Group 7

Visa Processing Management Database

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Section1: Final version of SRS

Software Requirements Specification

for

Visa Processing Management

Version 3.0

Prepared By: Group 7

Organization: Dhirubhai Ambani Institute of Information & communication Technology

Date created: 3/10/20

A. Introduction

A visa is an official document that allows the bearer to legally enter a foreign country. There are several different types of visas, each of which affords the bearer different rights in the host country.

Purpose:

The purpose behind the Online visa Processing system is to make visa processing easy, fast, and well planned without getting stressed by the pre-procedure. It will allow the process to take place entirely in a virtual environment just with the help of the Internet. It covers steps in the visa application like a procedure from fee payment, and appointment scheduling to background checks, registration of personal details, biometrics capture, from everywhere in the world.

Product Scope:

Online visa Processing systems will provide various benefits to both applicants and government authorities like convenience, security, reduction in time, reduction in administration cost, hiding vague obscure processes that are done in offices, simple to use, usage from anyplace in the world, easy to track the status of your application, etc.

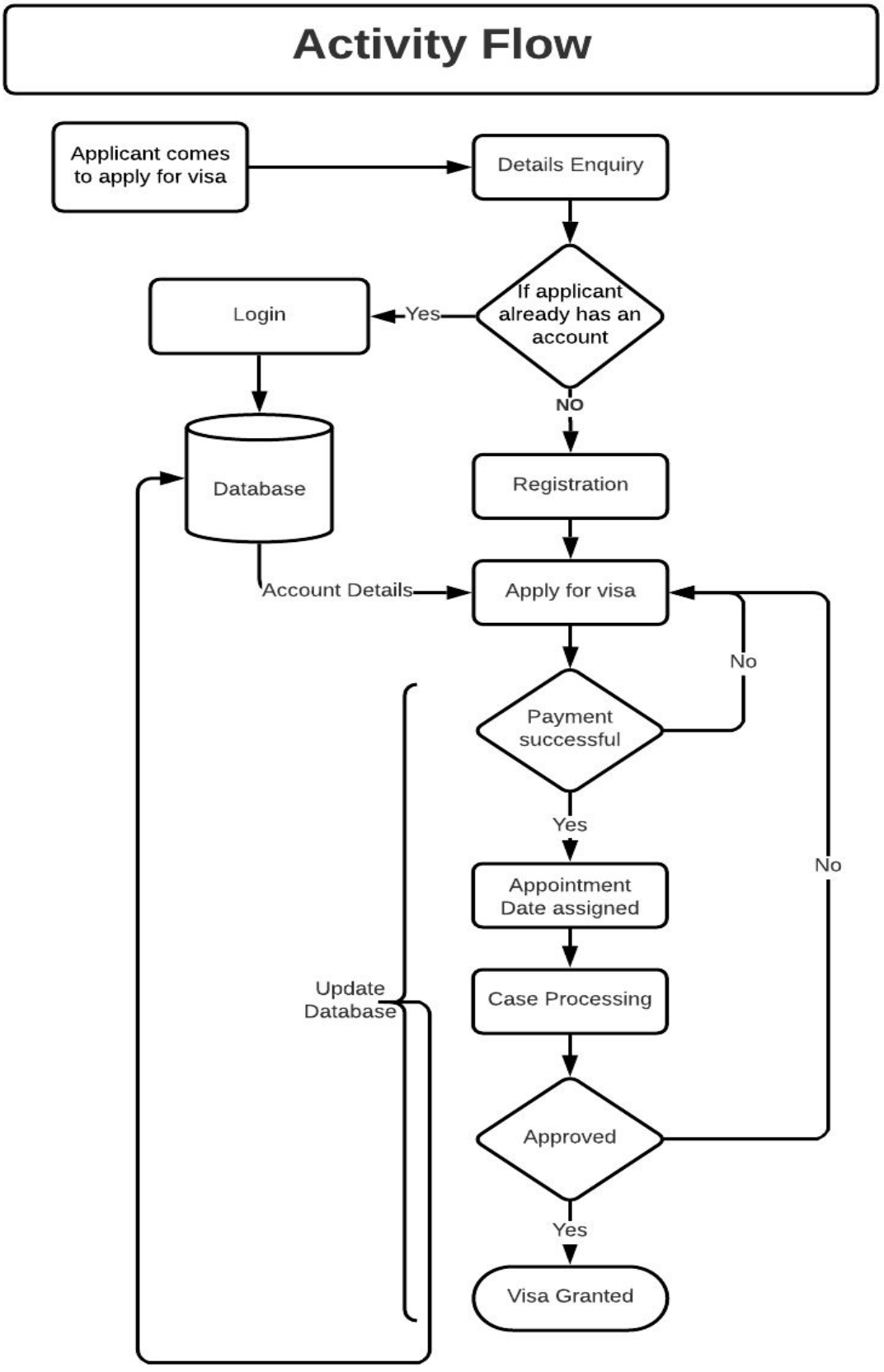
Intended Audience:

- Students
- Developers
- Project managers
- Users and testers
- Documentation writers

Description:

The system provides a solution for managing the database of visas. Also provides info. about the user who registered for a visa and also maintains the database such that the Government can access all user information. The government can easily track the status of a visa for a particular user. Also, store the data about the history of applied visas for users. This database provides and manages the information about visa applications, accepted visa, and rejected visas. The system stores information about the processing stage of the visa application. The system includes which type of visa users are applying for, application details, appointment details, consultant details, etc.During the pandemic visa applicants might be required to provide health certificates that suggest, they are not infected by the virus. They might also need to provide information regarding travel history. Considering post COVID scenarios, once the vaccine has been developed and it has been tested and certified by the WHO, It is possible that the certificate of this vaccine could be made compulsory for every visa applicant. Every user can track the status of their application easily so the system

provides an account for individual users.



B. Fact-Finding Phase

1. Background reading

1. India Visa Online
    - Procedure for the online Visa Application
    - Visa categories, Fees, Instructions for Visa Application.
    - Travel and Visa restrictions related to COVID-19
    - FAQs on new visa restrictions COVID-19
2. Writing a software requirements specification document | by Eni Sinanaj
    - Requirements for composing SRS document
    - Description of each section/subsection of SRS document
3. The benefits of e-Visas, and how to overcome implementation challenges
    - Advantages of the online visa application system
    - Challenges of implementing online visa application
4. Covid-19 impact: Visa regulations unlikely to change immediately say, experts
    - COVID pandemic situation of visa application
    - Enhanced health regulations
5. Visa Project /India
    - Got an insight about a current facility for visa on arrival
    - Get to know about Validities for visas and application fees

2. Interview/s

Interview Plan

System: E-Visa (Online Visa processing system)

Interviewee: 1) Vikas Sharma(Role Play) Designation: CEO at E-Visa

Interviewer: 1) Vishal Agrawal **Designation:** Developer

2) Kirti Mishra **Designation:** Business Dev.Executive

3)Dev Dixit **Designation**: Director

Date: 28/9/2020 **Time:** 14:30

Duration: 45 minutes(each) **Place:** E-visa Office

Agenda:

- Current Functionalities
- Current security measures
- Problems with the current system
- New Requirements
- Follow-up actions

Documents to be brought to the interview:

- Any documents regarding the current system
- Rough list for current issues

Purpose of Interview: Preliminary meeting to identify problems and requirements(Security, Performance) of the current online Visa Processing System.

Interview summary

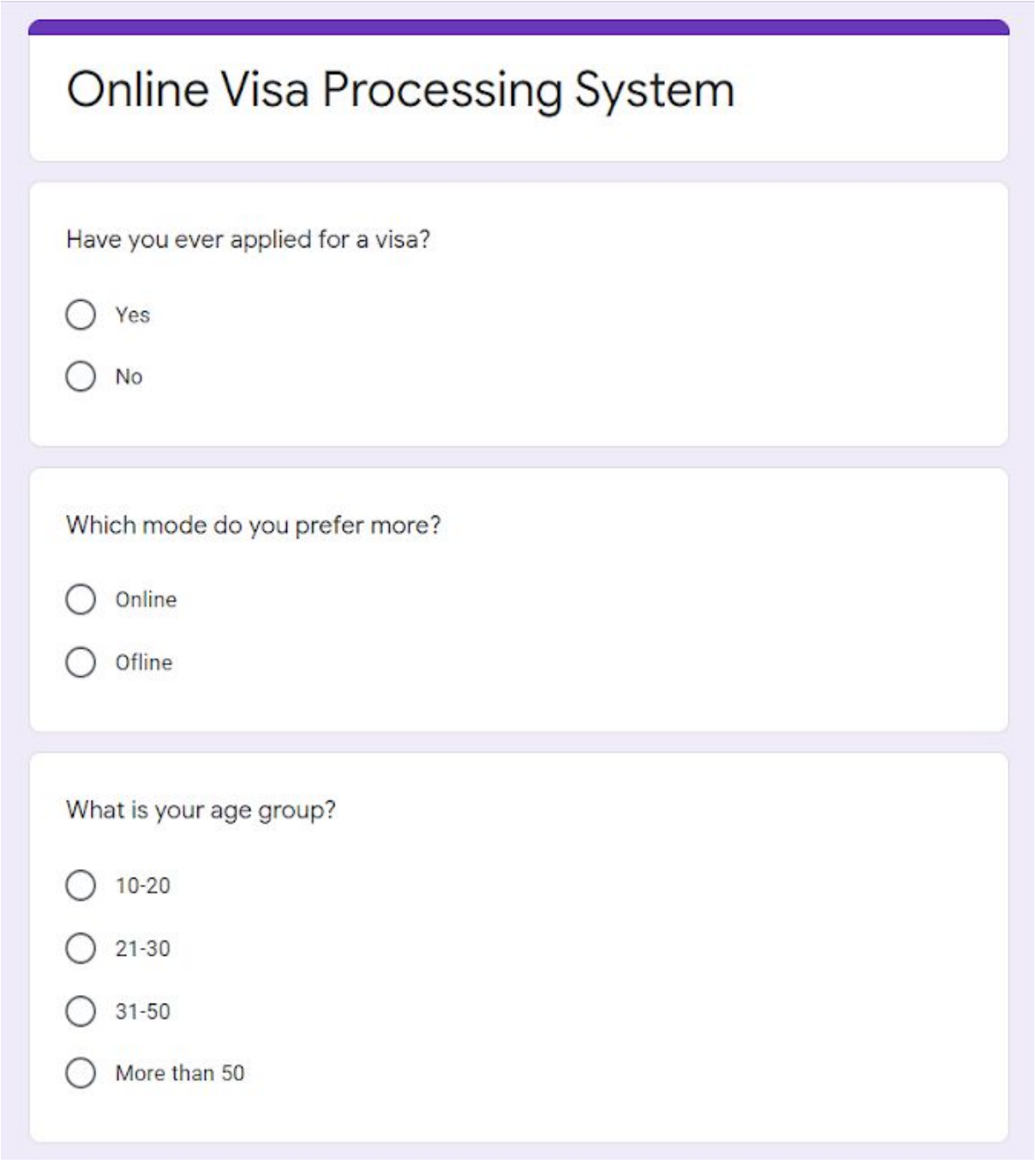
1. The System should allow the Administrator to view the details of the applicant (visa type, status) and to delete the details.
2. The system should have a facility for the Administrator to interact with the Visa Consultant Officer.
3. The system should have an option for the Visa Consultant Officer to view and check the proofs applied by the applicant. (like Valid Passport, Demand Draft Visa Fee I-20 Form, Letter of Admission and Aid letter, etc).
4. The system should have a provision for the applicant to view/delete/modify the details applied.
5. The system should have a facility for the applicant to choose the type of visa among all.
6. The system should have an option for the applicant to view the details of the fair amount of visas for each country.
7. Systems should be provided with proper backup media and resources to handle system crash scenarios.
8. The website should be hosted on a server that can provide adequate response time.

