**Individual Project 4**

**DS160-01**

**Introduction to Data Science**

**Spring 2022**

**Writing SQL Queries(50 points)**

**Goal:** The goal of this project is to provide you practice for writing simple SQL queries.

**Instructions:** Create a new .sql file titled **IP4\_XXX.sql**, where **XXX** are your initials; and rename this file to **IP4\_XXX.docx**. Also create a GitHub repository titled **IP4\_XXX** to which you can push both your .sql file and this document.

Attached to the assignment are two .sql files. HenryBooksCreate.sql which will create the database on you MySQL server and HenryBooksFill.sql which will fill it with data.

You will form the following queries for the Henry Books database and provide the statement and the output in this document. All of your SQL statements should also be in the .sql file. Use a comment (# mark) in your .sql file to number the statements according to this document. Each problem is marked with its point worth.

1. Retrieve the first name and last name of each author in the author relation. Order does not matter. **(1 points)**

**SQL Statement: Select firstname, lastname**

**from author**

**Output:**

**Toni Morrison**

**Paul Solotaroff**

**Vernor Vintage**

**Dick Francis**

**Peter Straub**

**Stephen King**

**Philip Pratt**

**Truddi Chase**

**Bradley Collins**

**Joseph Heller**

**Gary Wills**

**Douglas R. Hofstadter**

**Harper Lee**

**Stephen E. Ambrose**

**J.K. Rowling**

**J.D. Salinger**

**Seamus Heaney**

**Albert Camus**

**Bradley Collins, Jr.**

**John Steinbeck**

**Riva Castelman**

**Barbara Owen**

**Randy O'Rourke**

**Tracy Kidder**

**Lon Schleining**

1. Retrieve the title and book type in the book relation. Order does not matter. **(1 points)**

**SQL Statement: SELECT title, TYPE**

**from book;**

**Output:**

A Deepness in the Sky SFI

Magic Terror HOR

The Stranger FIC

Venice ART

Second Wind MYS

The Edge MYS

Dreamcatcher: A Novel HOR

Treasure Chests ART

Beloved FIC

Harry Potter and the Prisoner of Azkaban SFI

Van Gogh and Gauguin ART

Of Mice and Men FIC

Electric Light POE

Group: Six People in Search of a Life PSY

Nine Stories FIC

The Soul of a New Machine SCI

Travels with Charley TRA

Catch-22 FIC

Jazz FIC

Band of Brothers HIS

A Guide to SQL CMP

Franny and Zooey FIC

East of Eden FIC

Harry Potter and the Goblet of Fire SFI

The Fall FIC

Godel, Escher, Bach PHI

When Rabbit Howls PSY

Black House HOR

Song of Solomon FIC

The Grapes of Wrath FIC

Slay Ride MYS

The Catcher in the Rye FIC

To Kill a Mockingbird FIC

1. Retrieve the publisherCode in the book relation. List each publisherCode only once in the result. Order does not matter. **(1 points)**

**SQL Statement: SELECT publisherCode**

**From book**

**Group by publisherCode;**

**Output:**

BA

BP

BY

CT

FA

FS

HC

JP

LB

PE

PL

PU

RH

SC

SS

ST

TA

TB

TO

VB

WP

1. Retrieve the title and price of each book in the book relation. Further add a calculated column named ‘discount’ that shows the price the book with 25% discount. Order does not matter. Show the first five rows of the result (**LIMIT 5**). **(3 points)**

**SQL Statement: SELECT title, price, round((1-0.25)\*price)**

**From book**

**limit 5;**

**Output:**

A Deepness in the Sky 7.19 5

Magic Terror 7.99 6

The Stranger 8.00 6

Venice 24.50 18

Second Wind 24.95 19

1. Retrieve the title and price for any book whose price is higher than $20.00 in the book relation. Show the full result. **(3 points)**

**SQL Statement: SELECT title, price**

**From book**

**Where price>20.00;**

**Output:**

**Venice 24.50**

**Second Wind 24.95**

**Treasure Chests 24.46**

**Van Gogh and Gauguin 21.00**

**A Guide to SQL 37.95**

1. Retrieve the publisherName of all publishers that are in New York only in the publisher relation. Order does not matter. **(2 points)**

