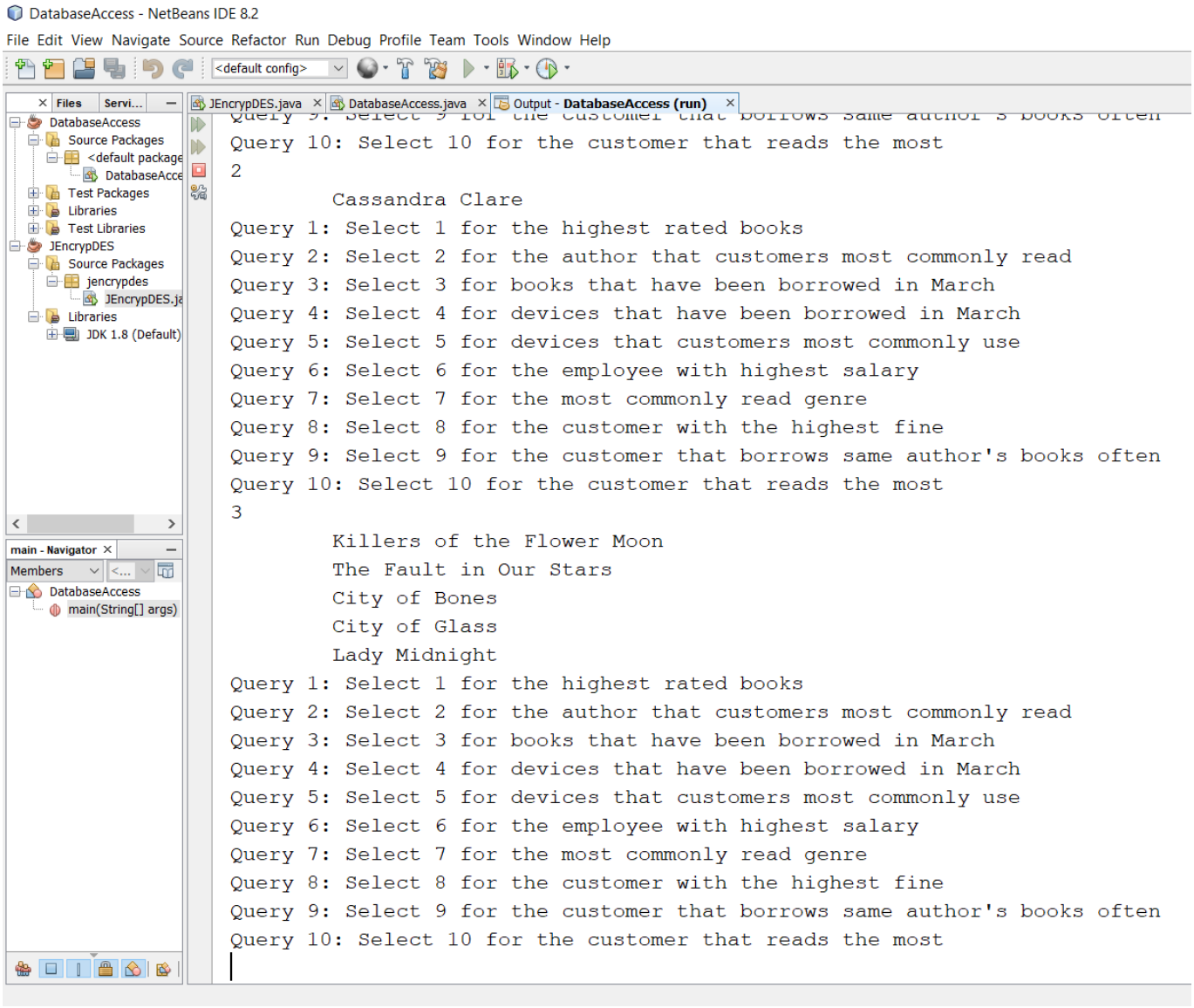

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