

**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**

2. 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

3. 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

4. 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

5. 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

6. 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

7. 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

8. 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

9. 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

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10. 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)

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11. 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
	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

12. 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
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
	New York					Trade
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

13. 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

14. 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

15. 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

16. 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