3. Questionnaire/s

Survey for Visa Processing Management

1. Have you ever applied for a visa?
    a. *Yes / No*
2. Do you prefer Online or Offline mode?
    a. *Online / Offline*
3. What is your age group?
    a. *15-20 /21-30 / 21-50 / >50*
4. Which type of visa did you apply for?
    a. *Tourist visa / Immigration and naturalization visas / Student visas / Business or work visas*
5. How often do you need to apply for a visa?
    a. *1 / 2 / 3 / >3*
6. How easy do you find using the online system on 1-10?

    a. *1-3 / 4-6 / 7-9/ 10*
7. How satisfied are you with the current online visa application system?
    a. *1-3 / 4-6 / 7-9/ 10*
8. What difficulties did you face while using the online system for visa application?
    a. ----------
    b. ----------
9. What changes would you like to see in the online visa application system?
    a. ----------
    b. ----------



Which type of visa did you apply for?

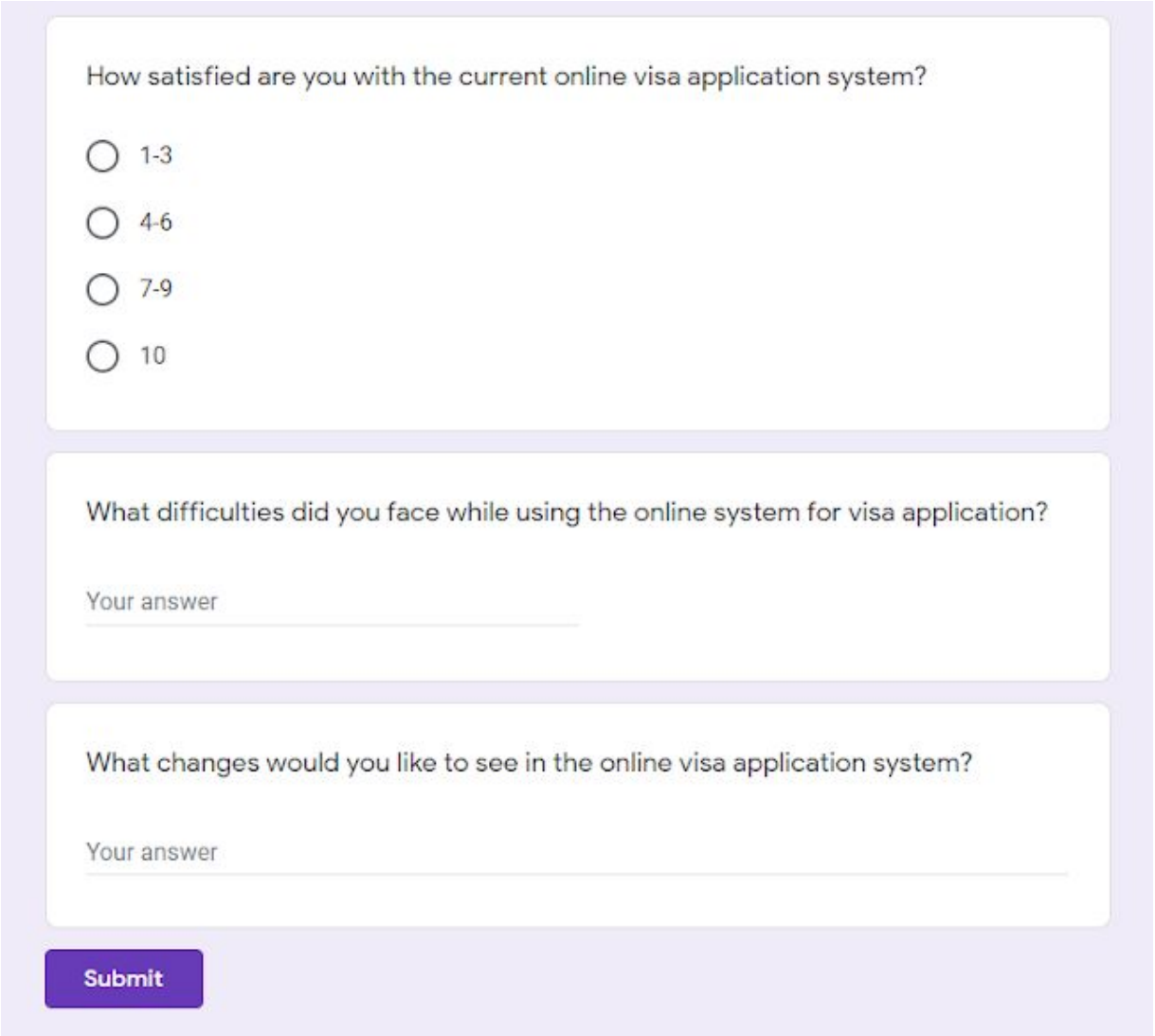
- ○ Tourist Visa
- ○ Immigration and naturalization visa
- ○ Student Visa
- ○ Business or Work visa
- ○ Other

How many attempts did it take for you to actually get a visa?

- ○ 1
- ○ 2
- ○ 3
- ○ More than 3

How easy do you find using the online system on 1-10?

- ○ 1-3
- ○ 4-6
- ○ 7-9
- ○ 10



Short Answers and Graphs From Responses of Google Form

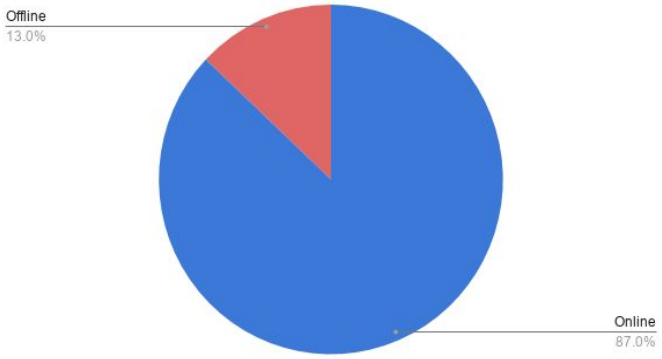
Short answers

Q: Difficulties faced while using the online system for visa application and desired changes.

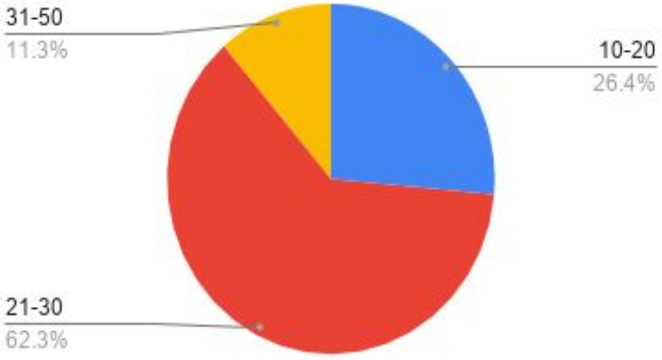
1. It would be better if they didn’t ask for translated documents so it wouldn’t cost extra charges.
2. There are still a few Indian missions that don't accept payment online.
3. Because of poor maintanence of visa sites there is the threat of falsifying of digital proof documents.
4. Secure online payment is also not guaranteed.
5. The online service should allow the option of collection of biometric data.
6. Offline mode was used by very few people.

Graphs

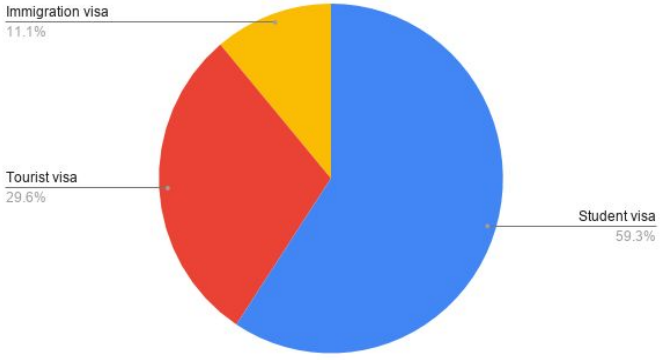
A. Mode



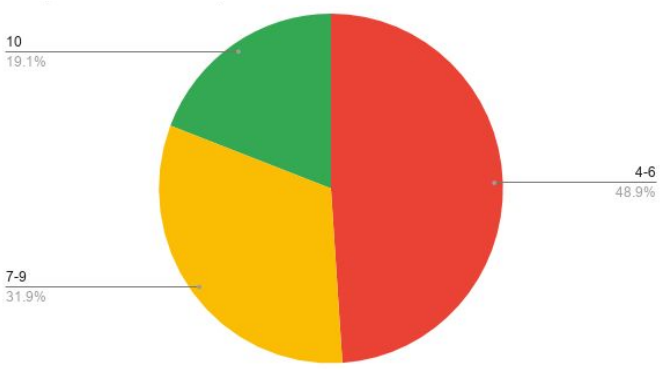
B. Ages



C. Types of Visa



D. easiness of system on the scale of 1-10



List of combined requirements from the above survey

Q: Difficulties faced while using the online system for visa application and desired changes.

1. There are still a few Indian missions that don't accept payment online.
2. In some cases, the questions don’t apply to everyone, and without answering all questions the application can’t be submitted. So that should be improved.
3. When the official fees are paid online, this may be advantageous for many, but those who don’t have credit cards that allow them to make payments in for example Canadian currency may prefer to apply and pay in the local currency as per the indications of the embassy.
4. Many embassies still need translations for many documents, which shouldn’t be there .
5. Improved ICT infrastructure
6. Allowance of the option of collection of biometric data.
7. Security must be taken care of there’s always a risk in case of online visa supporting documents like proof of sufficient financial means, medical insurance, or invitation letter, etc are submitted in digital form.

4. Observation/s

Observation summary

System: Online visa application system

IT Solutions: Observations

System: E-visa (Roleplay)

Project Reference: SF/SJ/2003/12 (Role play)

Observations by: Nikhil Jain (Role play)

Date: 29/sep/2020 (Role play) **Time:** 14:30 (Role play)

Duration: 45 minutes (Role play)

Observations:

1. The system should be accessible at any time and place like home, office, car, desktop, mobile, etc.
2. It should display different visa types and categories, visa fees, clear instructions on how to fill in the visa application form, etc.
3. Users should be able to view/edit/print the information in the online application form and option to save in case it is not to be submitted.
4. The system should be able to validate users' information and notify the user in case of wrong input information before submitting the online application.
5. The system should let users be able to upload/reupload proof documents/photos.
6. It should let the user be able to schedule the appointment as per his/ her convenience with the concerned Indian Mission.
7. All the details like Calculation of Visa fee, service charge, VAT, etc. as applicable according to the Visa type, must be visible to the user.
8. The security concerns for e-payment should be looked at.
9. Users must be given an option to track the status of the application.
10. The system should let the user apply again if the visa application gets denied.