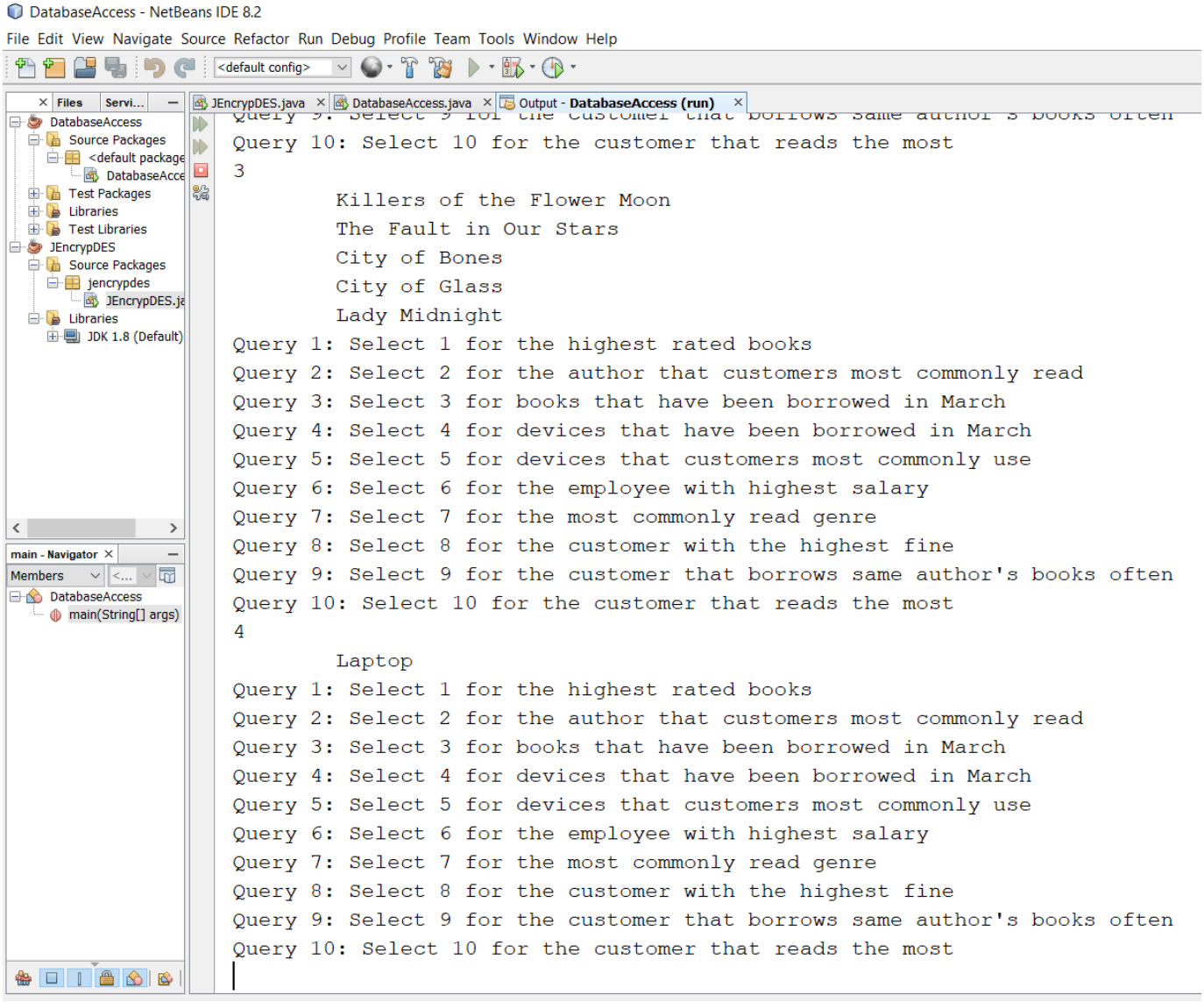

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