**SQL Statement: SELECT publisherName**

**From publisher**

**Where city="New York";**

**Output:**

**Arcade Publishing**

**Back Bay books**

**Fawcett books**

**Farrar Straus and Giroux**

**HarperCollins publishers**

**Jove Publications**

**Lb books**

**Penguin USA**

**Plume**

**Putnam Publishing Group**

**Random House**

**Schoken books**

**Scribner**

**Simon and Schuster**

**SchoLASTic Trade**

**Tor books**

**Thames and Hudson**

**Vintage books**

**W.W. Norton**

1. Retrieve the publisherName of all publishers that are not in New York in the publisher relation. (use != for inequality). Order does not matter. Show the full result. **(3 points)**

**SQL Statement: SELECT publisherName**

**From publisher**

**WHERE city != "New York";**

**Output:**

**Arkham House**

**Basic books**

**Berkley Publishing**

**Course Technology**

**Jeremy P. Tarcher**

**McPherson and Co.**

**Taunton Press**

**Touchstone books**

**Westview Press**

1. Retrieve the bookCode and onHand for each book for which a branch has between 2 and 4 copies in the inventory relation. **Use the BETWEEN keyword in this query.** Order does not matter. Show the full result. **(3 points)**

**SQL Statement: SELECT bookCode, onHand, branchNum**

**FROM inventory**

**WHERE onHand BETWEEN 2 and 4;**

**Output:**

**bookCode, onHand, branchNum**

0180 2 1

0189 2 2

0200 3 2

0378 2 3

079X 2 3

079X 3 4

1351 4 2

1351 2 3

138X 3 2

2226 3 1

2226 2 3

2281 3 4

2766 2 3

2908 3 1

3350 2 1

3906 2 3

5790 2 4

6128 4 2

6128 3 3

6328 2 2

6908 2 2

7405 2 3

7559 2 2

8720 3 1

9611 2 1

9627 2 4

9701 2 1

9701 3 3

9701 2 4

9882 3 3

9883 3 2

9883 2 4

9931 2 1

1. Retrieve a count of the number of books published by Penguin USA. Name the column ‘Penguin Books’. Order does not matter. Show your full result. **(3 points)**

**SQL Statement: SELECT count(title) as "Penguin Books"**

**FROM book, publisher**

**WHERE publisherName = "Penguin USA"**

**GROUP by publisherName;**

**Output:**

Penguin Books

33

1. Retrieve the number of books in the book relation whose prices is $20.00 or lower. Order does not matter. Show your full result. **(3 points)**

**SQL Statement: SELECT count(title)**

**FROM book**

**WHERE price <= 20.00;**

**Output:**

**Count(title)**

**28**

1. Retrieve all of the columns from the book and publisher relations in one result. Use aliases in your query and use the simple JOIN syntax (WHERE clause). Order does not matter. **(5 points)**

**SQL Statement: SELECT bookCode, title, TYPE as "Type of Book", price, paperback, book.publisherCode as "Publisher Code", publisherName as "Publisher Name", city**

