A. Overview
After open the application, a list of tasks is given with assigned
numbers from 1 to 6. User is prompted to enter a number between 1 to 6 to
perform corresponding task or enter e/exit to exit the program.
Once the user selects a task, the task is performed. After the task is
done, user is prompted to select a task again or leave the program.

B. Design
Task 1
Task1function()
This task shows all the papers in pages with each page showing five
papers. User can go to different pages by entering 'p' to go to the
previous page or entering 'n' to go to the next page. Once user selects a
paper by its ID, the emails of all reviewers of that paper are shown.

Implementation
First use SQL to select all papers. Use variable page to keep track of
what page it's on. Under an infinite while loop, prompt user to enter
'n', 'p', or an ID of a paper.
If the user enters 'n', go to the next page
Else if user enters 'p', go to the previous page
Else use SQL to select all the reviewers of that paper with the ID user
enters and print out the reviewers. Break the while loop.
Return to function call.

Task 2
Task2function()
This task shows all the papers in pages with each page showing five
papers. User can go to different pages by entering 'p' to go to the
previous page or entering 'n' to go to the next page. Once user selects a
paper by its ID, the emails of all potential reviewers of that paper are
shown. User should choose a potential reviewer and enter review for that
paper.

Implementation
First use SQL to select all papers. Use variable page to keep track of
what page it's on. Under an infinite while loop, prompt user to enter
'n', 'p', or an ID of a paper.
If the user enters 'n', go to the next page
Else if user enters 'p', go to the previous page

Else
use SQL to select all potential reviewers of that paper with the ID user
enters and print out the potential reviewers.
Prompt user to select a potential reviewer by their email
Check if it is a potential reviewer
If it is not a potential reviewer
      Print out deny message
      Exit the loop
      Else (it is a potential reviewer)
            Ask for input of review
            Add review into reviews table
      Break the loop

Return to function call.

Task 3
Task3function()
This task prompts the user to input a number range, and using that number range the task shows all of the reviewers whose number of reviews fall into that range (bounds included).

Implementation
Use python input() function to prompt the user to enter a number range. Convert the [0] index to an int and assign it as lower bound. Convert the [2] index to an int and assign it as upper bound. Use SQL to retrieve reviewers whose number of reviewers are in the number range. The function then ends.

Task 4
Task4function()
This task allows the user to choose two options by typing in the corresponding number for the task:
1. Shows a bar plot of all individual authors and how many sessions they participate in
2. Displays individual authors and allows the user to select one by typing in the corresponding number

Implementation
First use python input() function to allow user to choose a function. Depending on what the user inputs, execute one of the two tasks:

1.) Use the panda read_sql_query function to get a dataframe of all the individual authors and the number of sessions they participated in. Set the author as the x axis using the panda plotting. Display the bar char using the matplotlib library.

2.) Use SQL to get authors who have participated in a session. Print the retrieved authors each on a new line and list index beside it. Then prompt the user to select an author by inputting the corresponding list index of the author using the input() function. Then use an SQL query to retrieve the number of sessions the selected author has participated in and print the author and count.

After either of the two tasks has been executed, exit the function.

Task 5
Task5function()
This task uses a pie chart to display the top 5 most popular areas by number of papers.

In the case of ties, more than 5 areas may be displayed
If there are less than 5 areas with papers, all areas with papers will be displayed

Implementation
Use pandas read_sql_query to get a DataFrame of all areas with number of papers greater than or equal to the 5th largest number of papers
Plot a pie chart using pandas

Task 6
Task6function()
This task uses a grouped bar chart to display the average review score of each reviewer grouped by category

Implementation
Use pandas read_sql_query to get a DataFrame of all reviewers with reviews and their average category scores
Plot a grouped bar chart using pandas

main()
Connects to inputed database
Executes corresponding task functions based on input - TaskXfunction for input X
Ends program for input of 'e' or 'exit'

C. Testing Strategy
To test whether task 1 and 2 work, increased the number of papers to 12.

To test whether Task 3, 4, and 6 work, used the same database provided in assignment 2 to use sql queries on. Preformed SQL queries using DBBrowser for SQlite and compared results to the program to check if they matched.

To test whether task 5 worked, added additional areas and papers to ensure proper output with more than 5 areas and with ties.

D. Group Work Strategy

Group Work Break-Down

We divided the tasks into three parts. Each person takes care of one part. Li Shang is responsible for task 1 and task 2. Gustavo Ortega is responsible for task 3 and task 4. William Wei is responsible for task 5 and task 6. Everyone contributes to this report file.

D. Time Spent and Progress
#simply write down the time spent on working on this assignment and when you finished what
Li Shang spent approximately 4 hours on task 1 and task 2. Started on Wednesday March 6 and finished on Thursday March 7.

Gustavo Ortega spent around 3 hours on task 3, task 4, and on the skeletal framework of the code. Started on Monday March 4 and finished on Thursday March 7.

William Wei spend around 4 hours on tasks 5 and 6. Started on Tuesday March 5 and finished on Thursday March 7

The design document was worked on by all three members and finished on Saturday March 9

Method of Communication
We use GitHub to keep track of our work progress. We put our source code and other files onto GitHub so everyone can edit them. We use chat application (discord) and emails to communicate (gmail).