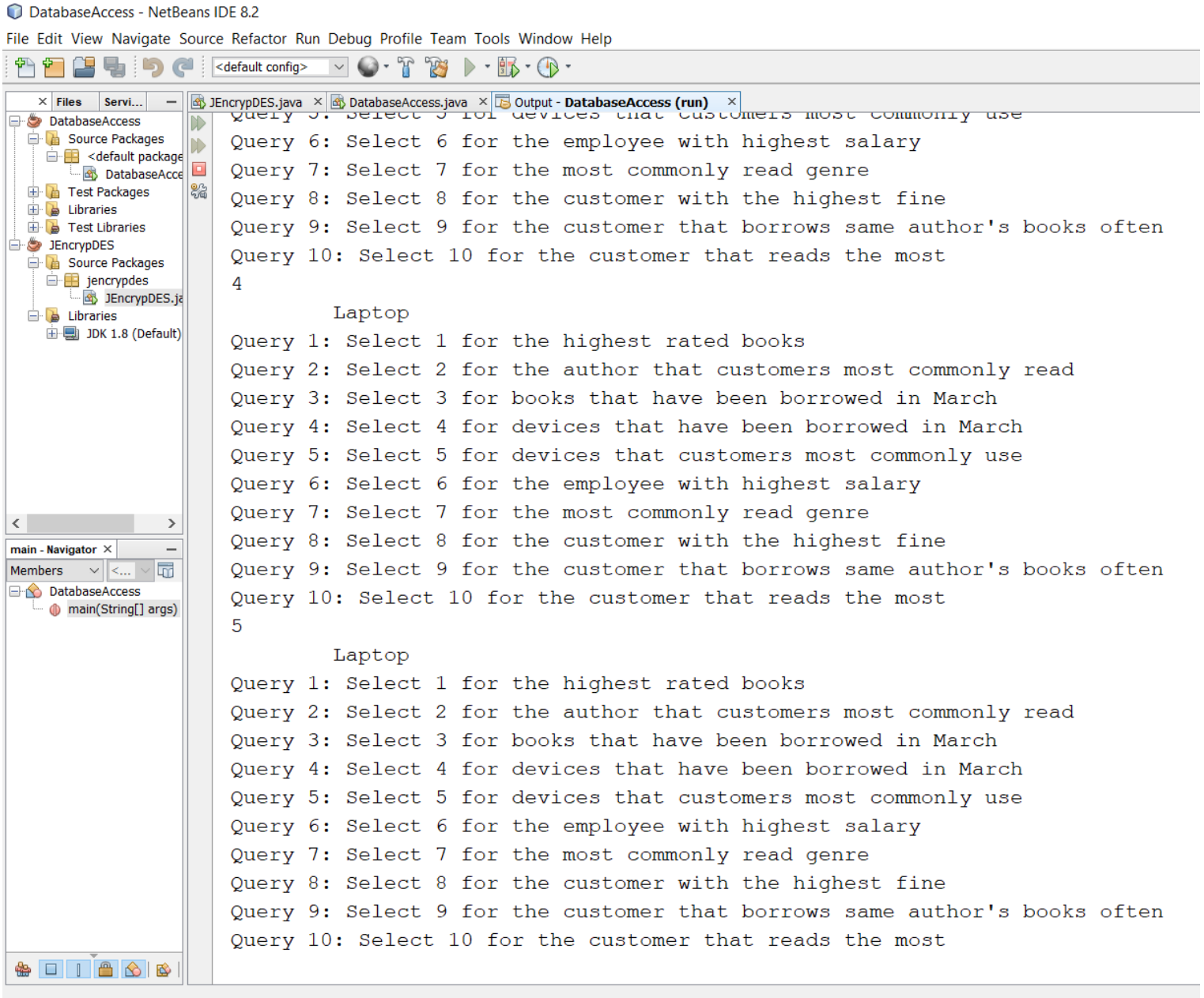

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