C. Fact Finding Chart

Objective	Technique	Subject(s)	Time Commitment
To get the background on the company.	Background reading	Company reports and journals	2-3 hour
To establish business objectives. To discuss the scope of the new system.	Interview	Business executive	1 hour
To gain an understanding of the roles of each department.	Interview	Director	2 hour
To establish the role of other staff members.	Observation	Different staff member from each	1 day

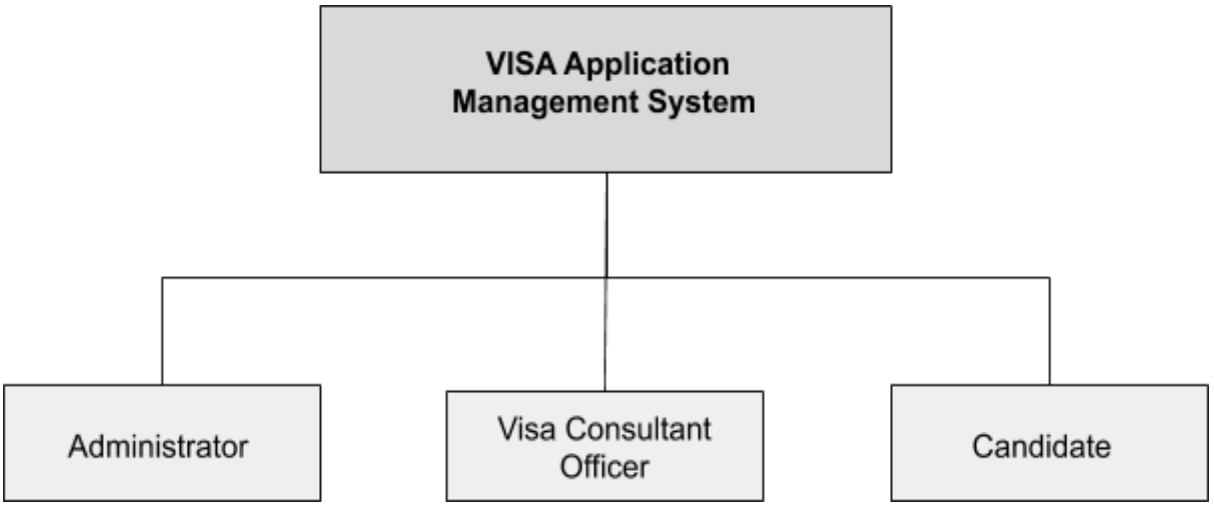
		department	
To establish additional requirements for the system	Interview	Sr. Software Engineer	2 hour
To determine the functionality of the system	Interview	Sr. Software Engineer	1-2 hour
To determine Problems in the current system and security measures.	Survey (By circulating online form)	Different users of the system	1 day
To establish what records to keep of users. (Visa status, Visa type, Application form details, Identity measures)	Interview	Director	1-2 hour
To determine how the requirements of the visa system will change in post covid (Visa application documents)	Background reading	Impact of covid on visa	1 hour

D. List Of Requirements

1. The system should be accessible at any time and place like home, office, car, desktop, mobile, etc.
2. The system should let the user create an account.
3. The system should display different visa types and categories, visa fees, clear instructions on how to fill in the visa application form, etc.
4. The system should let the user be able to view/edit/update the required details in the database for some specific time.
5. The system should be able to validate users' information and notify the user in case of wrong input information in the database before submitting the online application.
6. The system should let the user be able to upload/reupload proof documents/photos.
7. The system should let the user be able to schedule the appointment as per his/ her convenience with the concerned Indian Mission. So users must be able to view this database entry.
8. The system should display all the details in the database like Calculation of Visa fee, service charge, VAT, etc. as applicable according to the Visa type to the user.
9. The system should let the user use the facility of e-Payment if its available for the concerned Indian mission, safely.
10. The system should have an option for the user to view the proof document, profile, Application Id, helpline No., etc.
11. The system should have an option for the user to track the status of the application.

12. The system should let the user apply again if the visa application gets denied. So users must be able to update the database again if required.
13. The system should check that all requirements for covid regulations are matching.

E. User classes and characteristics



There are 3 core classes in the system:

1. Administrator (Government)
2. Visa Consultant Officer (Approver)
3. Candidate (Applicant)

1) Administrator:

- This is the most privileged user class
- Can access all application data
- Maintain details about logs in the database
- Can remove any application or access to data to approvers
- Can assign the role of Visa Consultant officer
- Maintain Visa consultant officers
- Can check and generate logs
- Can accept or reject Visa applications

2) Visa Consultant Officer :

- This user class is authorized by admin for the role of approval
- Can access Visa application for viewing
- Can accept or reject Visa applications
- Can generate logs about application status

- Can manage appointment dates
- Can manage payments

3) **Candidate:**

- Can apply for multiple Visas.
- Can check their application status
- Can get information about the procedure
- Can make updates in the current application when required
- Can view application details
- Can see process fees

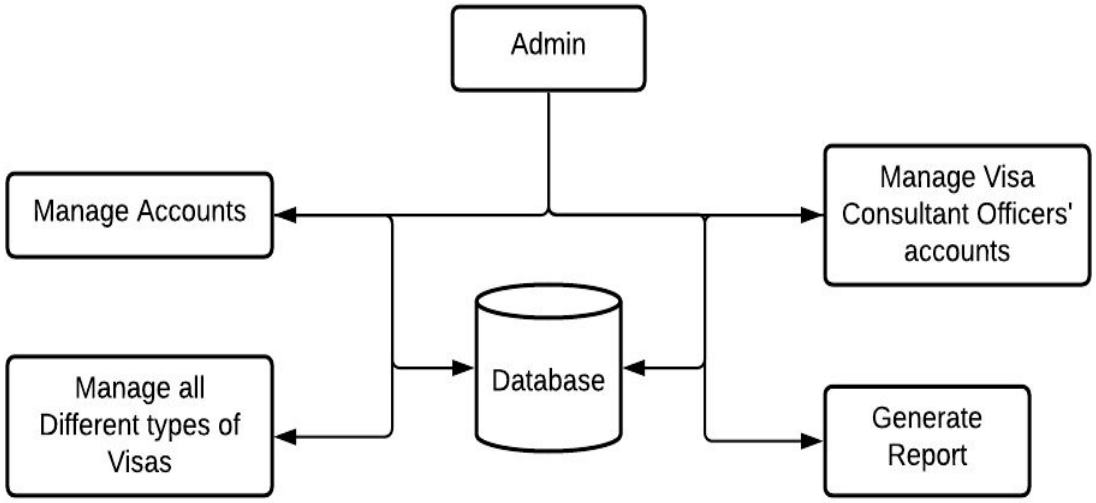
F. Operating Environment

- **Software Requirements:**
  - Database:
    - PostgreSQL (v10.14)
  - Programming Language:
    - PL/pgSQL
  - Supported Operating System:
    - Windows 8.0 or above
    - macOS
    - Linux

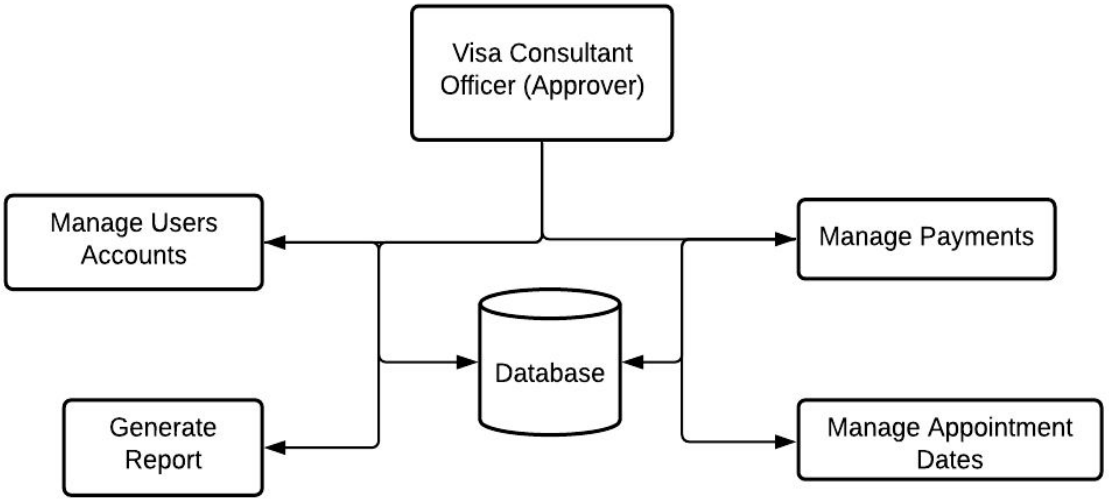
- **Hardware Requirements:**
  - 1 GHz processor
  - 2 GB RAM minimum (4GB recommended)
  - 512 MB HardDisk (For software)
  - 10GB HardDisk (For storing data of applicants and logs)

G. Product Functions

Admin Subsystem (Government) :
Admin can access all user accounts. Admin can manage all payments which are made and assign appointment dates to them. Admin can see what types of visas are applied more often. Admin can manage all appointment dates. Admin can also access all Visa Consultant Officers' accounts. Admin can manage roles of Visa Consultant Officer. Admin can also generate reports like for which visa users are applying more, based on the data which is there in the database.

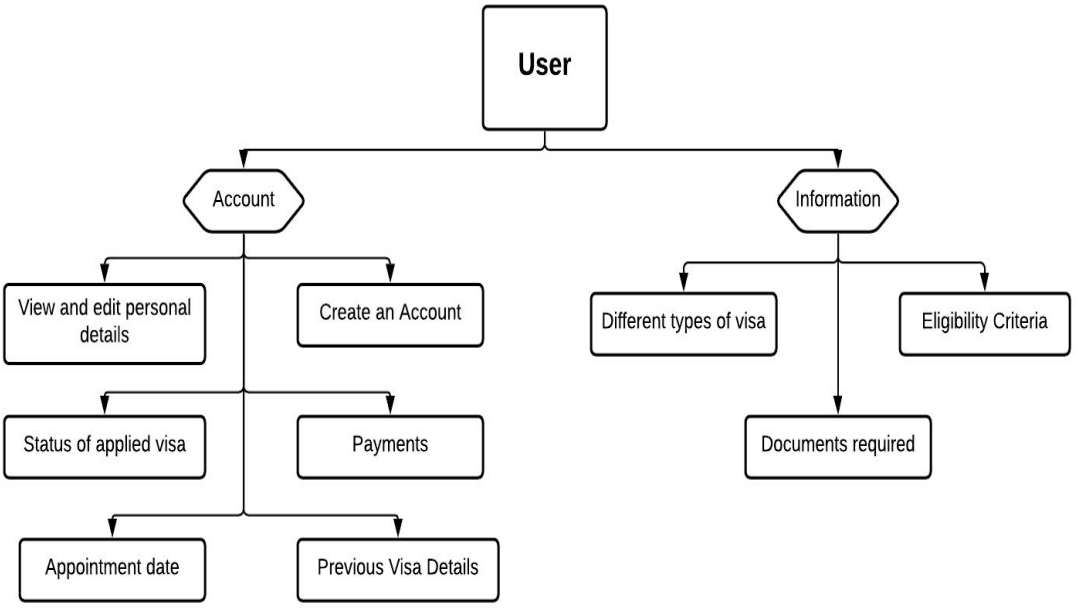


Visa Consultant Officer Subsystem:
Visa consultant officers can view visa applications, can check logs about applications like approval status, payment status, etc. Visa consultant officers can generate logs about the



status of applications and can approve or reject applications for visas.

User Subsystem :
Users can create a new account or can view and edit all account details. Users can also see the status of the applied visa, previous visa details, payments he made and appointment date. Users can also get information about different types of visa, documents required and eligibility criteria, etc.



H. Privileges

There are 4 key privileges:

- View
- Add
- Delete
- Update

Administrator	
View	Application Details Logs about applications Status of any application
Add	Generate logs Give authority to approvers
Delete	Remove applications Delete logs
Update	Update status of applications Update roles

Visa Consultant Officer	
View	Application Details Logs about applications
Add	Generate logs about the status Manage appointments
Delete	-
Update	Update status of applications Manage payments

Candidates	
View	Application Details Status of any application View appointments
Add	Add applications for visas
Delete	Delete application Delete his/her account
Update	Update current application

I. Assumptions:

- Basic knowledge of computers because the process is online
- Familiarity with the English language and terminology of the Visa system
- Admin is familiar with the management of system and database
- System server should be online 24 × 7 hrs
- The system server is having good internet connectivity always
- We are assuming that the user will add appropriate input because we didn't add input validations

J. Business constraints:

- Initial development and gathering of requirements are time-consuming.
- COVID pandemic situation is a major issue for VISA approvals so have to apply strict visa regulations for preventing spread.

