Before describing the reasoning for each of my SQL queries (for the questions assigned in the homework). It is useful to understand the pattern of each of the query functions used to obtain the answers for each question. Each function involves two main components: (1) a parameterized SQL query and the (2) helper function execute\_and\_fetch in order to connect to the PostgreSQL database and then execute the prior defined SQL query with the remaining parameters needed to complete that query.

1. How many entries do you have in your database who have applied for Fall 2024?

This is a “count” type of query, so the query executed is simply done with one f-string that uses SELECT COUNT and filters by the placeholder term = %s, in which we use to filter the counts by term = “Fall 2024”.

1. What percentage of entries are from international students (to two decimal places)?

The function uses two SELECT COUNT(\*) queries. The first counts all entries in the applicants table to get the total number of applicants. The second counts entries where the us\_or\_international column is “International”. Once again, the query utilizes XX in order to input specific parameters that filters from which students we are counting. In the case of counting the number of international students, we use us\_or\_international = “International”. The rest of the function (not a SQL query), calculates the percentage by dividing the international count by the total count and multiplying by 100.

1. What is the average GPA, GRE, GRE V, GRE AW of applicants who provide these metrics?

For each score, we can directly retrieve the average using the SQL query. To ensure that we do not take that average across students who did not submit a (e.g., GPA, GRE) score, the SQL query uses the condition WHERE [score] IS NOT NULL. Each average score (GPA, GRE, GRE V, GRE AW) requires its own SQL query.

1. What is their average GPA of American students in Fall 2024?

The SQL query retrieves the appropriate average GPA score directly and at the same time, filters the set of applicants (term, applicant type) by using a WHERE condition. Additionally, in order to not take the GPA score across only applicants whose GPA is provided, we add the condition WHERE gpa IS NOT NULL.

1. What percent of entries for Fall 2024 are Acceptances (to two decimal places)?

The function consists of two queries. The first query counts the total applicants for “Fall 2024” using COUNT(\*). Then, the second query counts applicants for “Fall 2024” whose status column matches 'Accepted' (using LIKE %s with '%Accepted%'). Note that because the status values include if the applicant was Accepted/Rejected and the date in which that decision was determined, we use the wildcard '%Accepted%' (to count the number of acceptances. The rest of the function (not a SQL query) computes the percentage by dividing the count of accepted applicants by the total applicants and multiplying by 100.

1. What is the average GPA of applicants who applied for Fall 2024 who are Acceptances?
2. How many entries are from applicants who applied to JHU for a masters degrees in Computer Science?