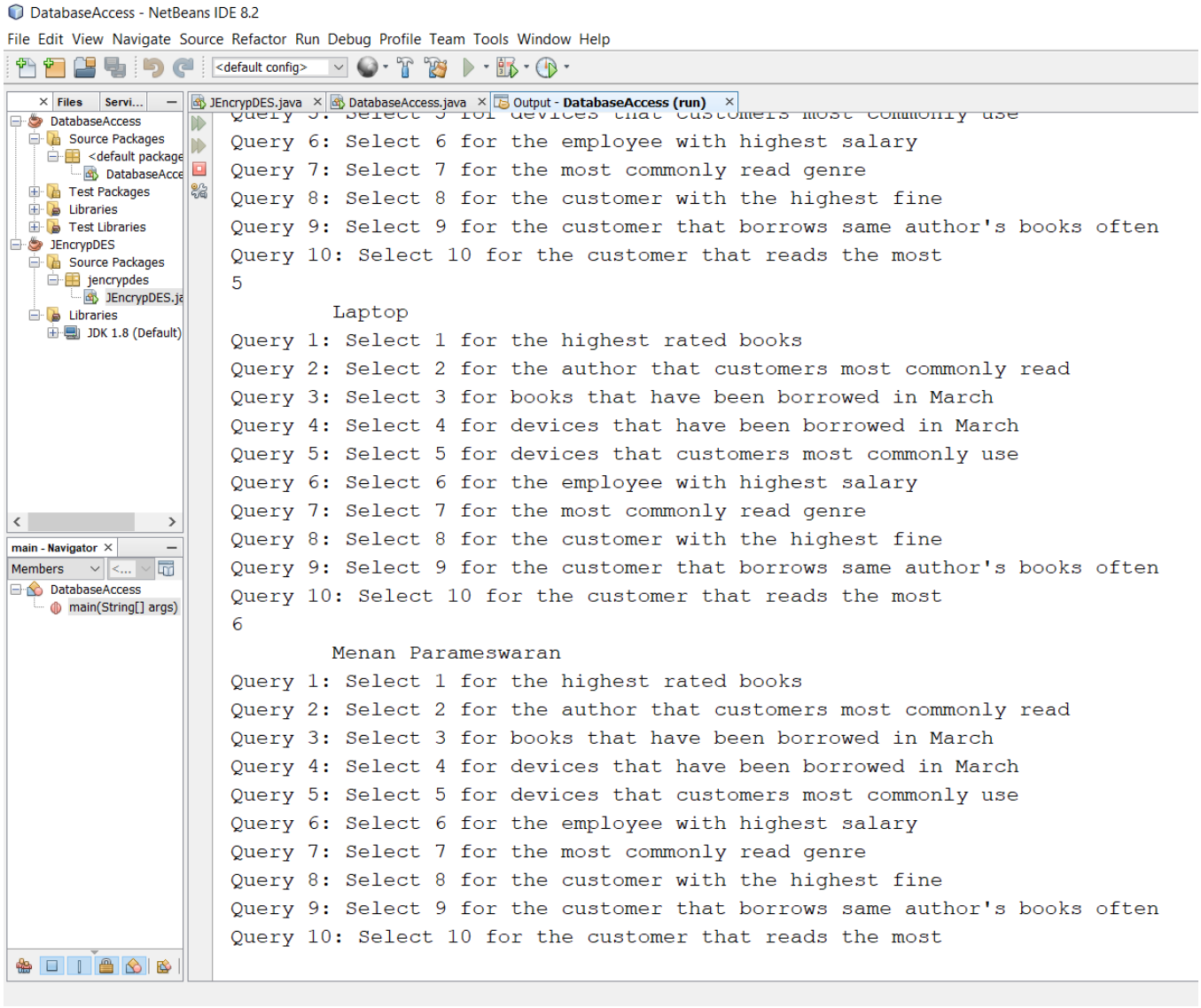

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