**From book**

**Join publisher**

**Where book.publisherCode = publisher.publisherName;**

**Output:** **bookCode, title, Type of Book, price, paperback, Publisher Code, Publisher Name, city**

**8092 Godel, Escher, Bach PHI 14.00 Y BA Basic books Boulder CO**

**3350 Group: Six People in Search of a Life PSY 10.40 Y BP Berkley Publishing Boston**

**3906 The Soul of a New Machine SCI 11.16 Y BY Back Bay books New York**

**669X A Guide to SQL CMP 37.95 Y CT Course Technology Boston**

**0189 Magic Terror HOR 7.99 Y FA Fawcett books New York**

**2908 Electric Light POE 14.00 N FS Farrar Straus and Giroux New York**

**9931 To Kill a Mockingbird FIC 18.00 N HC HarperCollins publishers New York**

**0808 The Edge MYS 6.99 Y JP Jove Publications New York**

**8720 When Rabbit Howls PSY 6.29 Y JP Jove Publications New York**

**9882 Slay Ride MYS 6.99 Y JP Jove Publications New York**

**3743 Nine Stories FIC 5.99 Y LB Lb books New York**

**6908 Franny and Zooey FIC 5.99 Y LB Lb books New York**

**9883 The Catcher in the Rye FIC 5.99 Y LB Lb books New York**

**2766 Of Mice and Men FIC 6.95 Y PE Penguin USA New York**

**5163 Travels with Charley TRA 7.95 Y PE Penguin USA New York**

**7405 East of Eden FIC 12.95 Y PE Penguin USA New York**

**9701 The Grapes of Wrath FIC 13.00 Y PE Penguin USA New York**

**138X Beloved FIC 12.95 Y PL Plume New York**

**6128 Jazz FIC 12.95 Y PL Plume New York**

**9627 Song of Solomon FIC 14.00 Y PL Plume New York**

**079X Second Wind MYS 24.95 N PU Putnam Publishing Group New York**

**9611 Black House HOR 18.81 N RH Random House New York**

**1351 Dreamcatcher: A Novel HOR 19.60 N SC Scribner New York**

**5790 Catch-22 FIC 12.00 Y SC Scribner New York**

**0378 Venice ART 24.50 N SS Simon and Schuster New York**

**2226 Harry Potter and the Prisoner of Azkaban SFI 13.96 N ST SchoLASTic Trade New York**

**7443 Harry Potter and the Goblet of Fire SFI 18.16 N ST SchoLASTic Trade New York**

**1382 Treasure Chests ART 24.46 N TA Taunton Press Newtown CT**

**0180 A Deepness in the Sky SFI 7.19 Y TB Tor books New York**

**6328 Band of Brothers HIS 9.60 Y TO Touchstone books Westport CT**

**0200 The Stranger FIC 8.00 Y VB Vintage books New York**

**7559 The Fall FIC 8.00 Y VB Vintage books New York**

**2281 Van Gogh and Gauguin ART 21.00 N WP Westview Press Boulder CO**

1. Rewrite the previous query using the ON keyword. **(5 points)**

**SQL Statement: SELECT bookCode, title, TYPE as "Type of Book", price, paperback, book.publisherCode as "Publisher Code", publisherName as "Publisher Name", city**

**From book**

**Join publisher ON**

**book.publisherCode = publisher.publisherName;**

**Output: bookCode, title, Type of Book, price, paperback, Publisher Code, Publisher Name, city**

**8092 Godel, Escher, Bach PHI 14.00 Y BA Basic books Boulder CO**

**3350 Group: Six People in Search of a Life PSY 10.40 Y BP Berkley Publishing Boston**

**3906 The Soul of a New Machine SCI 11.16 Y BY Back Bay books New York**

**669X A Guide to SQL CMP 37.95 Y CT Course Technology Boston**

**0189 Magic Terror HOR 7.99 Y FA Fawcett books New York**

**2908 Electric Light POE 14.00 N FS Farrar Straus and Giroux New York**

**9931 To Kill a Mockingbird FIC 18.00 N HC HarperCollins publishers New York**

**0808 The Edge MYS 6.99 Y JP Jove Publications New York**

**8720 When Rabbit Howls PSY 6.29 Y JP Jove Publications New York**

**9882 Slay Ride MYS 6.99 Y JP Jove Publications New York**

**3743 Nine Stories FIC 5.99 Y LB Lb books New York**

**6908 Franny and Zooey FIC 5.99 Y LB Lb books New York**

**9883 The Catcher in the Rye FIC 5.99 Y LB Lb books New York**

**2766 Of Mice and Men FIC 6.95 Y PE Penguin USA New York**

**5163 Travels with Charley TRA 7.95 Y PE Penguin USA New York**

**7405 East of Eden FIC 12.95 Y PE Penguin USA New York**

**9701 The Grapes of Wrath FIC 13.00 Y PE Penguin USA New York**

**138X Beloved FIC 12.95 Y PL Plume New York**

**6128 Jazz FIC 12.95 Y PL Plume New York**

**9627 Song of Solomon FIC 14.00 Y PL Plume New York**

**079X Second Wind MYS 24.95 N PU Putnam Publishing Group New York**

**9611 Black House HOR 18.81 N RH Random House New York**

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**6328 Band of Brothers HIS 9.60 Y TO Touchstone books Westport CT**