Section2: Final Noun Analysis

Accepted Noun and Verb

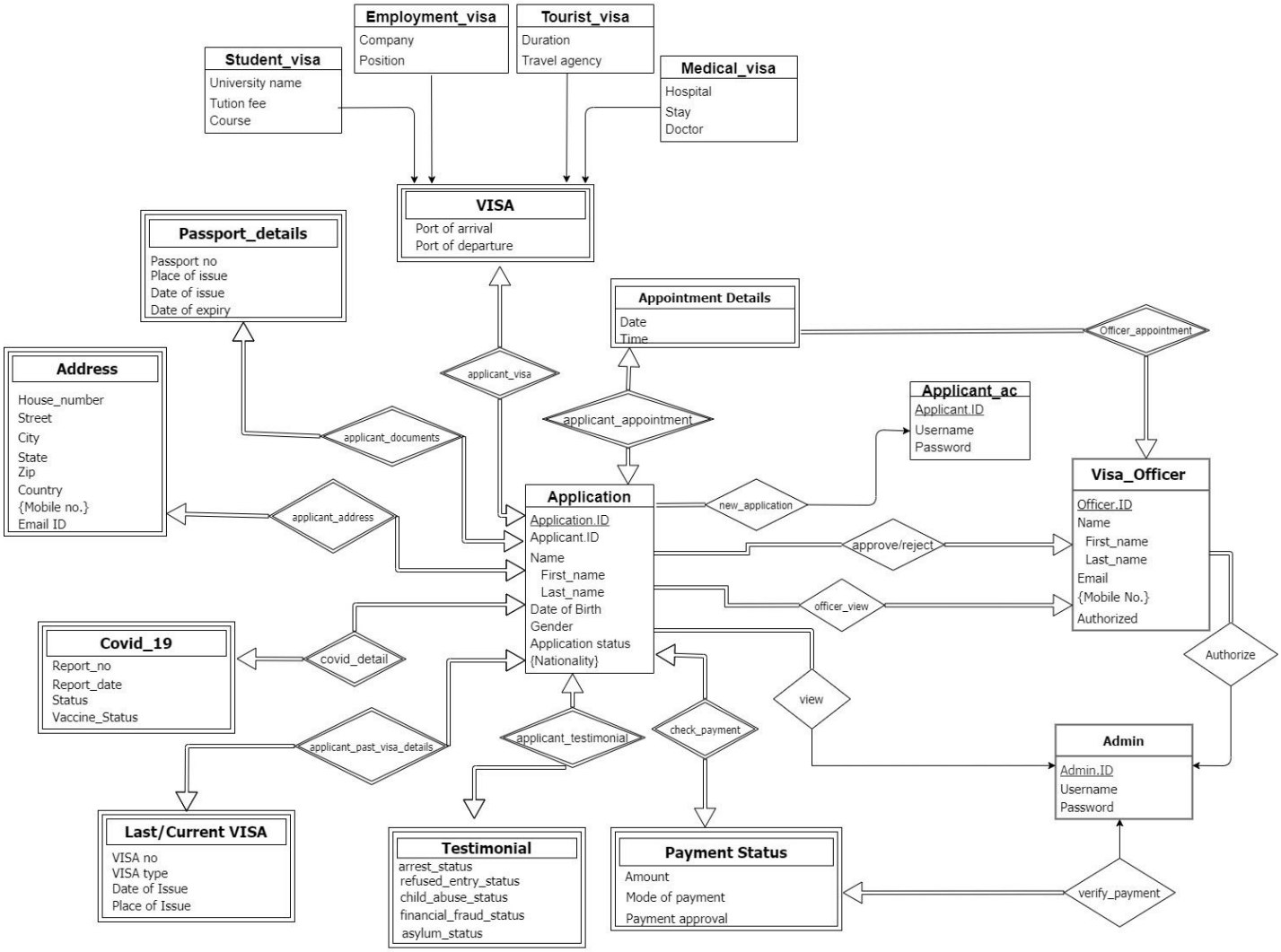
Entity	Attribute	Relations (Verb)
Applicant Application Visa Officer Admin Address VISA Appointment Details Passport Details Student visa Employment visa Tourist visa Medical visa Covid 19 Last/Current visa Testimonial Payment status	Applicant ID Application ID Username Password First name Last name Date of birth Gender Application status Nationality Email Mobile no. Nationality Visa no. Visa type Date of issue Place of issue Amount Mode of payment Report no. Report date Report status Vaccine status	Create Approve Reject View Verify Authorize

Rejected Noun & Verbs list

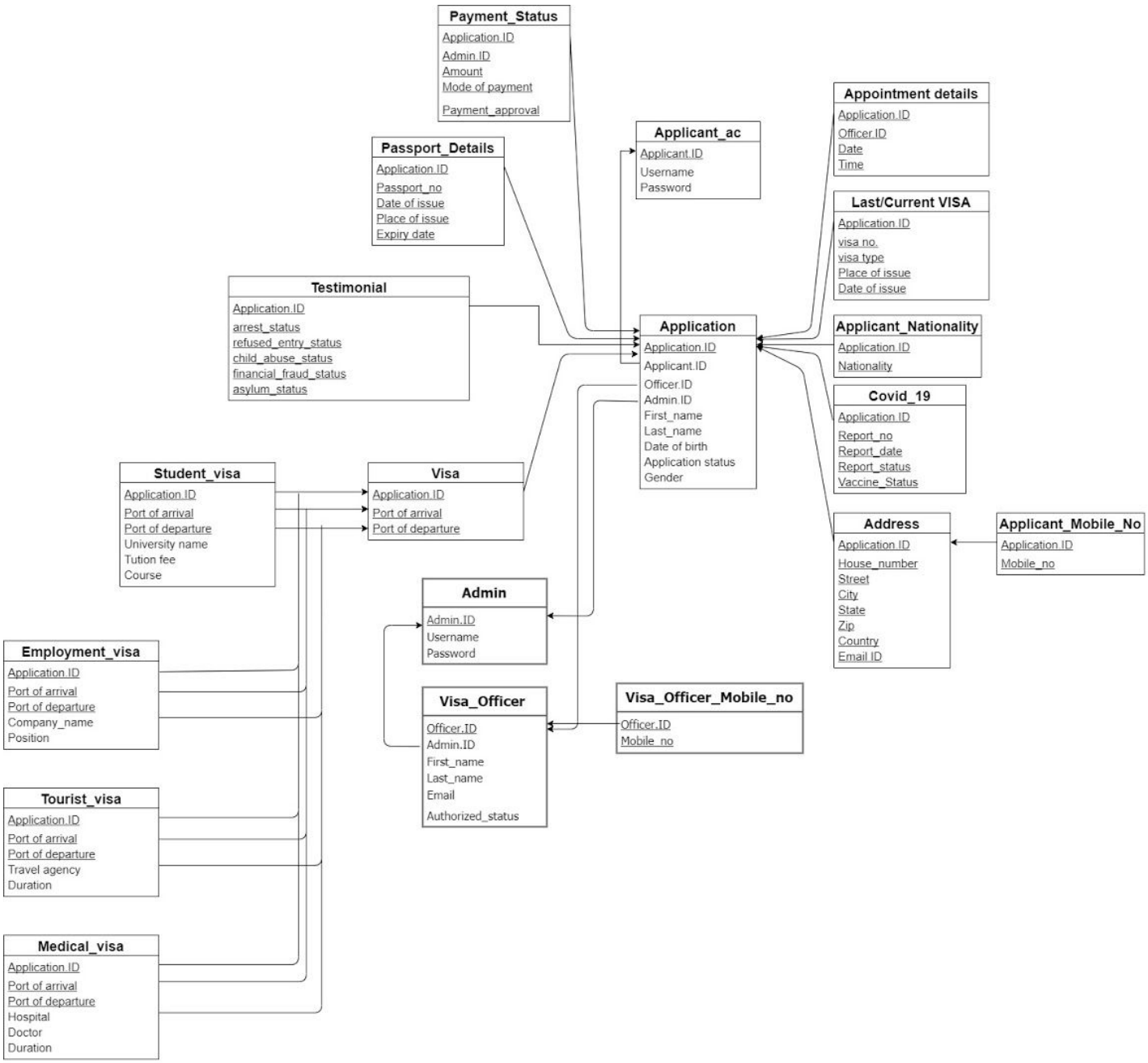
Noun	Verb
VISA	Redundant
Passport	Attribute
Document	Attribute
VISA Application	Redundant

Applicant	Redundant
Status	Attribute
Courier	Irrelevant
Case	General
Stamp	Irrelevant
Authorization Letter	General
Reason	Redundant
VISA application center	Redundant
VISA application receipt	Redundant
Authorized person	Unclear
Photocopy	Irrelevant
Email	Attribute
India	Irrelevant
Apply	Association
Collect	Irrelevant
Accept	Association
Reject	Association
Grant	Redundant
Authorize	Unclear
Receive	Redundant
Attach	Irrelevant
Scan	Irrelevant
See	Association

Section 3 : Final ER-Diagram



Section4: Final Relational Model



Section5: Normalization and Schema Refinement

Update, Insert, Delete anomalies for every schema

1. applicant_ac(Applicant_ID,Username,Password)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

2. application(Application_ID,Applicant_ID,Officer_ID,Admin_ID,First_name,Last_name,Date_of_birth, Application_status, Gender)

    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

3. admin(Admin_ID, Username, Password)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

4. visa_officer(Officer_ID, Admin_ID, First_name, Last_name, Email, Authorized_status)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

5. visa_officer_mobile_no(Officer_ID, Mobile_no)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

6. address(Application_ID, house_number, Street, City, State, zipcode, Country, Email_ID)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

7. applicant_mobile_no(Application_ID, Mobile_no)
    - Insertion Anomaly:not present

- Deletion Anomaly:not present
- Updation Anomaly:not present

8. covid19(Application_ID, Report_no, Report_date, report_tatus, Vaccine_status)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

9. applicant_nationality(Application_ID, Nationality)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

10. Last/Current_visa(Application_ID, visa_no,visa type, Place of issue, Date of issue)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

11. appointment_details(Application_ID, Officer_ID, Date, Time)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

12. payment_status(Application_ID, Admin_ID, Amount, Mode_of_Payment,Payment_approval)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

13. passport_details(Application_ID, Passport_No, Date_of_issue, Place_of_issue, Expiry_date, Nationality)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

14. testimonial(Application_ID,arrested, refused_entry_status, human_drug_trafficing_involvement , child_abuse , financial_fraud,asylum_status)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

15. visa(Application_ID, Port_of_arrival, Port_of_departure)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

16. student_visa(Application_ID, Port_of_arrival, Port_of_departure, Validity, University_name, Tution_fee, Course)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

17. employment_visa(Application_ID, Port_of_arrival, Port_of_departure,Company name, Position, Validity)

    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

18. tourist_visa(Application_ID, Port_of_arrival, Port_of_departure, Travel agency, Duration, Validity)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

19. medical_visa(Application_ID, Port_of_arrival, Port_of_departure, Hospital, Doctor, Duration, Validity)
    - Insertion Anomaly:not present
    - Deletion Anomaly:not present
    - Updation Anomaly:not present

- The schema was already in 3NF form.

Schema

1. applicant_ac(Applicant_ID,Username,Password)
2. application(Application_ID,Applicant_ID,Officer_ID,Admin_ID,First_name,Last_name,Date_of_birth, Application_status, Gender)
3. admin(Admin_ID, Username, Password)
4. visa_officer(Officer_ID, Admin_ID, First_name, Last_name, Email, Authorized_status)
5. visa_officer_mobile_no(Officer_ID, Mobile_no)

6. address(Application_ID, house_number, Street, City, State, zipcode, Country, Email_ID)
7. applicant_mobile_no(Application_ID, Mobile_no)
8. covid19(Application_ID, Report_no, Report_date, report_tatus, Vaccine_status)
9. applicant_nationality(Application_ID, Nationality)
10. Last/Current_visa(Application_ID, visa_no,visa type, Place of issue, Date of issue)
11. appointment_details(Application_ID, Officer_ID, Date, Time)
12. payment_status(Application_ID, Admin_ID, Amount, Mode_of_Payment,Payment_approval)
13. passport_details(Application_ID, Passport_No, Date_of_issue, Place_of_issue, Expiry_date, Nationality)
14. testimonial(Application_ID,arrested, refused_entry_status, human_drug_trafficing_involvement , child_abuse , financial_fraud,asylum_status)
15. visa(Application_ID, Port_of_arrival, Port_of_departure)
16. student_visa(Application_ID, Port_of_arrival, Port_of_departure, Validity, University_name, Tution_fee, Course)
17. employment_visa(Application_ID, Port_of_arrival, Port_of_departure,Company name, Position, Validity)
18. tourist_visa(Application_ID, Port_of_arrival, Port_of_departure, Travel agency, Duration, Validity)
19. medical_visa(Application_ID, Port_of_arrival, Port_of_departure, Hospital, Doctor, Duration, Validity)

Section6: SQL: Final DDL Scripts, Insert statements, 40 SQL Queries, Snapshots of output of each query