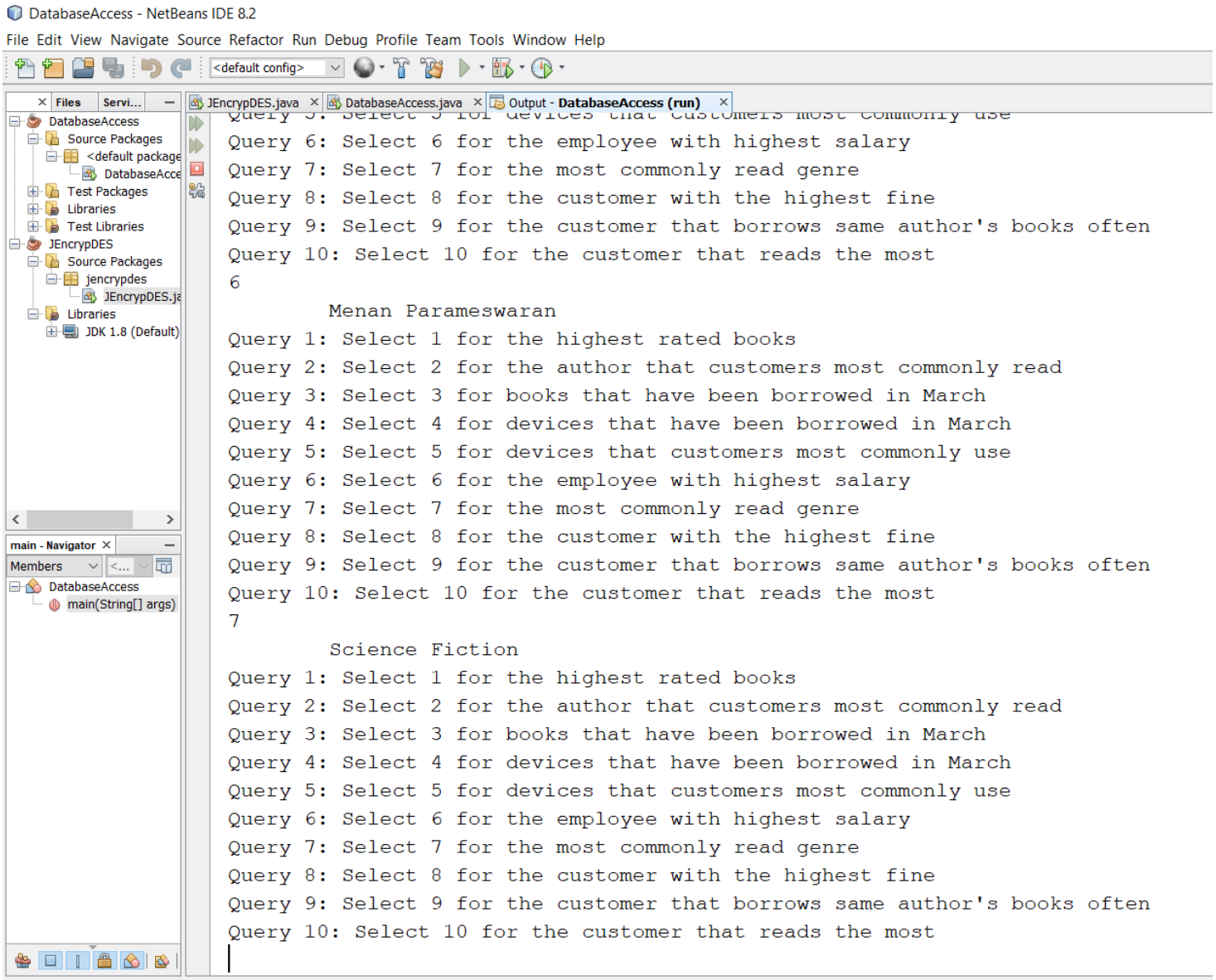

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