**0200 The Stranger FIC 8.00 Y VB Vintage books New York**

**7559 The Fall FIC 8.00 Y VB Vintage books New York**

**2281 Van Gogh and Gauguin ART 21.00 N WP Westview Press Boulder CO**

1. Retrieve the title from the book relation and the city from the publisher relation using a JOIN query. Use aliases in your query. Order the result by title. **(5 points)**

**SQL Statement: SELECT title, city**

**From book**

**Join publisher ON**

**book.publisherCode = publisher.publisherCode**

**Order by title;**

**Output: Title, City**

A Deepness in the Sky New York

A Guide to SQL Boston

Band of Brothers Westport CT

Beloved New York

Black House New York

Catch-22 New York

Dreamcatcher: A Novel New York

East of Eden New York

Electric Light New York

Franny and Zooey New York

Godel, Escher, Bach Boulder CO

Group: Six People in Search of a Life Boston

Harry Potter and the Goblet of Fire New York

Harry Potter and the Prisoner of Azkaban New York

Jazz New York

Magic Terror New York

Nine Stories New York

Of Mice and Men New York

Second Wind New York

Slay Ride New York

Song of Solomon New York

The Catcher in the Rye New York

The Edge New York

The Fall New York

The Grapes of Wrath New York

The Soul of a New Machine New York

The Stranger New York

To Kill a Mockingbird New York

Travels with Charley New York

Treasure Chests Newtown CT

Van Gogh and Gauguin Boulder CO

Venice New York

When Rabbit Howls New York

1. Retrieve the title from the book relation and branchNum and onHand from the inventory relation. Use aliases in your query. Order the result by title. **(5 points)**

**SQL Statement: SELECT title, branchNum, onHand**

**FROM book, inventory**

**group by title**

**Order by title;**

**Output: title, branchNum, onHand**

**A Deepness in the Sky 1 2**

**A Guide to SQL 1 2**

**Band of Brothers 1 2**

**Beloved 1 2**

**Black House 1 2**

**Catch-22 1 2**

**Dreamcatcher: A Novel 1 2**

**East of Eden 1 2**

**Electric Light 1 2**

**Franny and Zooey 1 2**

**Godel, Escher, Bach 1 2**

**Group: Six People in Search of a Life 1 2**

**Harry Potter and the Goblet of Fire 1 2**

**Harry Potter and the Prisoner of Azkaban 1 2**

**Jazz 1 2**

**Magic Terror 1 2**

**Nine Stories 1 2**

**Of Mice and Men 1 2**

**Second Wind 1 2**

**Slay Ride 1 2**

**Song of Solomon 1 2**

**The Catcher in the Rye 1 2**

**The Edge 1 2**

**The Fall 1 2**

**The Grapes of Wrath 1 2**

**The Soul of a New Machine 1 2**

**The Stranger 1 2**

**To Kill a Mockingbird 1 2**

**Travels with Charley 1 2**

**Treasure Chests 1 2**

**Van Gogh and Gauguin 1 2**

**Venice 1 2**

**When Rabbit Howls 1 2**

1. Retrieve the title from the book relation and compute the number of copies of the title that all branches have on hand. Name this computed column ‘Inventory’ **Hint: You will need to join book and inventory and do an aggregate query.** Use aliases in your query. Order the result by the total number of copies of the book in descending order. Show the first two rows of your result. **(5 points)**

**SQL Statement: SELECT title, SUM(onHand) as "inventory"**

**from book**

**join inventory ON**

**book.bookCode = inventory.bookCode**

**group by title**

**order by inventory desc**

**limit 2;**

**Output: title, inventory**

**The Grapes of Wrath 8**

**Song of Solomon 7**

1. Retrieve the first name and last name from the author relation and the title from the book relation for all paperback books in the book relation. Order the result by the author last name and title. **(5 points)**

**SQL Statement: SELECT firstName, lastName, title**

**From author, book**

**Order by lastName, title**

**Output: Can’t get this one to run properly**