DDL Script

```
SET SEARCH_PATH TO visa_db

create table visa_db.applicant_ac
(
	applicant_id int unique primary key,
	username varchar(20),
	password varchar(20)
);

create table visa_db.admin
(
	admin_id int unique primary key,
	username varchar(20),
	password varchar(20)
);

create table visa_db.visa_officer
(
	officer_id int unique primary key,
	admin_id int,
	first_name varchar(20),
	last_name varchar(20),
	email varchar(100),
	authorized_status varchar(20),
	foreign key(admin_id) references admin(admin_id) on delete set default on update
	cascade
);

create table visa_db.visa_officer_mobile
(
	officer_id int,
	mobile_no varchar(20),
	primary key(officer_id,mobile_no),
```

```
        foreign key(officer_id) references visa_officer(officer_id) on delete set default on update
        cascade
);

create table visa_db.application
(
        application_id int unique,
        applicant_id int,
        officer_id int,
        admin_id int,
        first_name varchar(20),
        last_name varchar(20),
        date_of_birth date,
        gender varchar(10),
        application_status varchar(20),
        primary key(application_id),
        foreign key (applicant_id) references applicant_ac(applicant_id) on delete set default
        on update cascade,
        foreign key (officer_id) references visa_officer(officer_id) on delete set default  on
        update cascade,
        foreign key (admin_id) references admin(admin_id) on delete set default on update
        cascade
);

create table visa_db.applicant_nationality
(
        application_id int,
        nationality varchar(50),
        Primary key(application_id,nationality),
        foreign key (application_id) references application(application_id) on delete set default
        on update cascade
);

create table visa_db.applicant_mobile_no
(
        application_id int,
        mobile_no varchar(20),
        Primary key(application_id,mobile_no),
        foreign key (application_id) references application(application_id) on delete set default
        on update cascade
);
```

```
create table visa_db.covid19
(
	application_id int,
	report_no int,
	report_date date,
	report_status varchar(20),
	vaccine_status varchar(20),
	Primary key(application_id,report_no,report_date,report_status,vaccine_status),
	foreign key (application_id) references application(application_id) on delete set default
	on update cascade
);

create table visa_db.appointment_details
(
	application_id int,
	officer_id int,
	date date,
	time varchar(20),
	primary key(application_id,officer_id,date,time),
	foreign key(application_id) references application(application_id) on delete set default
on	update cascade,
	foreign key(officer_id) references visa_officer(officer_id) on delete set default on update
	cascade
);

create table visa_db.last_current_visa
(
	application_id bigint,
	visa_no bigint,
	visa_type varchar(20),
	place_of_issue varchar(50),
	date_of_issue date,
	primary key(application_id,visa_no,visa_type,place_of_issue,date_of_issue),
	foreign key(application_id) references application(application_id) on delete set default
on		update cascade
);

create table visa_db.address
(
	application_id int,
	house_name varchar(50),
	street varchar(50),
```

```
	city varchar(50),
	state varchar(50),
	zipcode varchar(20),
	country varchar(50),
	email_id varchar(100),
	primary key(application_id,house_name,street,city,state,zipcode,country,email_id),
	foreign key(application_id) references application(application_id) on delete set default
on		update cascade
);

create table visa_db.passport_Details
(
	application_id int,
	passport_no bigint,
	date_of_issue date,
	place_of_issue varchar(50),
	expiry_date date,
Primary Key ( application_id, passport_no, date_of_issue, place_of_issue, expiry_date),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade
);

create table visa_db.testimonial
(
	application_id int,
	arrest_status varchar(20),
	refused_entrance_status varchar(20),
	human_drug_trafficing_involvement varchar(20),
	child_abuse varchar(20),
	financial_fraud varchar(20),
	asylum_status varchar(20),
	Primary key ( application_id, arrest_status, refused_Entrance_status,
human_Drug_trafficing_involvement, child_Abuse,financial_Fraud, asylum_status),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade
);

create table visa_db.payment_status
(
	application_id int,
	admin_id int,
	amount float,
```

```
	mode_of_payment varchar(20),
	payment_approval varchar(20),
	primary key(application_id,admin_id,amount,mode_of_payment,payment_approval),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade,
	foreign key(admin_id) references admin(admin_id) on delete set default on update
cascade
);

create table visa_db.visa
(
	application_id int,
	port_of_Arrival varchar(50),
	port_of_departure varchar(50),
	primary key(application_id,port_of_Arrival,port_of_Departure),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade
);

create table visa_db.student_visa
(
	application_id int,
	port_of_Arrival varchar(50),
	port_of_departure varchar(50),
	university_name varchar(50),
	tuition_fee varchar(20),
	course varchar(20),
	primary key(application_id,port_of_Arrival,port_of_Departure),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade
);

create table visa_db.employment_visa
(
	application_id int,
	port_of_Arrival varchar(50),
	port_of_departure varchar(50),
	company_name varchar(20),
	position varchar(20),
	primary key(application_id,port_of_Arrival,port_of_Departure),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade
```

```
);

create table visa_db.tourist_visa
(
	application_id int,
	port_of_Arrival varchar(50),
	port_of_departure varchar(50),
	travel_Agency varchar(50),
	duration varchar(20),
	primary key(application_id,port_of_Arrival,port_of_Departure),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade
);

create table visa_db.medical_visa
(
	application_id int,
	port_of_Arrival varchar(50),
	port_of_departure varchar(50),
	hospital varchar(50),
	doctor varchar(50),
	duration varchar(20),
	primary key(application_id,port_of_Arrival,port_of_Departure),
	foreign key(application_id) references application(application_id) on delete set default
on update cascade
);
```

Data insertion queries :

```
COPY visa_db.applicant_ac(Applicant_ID,Username,Password)
FROM 'E:\Academic\dbms_data\applicant_ac.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.admin(Admin_ID, Username, Password)
FROM 'E:\Academic\dbms_data\admin.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.visa_officer(Officer_ID, First_name, Last_name, Email,
Authorized_status,Admin_ID)
FROM 'E:\Academic\dbms_data\visa_officer.csv' DELIMITER '|' CSV HEADER;
```

```
COPY
visa_db.application(Application_ID,Applicant_ID,Officer_ID,Admin_ID,First_name,Last_name,Date
_of_birth, Gender,Application_status)
FROM 'E:\Academic\dbms_data\application.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.visa_officer_mobile(Officer_ID, Mobile_no)
FROM 'E:\Academic\dbms_data\visa_officer_mobile.csv' DELIMITER ',' CSV HEADER;

COPY visa_db.address(Application_ID, house_name, street, City, State, zipcode, Country,
Email_ID)
FROM 'E:\Academic\dbms_data\address.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.applicant_mobile_no(Application_ID, Mobile_no)
FROM 'E:\Academic\dbms_data\applicant_mobile_no.csv' DELIMITER ',' CSV HEADER;

COPY visa_db.covid19(Application_ID, Report_no, Report_date, report_status, Vaccine_status)
FROM 'E:\Academic\dbms_data\covid19.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.applicant_nationality(Application_ID, Nationality)
FROM 'E:\Academic\dbms_data\applicant_nationality.csv' DELIMITER ',' CSV HEADER;

COPY visa_db.Last_current_visa(Application_ID, visa_no, visa_type, Place_of_issue,
Date_of_issue)
FROM 'E:\Academic\dbms_data\Last_Current_visa.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.appointment_details(Application_ID, Officer_ID, Date, Time)
FROM 'E:\Academic\dbms_data\appointment_details.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.payment_status(Application_ID, Admin_ID, Amount,
Mode_of_Payment,Payment_approval)
FROM 'E:\Academic\dbms_data\payment_status.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.passport_details(Application_ID, Passport_No, Date_of_issue, Place_of_issue,
Expiry_date)
FROM 'E:\Academic\dbms_data\passport_details.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.testimonial(Application_ID,arrest_status, refused_entrance_status,
human_drug_trafficing_involvement , child_abuse , financial_fraud,asylum_status )
FROM 'E:\Academic\dbms_data\testimonial.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.visa(Application_ID, Port_of_arrival, Port_of_departure)
FROM 'E:\Academic\dbms_data\visa.csv' DELIMITER '|' CSV HEADER;
```

```
COPY visa_db.student_visa(Application_ID, Port_of_arrival, Port_of_departure, University_name,
Tuition_fee, Course)
FROM 'E:\Academic\dbms_data\student_visa.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.employment_visa(Application_ID, Port_of_arrival,Port_of_departure
,Company_name, Position)
FROM 'E:\Academic\dbms_data\employment_visa.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.tourist_visa(Application_ID, Port_of_arrival, Port_of_departure,Travel_agency,
Duration)
FROM 'E:\Academic\dbms_data\tourist_visa.csv' DELIMITER '|' CSV HEADER;

COPY visa_db.medical_visa(Application_ID, Port_of_arrival, Port_of_departure,Hospital, Doctor,
Duration)
FROM 'E:\Academic\dbms_data\medical_visa.csv' DELIMITER '|' CSV HEADER;
```

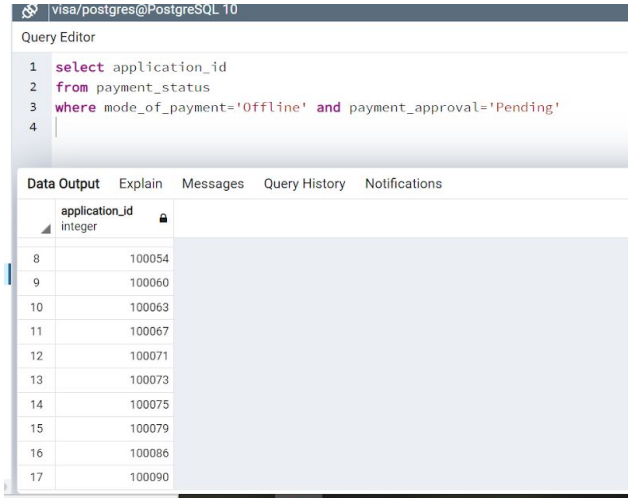
All select queries :

```
select * from applicant_ac
select * from admin
select * from visa_officer
select * from application
select * from visa_officer_mobile
select * from address
select * from applicant_mobile_no
select * from covid19
select * from applicant_nationality
select * from last_current_visa
select * from appointment_details
select * from payment_status
select * from passport_details
select * from testimonial
select * from visa
select * from student_visa
select * from medical_visa
select * from tourist_visa
select * from employment_visa
```

Simple Queries

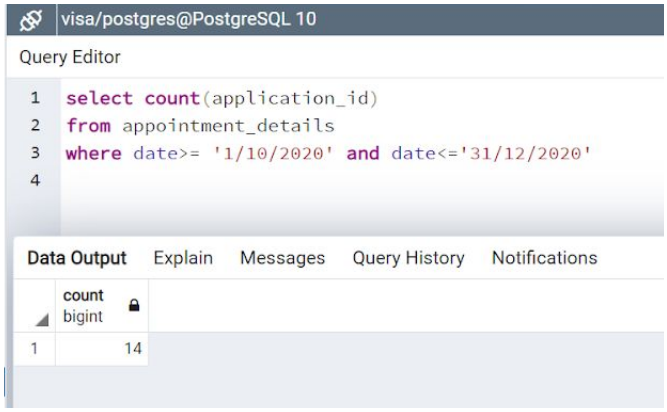
1. **Find application ID of applicants whose fees payment will be done in Offline mode and isn't approved.**
   A:
   select application_id
   from payment_status
   where mode_of_payment='Offline' and payment_approval='Pending'

   No. of tuples=17



2. **Count the total number of appointments held in last three months of 2020**
   A:
   select count(application_id)
   from appointment_details
   where date>= '1/10/2020' and date<='31/12/2020'

   No. of tuples=1



3. **Find details of applicants with any type type criminal record**

A:

```
select *
from testimonial
where arrest_status ='Yes' or refused_entrance_status='Yes'
        or human_drug_trafficing_involvement='Yes' or child_abuse='Yes'
        or financial_fraud ='Yes' or asylum_status='Yes'
```

No. of tuples=54

visa/postgres@PostgreSQL 10

Query Editor

```
1  select *
2  from testimonial
3  where arrest_status ='Yes' or refused_entrance_status='Yes'
4      or human_drug_trafficing_involvement='Yes' or child_abuse='Yes'
5      or financial_fraud ='Yes' or asylum_status='Yes'
```