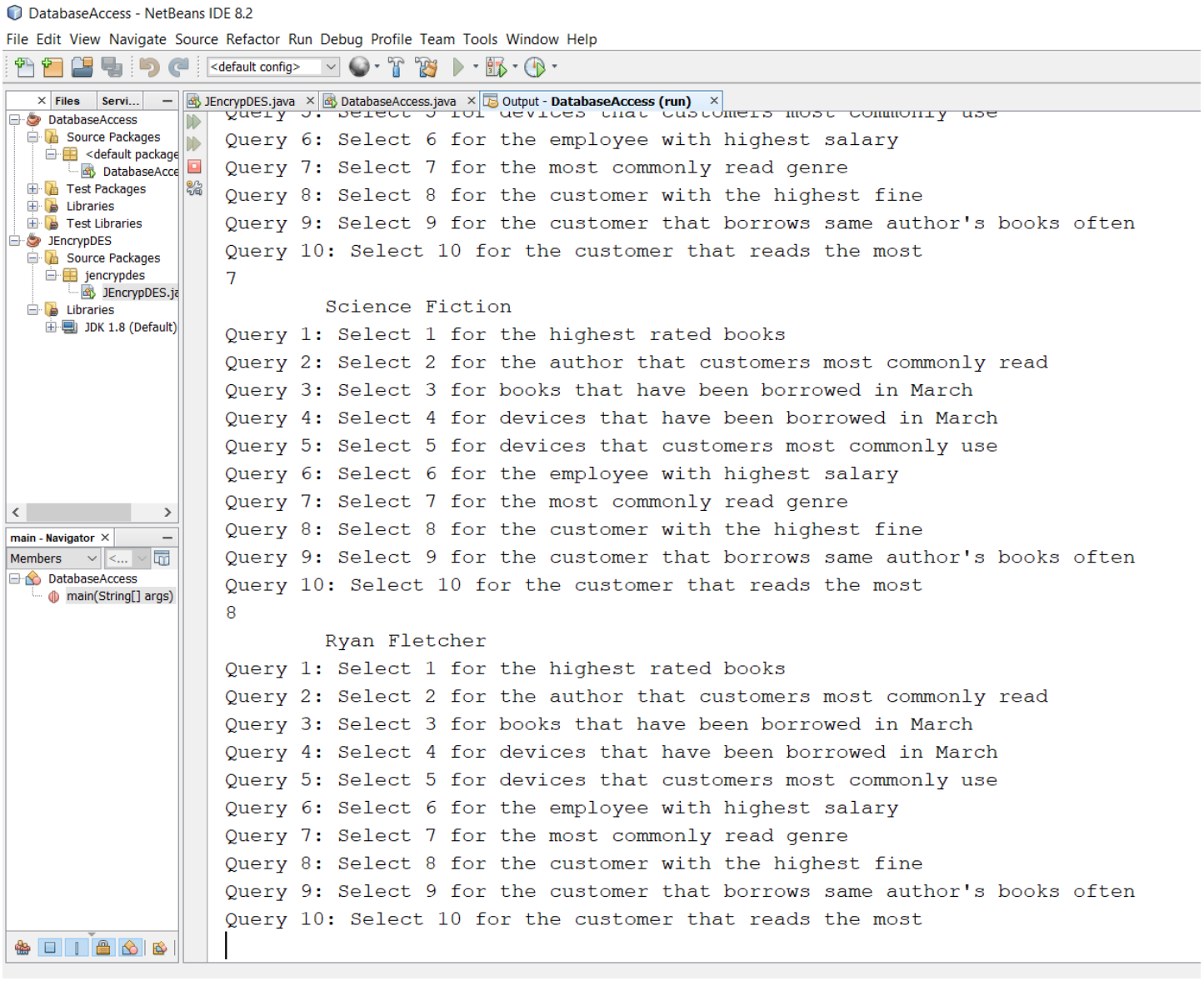

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