Data Output | Explain | Messages | Query History | Notifications

	application_id [PK] integer	arrest_status [PK] character varying (20)	refused_entrance_status [PK] character varying (20)	human_drug_trafficing_involvement [PK] character varying (20)	child_abuse [PK] character varying (20)	financ [PK] c
46	100084	No	Yes	No	No	No
47	100085	No	Yes	No	No	No
48	100086	No	Yes	No	No	No
49	100088	No	Yes	No	No	No
50	100089	No	Yes	No	No	No
51	100093	No	Yes	No	No	No
52	100096	No	Yes	No	No	No
53	100097	No	Yes	No	No	No
54	100098	No	Yes	No	No	No

4. **Find the count of total number of applications from each country**

A:

```
select address.country, count(application_id)
from address
group by country
```

No. of tuples

```
2  select address.country, count(application_id)
3  from address
4  group by country
5
```

Data Output | Explain | Messages | Query History | Notifications

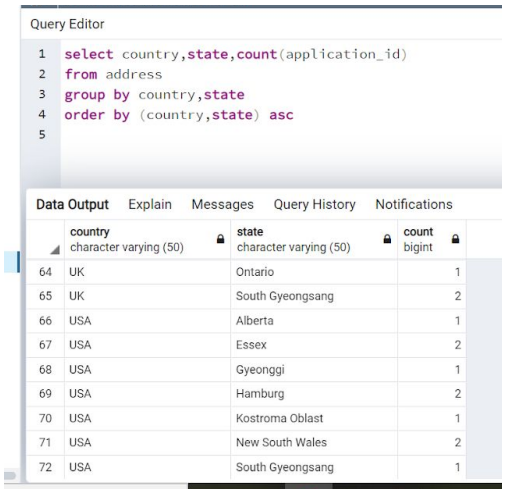
	country character varying (50)	count bigint
3	England	10
4	UK	10
5	Germany	10
6	China	9
7	Russia	10
8	Canada	10
9	Nationality	1
10	USA	10
11	France	11

5. **Find the count of total number of applications from each country for each state in ascending order**

   A:

```
select country,state,count(application_id)
from address
group by country,state
order by (country,state) asc
```

   No.of tuples:72



Query Editor

```
1  select country,state,count(application_id)
2  from address
3  group by country,state
4  order by (country,state) asc
5
```

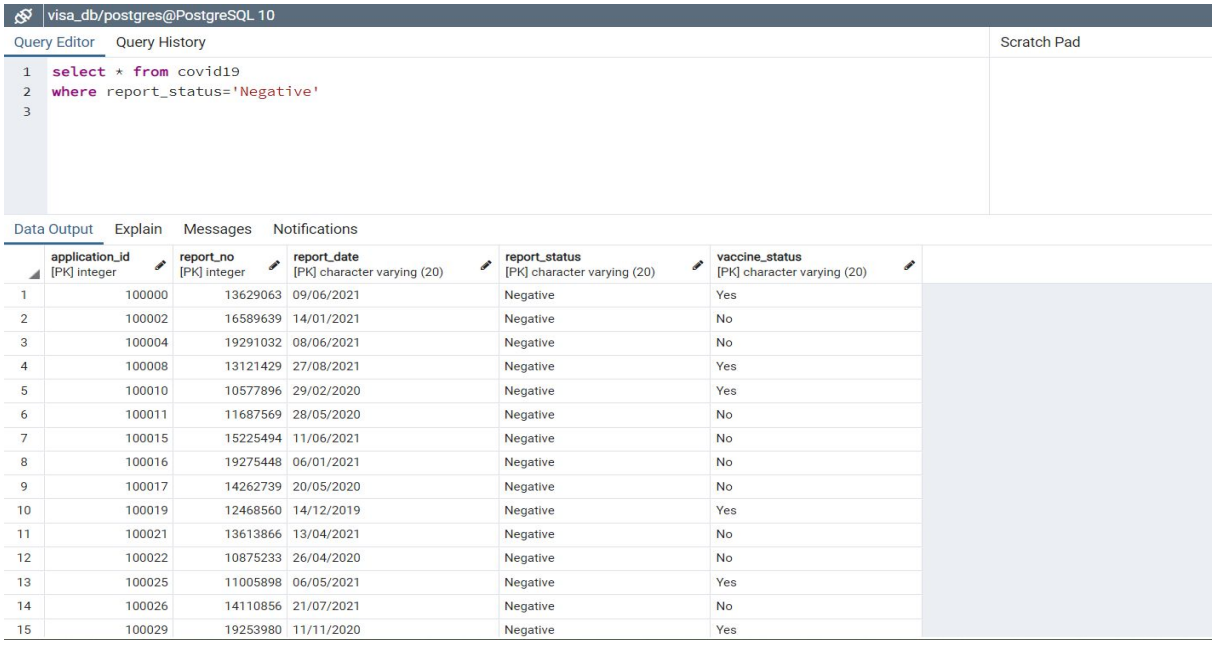
Data Output | Explain | Messages | Query History | Notifications

	country character varying (50)	state character varying (50)	count bigint
64	UK	Ontario	1
65	UK	South Gyeongsang	2
66	USA	Alberta	1
67	USA	Essex	2
68	USA	Gyeonggi	1
69	USA	Hamburg	2
70	USA	Kostroma Oblast	1
71	USA	New South Wales	2
72	USA	South Gyeongsang	1

6. **select all applicants with negative covid report.**

```
select * from covid19
where report_status='Negative'
```

   No of tuples : 52



visa_db/postgres@PostgreSQL 10

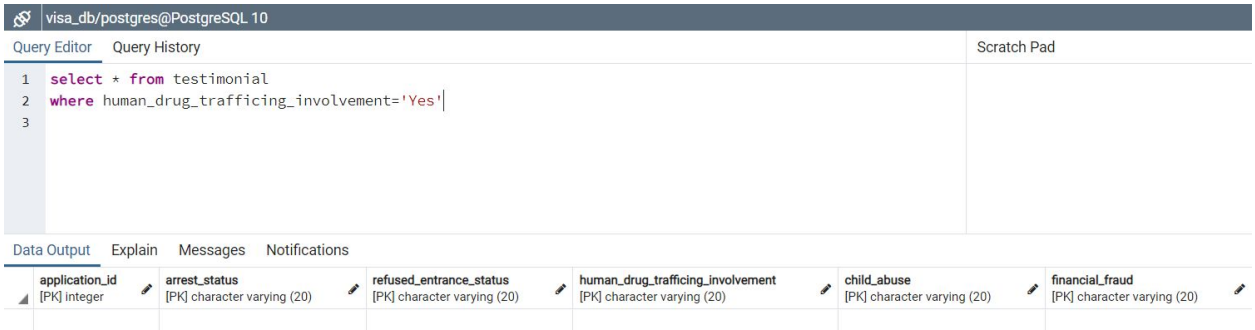
Query Editor | Query History | Scratch Pad

```
1  select * from covid19
2  where report_status='Negative'
3
```

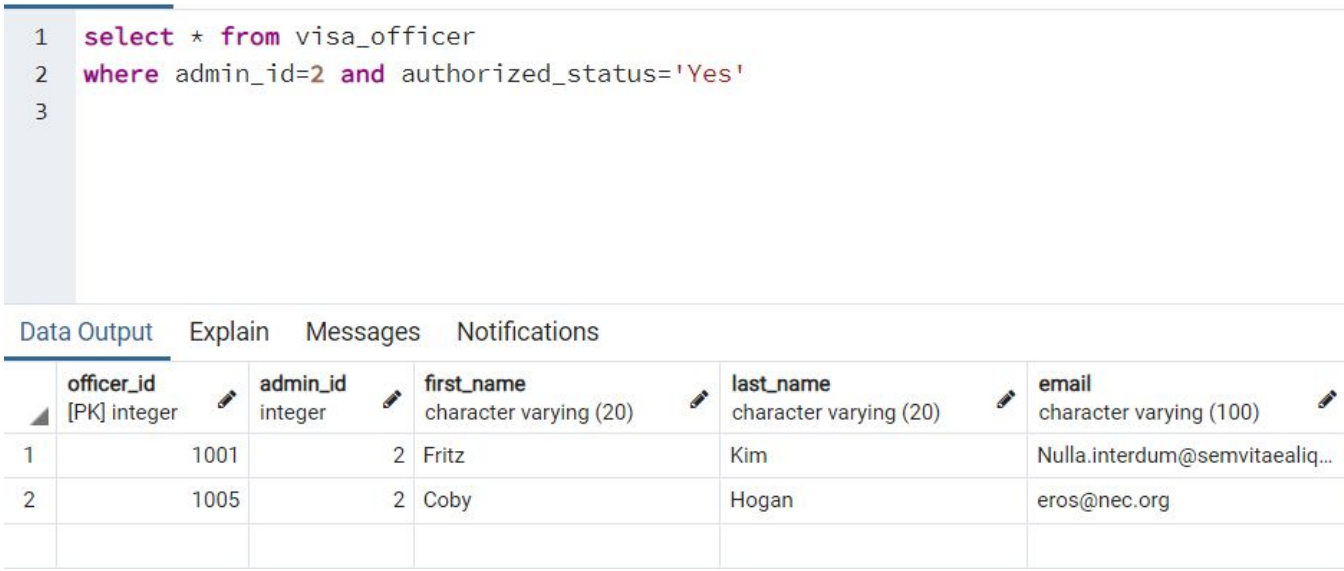
Data Output | Explain | Messages | Notifications

	application_id [PK] integer	report_no [PK] integer	report_date [PK] character varying (20)	report_status [PK] character varying (20)	vaccine_status [PK] character varying (20)
1	100000	13629063	09/06/2021	Negative	Yes
2	100002	16589639	14/01/2021	Negative	No
3	100004	19291032	08/06/2021	Negative	No
4	100008	13121429	27/08/2021	Negative	Yes
5	100010	10577896	29/02/2020	Negative	Yes
6	100011	11687569	28/05/2020	Negative	No
7	100015	15225494	11/06/2021	Negative	No
8	100016	19275448	06/01/2021	Negative	No
9	100017	14262739	20/05/2020	Negative	No
10	100019	12468560	14/12/2019	Negative	Yes
11	100021	13613866	13/04/2021	Negative	No
12	100022	10875233	26/04/2020	Negative	No
13	100025	11005898	06/05/2021	Negative	Yes
14	100026	14110856	21/07/2021	Negative	No
15	100029	19253980	11/11/2020	Negative	Yes

7. **select all applications involved in human/drug trafficking.**
   select * from testimonial
   where human_drug_trafficing_involvement='Yes'
   No of tuples: 0



8. **Select all visa officers authorized by admin with ID 2.**
   select * from visa_officer
   where admin_id=2 and authorized_status='Yes'
   No. of tuples: 2



	officer_id [PK] integer	admin_id integer	first_name character varying (20)	last_name character varying (20)	email character varying (100)
1	1001	2	Fritz	Kim	Nulla.interdum@semvitaealiq...
2	1005	2	Coby	Hogan	eros@nec.org

9. **count no of applicants who made online payment for visa procedure.**

   select count(application_id)
   from payment_status
   where mode_of_payment='Online'

   No. of tuples=1

visa_db/postgres@PostgreSQL 10

Query Editor | Query History

```
1  select count(application_id)
2  from payment_status
3  where mode_of_payment='Online'
4
```

Data Output | Explain | Messages | Notifications

	count bigint
1	49

10. select all applicants who are applying for the CEO position on an employment visa.

```
select *
from employment_visa
where position='CEO,'
```

No of tuples : 3

```
1  select *
2  from employment_visa
3  where position='CEO'
4
```

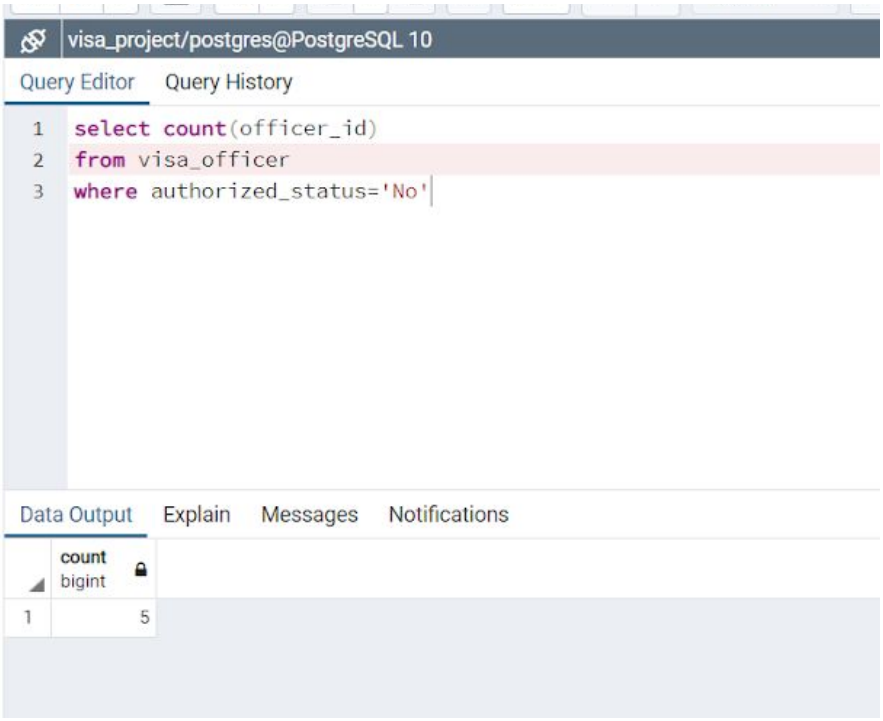
Data Output | Explain | Messages | Notifications

	application_id [PK] integer	port_of_arrival [PK] character varying (50)	port_of_departure [PK] character varying (50)	company_name character varying (20)	position character varying (20)
1	100004	Amritsur	Pune	JIO	CEO
2	100013	Amritsur	Pune	Vipro	CEO
3	100020	Delhi	Kolkata	Zomato	CEO

11. Find the total number of visa officers who are not authorized.

```
select count(officer_id)
from visa_officer
where authorized_status='No'
```

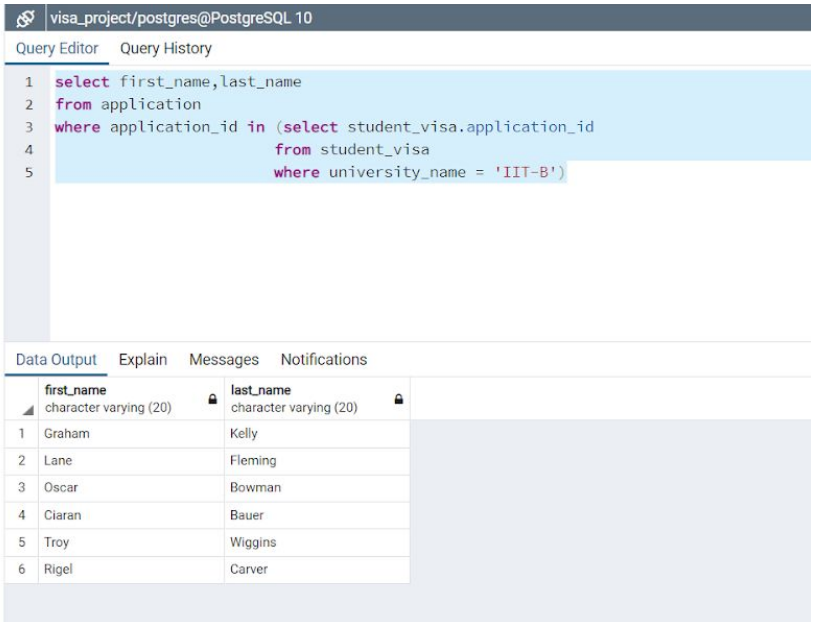
No. of tuples = 1



12. Find the names of the students who have applied for student visa for university 'IIT-B'

```
select first_name,last_name
from application
where application_id in (select student_visa.application_id
                         from student_visa
                         where university_name = 'IIT-B')
```

No. of tuples = 6



13. Find all applications whose applicant's age is more than 30.

```
select distinct *
from application
where extract(year from age(current_date,date_of_birth)) > 30
```

No. of tuples = 46

visa_project/postgres@PostgreSQL 10

Query Editor | Query History

```
1  select distinct *
2  from application
3  where extract(year from age(current_date,date_of_birth)) > 30
```

Data Output | Explain | Messages | Notifications

	application_id [PK] integer	applicant_id integer	officer_id integer	admin_id integer	first_name character varying (20)	last_name character varying (20)	date_of_birth date	gender character varying (10)	application_status character varying (20)
31	100096	12818240	1009	4	Ulric	Massey	1984-03-29	Male	Approved
32	100069	67393090	1002	4	Lars	Sampson	1988-12-25	Male	Pending
33	100018	34777989	1001	4	Knox	Nguyen	1989-03-15	Female	Pending
34	100051	23400816	1007	2	Giacomo	Spencer	1989-03-22	Male	Pending
35	100089	29074650	1005	5	Ulysses	Cross	1986-08-12	Male	Pending
36	100080	36181992	1005	5	Quinlan	Salas	1989-09-24	Female	Pending
37	100023	35967735	1001	3	Lev	Myers	1981-06-17	Female	Pending
38	100004	10361676	1009	5	George	Chambers	1989-10-13	Female	Pending
39	100000	26030746	1001	2	Declan	Mcconnell	1984-02-17	Female	Approved
40	100046	67232295	1007	2	Lucian	Monroe	1980-08-18	Male	Approved
41	100013	51444818	1001	3	Patrick	Larson	1989-05-23	Male	Approved
42	100083	47259552	1002	2	Gil	Harding	1985-12-10	Male	Approved
43	100036	59145564	1007	2	Griffith	Henson	1987-07-28	Female	Pending
44	100031	69084573	1002	4	Brett	Ramos	1989-05-07	Female	Pending
45	100062	60249077	1009	4	Christian	Gamble	1983-01-10	Male	Pending
46	100088	39769641	1002	3	Elijah	Cline	1980-02-03	Female	Approved

14. Find the total number of student visa applications.

```
select count(*)
from student_visa
```

No. of tuples = 27

visa_project/postgres@PostgreSQL 10

Query Editor | Query History

```
1  select count(*)
2  from student_visa
```

Data Output | Explain | Messages | Notifications

	count bigint
1	27

15. Find all applications whose applicant is female.

```
select *
from application
where gender = 'Female'
```

No. of tuple = 52

visa_project/postgres@PostgreSQL 10

Query Editor | Query History

```
1  select *
2  from application
3  where gender = 'Female'
```

Data Output | Explain | Messages | Notifications

	application_id [PK] integer	applicant_id integer	officer_id integer	admin_id integer	first_name character varying (20)	last_name character varying (20)	date_of_birth date	gender character varying (10)	application_status character varying (20
38	100068	61433340	1001	3	Xavier	Gaines	1997-07-09	Female	Approved
39	100070	57198575	1005	5	Holmes	Tyson	1990-03-17	Female	Pending
40	100073	10660021	1001	2	Josiah	Pratt	1994-12-16	Female	Pending
41	100076	12411340	1007	1	Ryan	Johns	1993-10-19	Female	Pending
42	100078	20186217	1001	3	Andrew	Burns	1993-03-13	Female	Pending
43	100079	66996793	1002	4	Nigel	Caldwell	2002-10-14	Female	Approved
44	100080	36181992	1005	5	Quinlan	Salas	1989-09-24	Female	Pending
45	100081	20576510	1007	2	Burke	Coffey	1995-08-06	Female	Pending
46	100085	35447209	1007	2	Tad	Woodward	1999-10-01	Female	Approved
47	100088	39769641	1002	3	Elijah	Cline	1980-02-03	Female	Approved
48	100092	48605713	1001	3	Marsden	Puckett	2004-08-29	Female	Pending
49	100093	38761783	1002	4	Thor	Mcintosh	1986-05-30	Female	Approved
50	100094	12821168	1005	5	Lee	House	1984-12-13	Female	Approved
51	100095	48469592	1007	2	Travis	Woods	1981-12-09	Female	Pending
52	100098	67975198	1002	2	Ahmed	Tyler	1980-07-07	Female	Pending

16. Count all the German applicants applying for visas.

```
select application_id,country from address
where country='Germany';
```

No, of tuples: 10

visaproject/postgres@PostgreSQL 10

Query Editor | Query History

```
1  select application_id,country from address
2  where country='Germany';
```

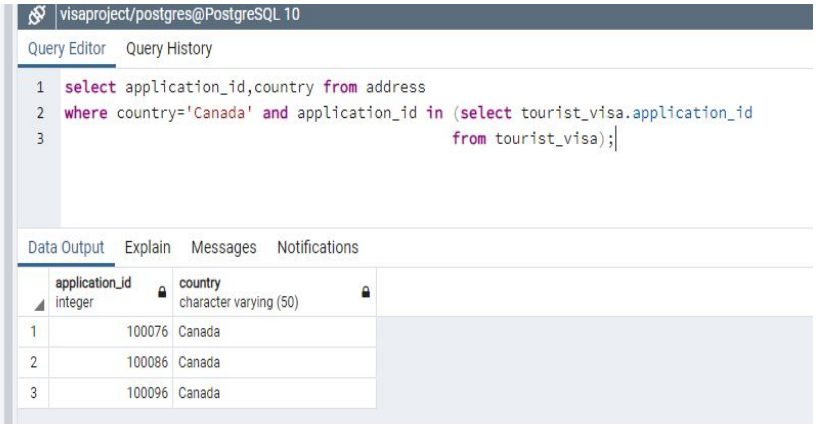
Data Output | Explain | Messages | Notifications

	application_id integer	country character varying (50)
1	100001	Germany
2	100011	Germany
3	100021	Germany
4	100031	Germany
5	100041	Germany
6	100051	Germany
7	100061	Germany
8	100073	Germany
9	100083	Germany
10	100093	Germany

17. **Find all the canadian applicants applying for tourist visa.**

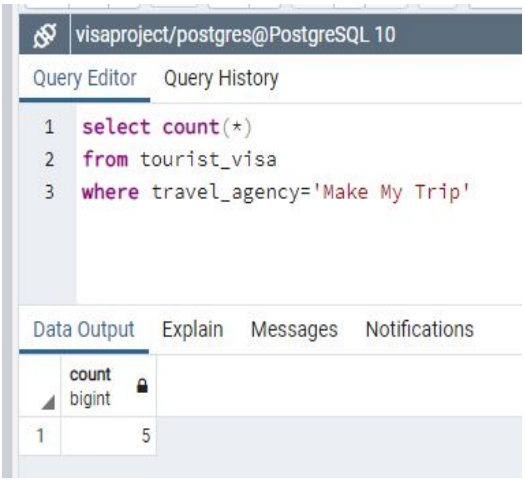
select application_id,country from address
where country='Canada' and application_id in (select tourist_visa.application_id
from tourist_visa);

No. of tuples: 3



18. Count all the tourist visa applicants whose travel agency is Make my trip.

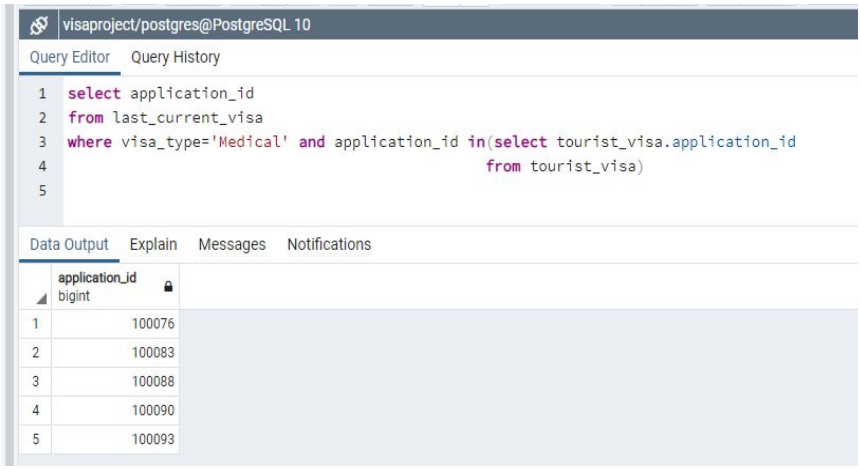
select count(*)
from tourist_visa
where travel_agency='Make My Trip'
No. of tuples: 1



19. **Find all the applicants who already have a medical visa and are now applying for a tourist visa.**