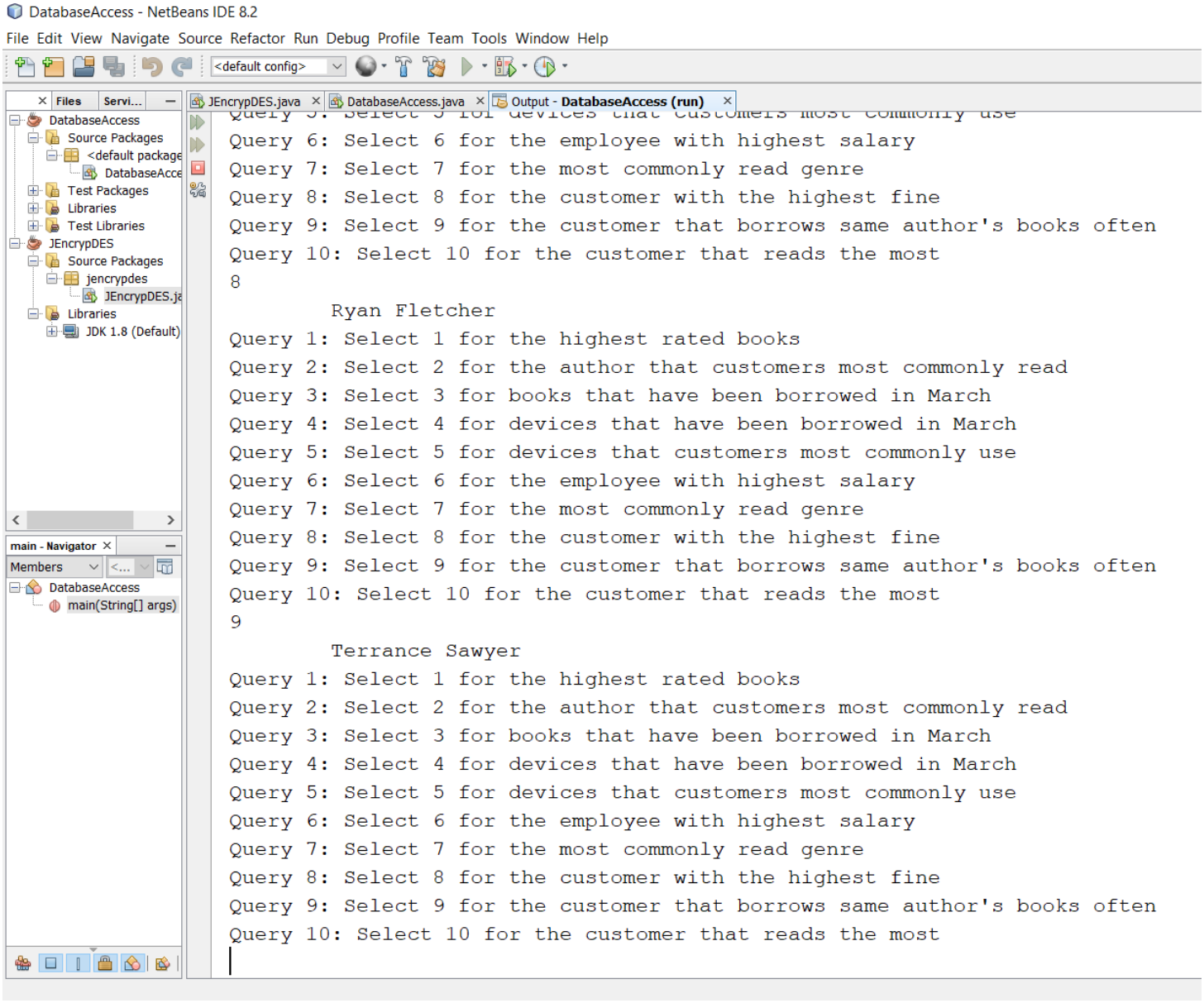

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