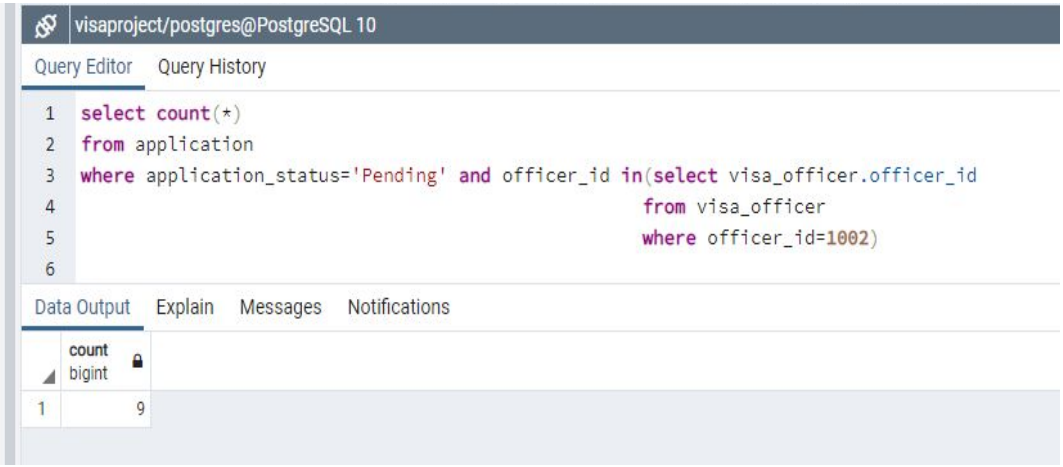
select application_id
from last_current_visa
where visa_type='Medical' and application_id in(select tourist_visa.application_id
from tourist_visa)

No.of tuples: 5



20. Find the total no. of visa applications that are pending for visa officer with ID 1002.

```
select count(*)
from application
where application_status='Pending' and officer_id in(select visa_officer.officer_id
                                                     from visa_officer
                                                     where officer_id=1002)
```



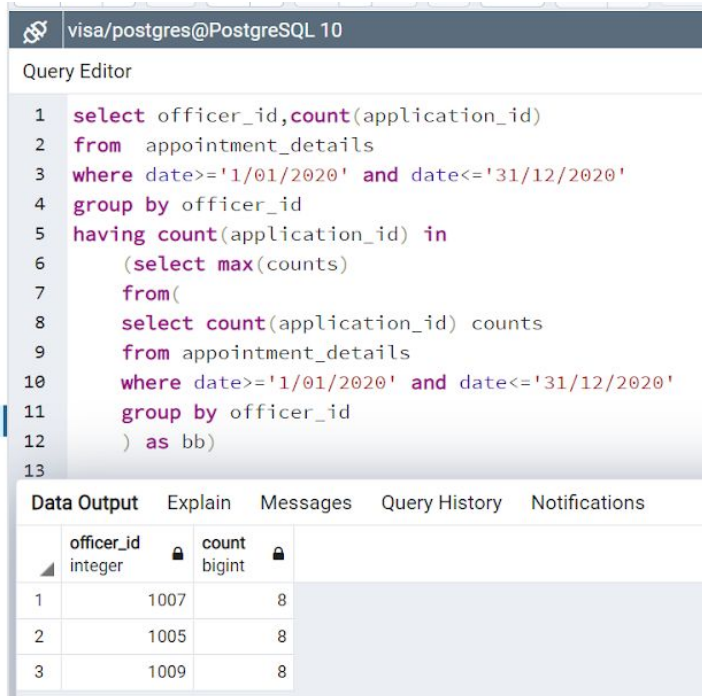
Complex Queries

1. **Find the Officer who has been scheduled highest number of appointments in 2020**

   A:

```
select officer_id,count(application_id)
from  appointment_details
where date>='1/01/2020' and date<='31/12/2020'
group by officer_id
having count(application_id) in
        (select max(counts)
        from(
        select count(application_id) counts
        from appointment_details
        where date>='1/01/2020' and date<='31/12/2020'
        group by officer_id
        ) as bb)
```

   No.of tuples:3

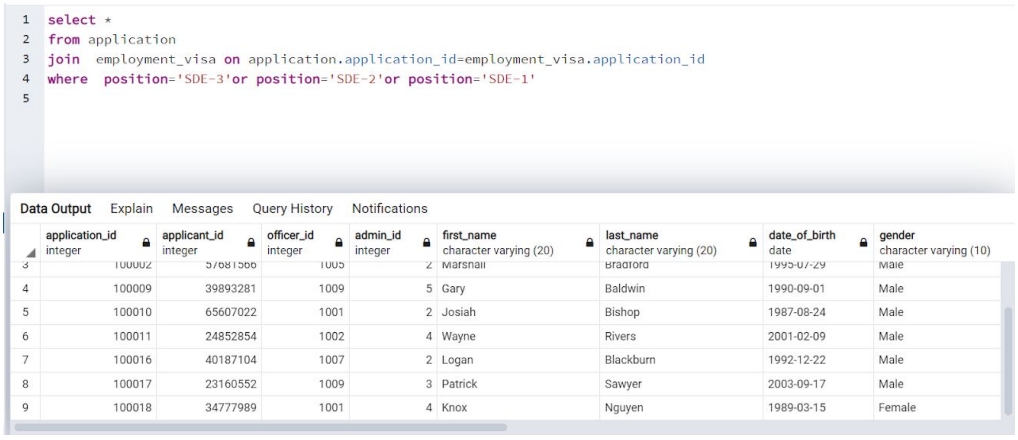


2. **Find the details of applicants who has applied for employment visa and are SDE**

A:

```
select *
from application
join  employment_visa on application.application_id=employment_visa.application_id
where  position='SDE-3'or position='SDE-2'or position='SDE-1'
```

No.of tuples:9



```
select *
from application
join  employment_visa on application.application_id=employment_visa.application_id
where  position='SDE-3'or position='SDE-2'or position='SDE-1'
```

Data Output | Explain | Messages | Query History | Notifications

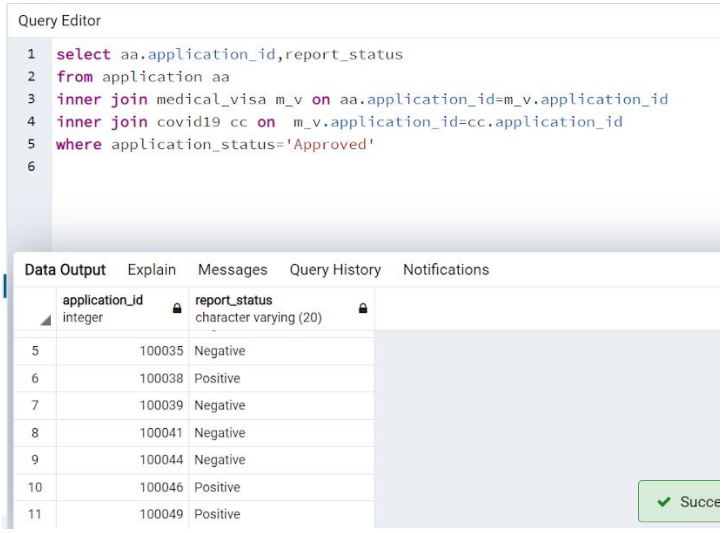
application_id integer	applicant_id integer	officer_id integer	admin_id integer	first_name character varying (20)	last_name character varying (20)	date_of_birth date	gender character varying (10)
4	100009	39893281	1009	5	Gary	Baldwin	1990-09-01	Male
5	100010	65607022	1001	2	Josiah	Bishop	1987-08-24	Male
6	100011	24852854	1002	4	Wayne	Rivers	2001-02-09	Male
7	100016	40187104	1007	2	Logan	Blackburn	1992-12-22	Male
8	100017	23160552	1009	3	Patrick	Sawyer	2003-09-17	Male
9	100018	34777989	1001	4	Knox	Nguyen	1989-03-15	Female

3. **Find report status of covid 19 of all approved medical visa applications.**

A:

```
select aa.application_id,report_status
from application aa
inner join medical_visa m_v on aa.application_id=m_v.application_id
inner join covid19 cc on  m_v.application_id=cc.application_id
where application_status='Approved'
```

No. of tuples:11



Query Editor

```
select aa.application_id,report_status
from application aa
inner join medical_visa m_v on aa.application_id=m_v.application_id
inner join covid19 cc on  m_v.application_id=cc.application_id
where application_status='Approved'
```

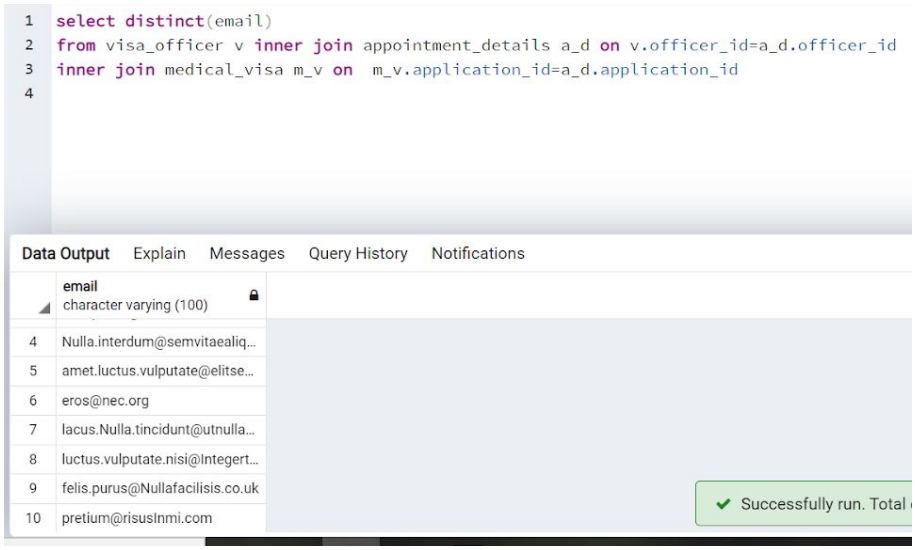
Data Output | Explain | Messages | Query History | Notifications

application_id integer	report_status character varying (20)
5	100035	Negative
6	100038	Positive
7	100039	Negative
8	100041	Negative
9	100044	Negative
10	100046	Positive
11	100049	Positive

Succe

4. **Find the email ID of all the officers who have an appointment with applicants applying for medical_visa.**
   A:
   select distinct(email)
   from visa_officer v inner join appointment_details a_d on v.officer_id=a_d.officer_id
   inner join medical_visa m_v on m_v.application_id=a_d.application_id

   No. of tuples:10



5. **Find the total number applicants for each country, who have applied for an employment visa to work for Google , Microsoft or Amazon .**
   A:
   select country, count(employment_visa.application_id)
   from address
   inner join employment_visa on address.application_id=employment_visa.application_id
   where company_name='Google' or company_name='Microsoft' or
   company_name='Amazon'
   group by country

   No. of tuples:3

```
select country, count(employment_visa.application_id)
from address
inner join  employment_visa on  address.application_id=employment_visa.application_id
where company_name='Google' or company_name='Microsoft' or company_name='Amazon'
group by country
```

Data Output | Explain | Messages | Query History | Notifications

	country character varying (50)	count bigint
1	China	2
2	Nepal	1
3	South Africa	1

6. Group all the cities by no of students coming there for student visa for course "Computer Science".

select port_of_arrival , count(application_id)
from student_visa
where course='CS'
group by port_of_arrival

No. of Tuples = 9

```
select port_of_arrival , count(application_id)
from student_visa
where course='CS'
group by port_of_arrival
```

Data Output | Explain | Messages | Notifications

	port_of_arrival character varying (50)	count bigint
1	Amritsur	1
2	Banglore	1
3	Chennai	3
4	Delhi	1
5	Hydrabad	2
6	Kolkata	1
7	Mumbai	2
8	Pune	1
9	Rajkot	2

7. Find full name of applicants who applied for tourist visa and not having covid vaccine.

```
select application.first_name,application.last_name
from tourist_visa
join application on tourist_visa.application_id = application.application_id
join covid19 on covid19.application_id = application.application_id
where vaccine_status='No'
```

No of Tuples = 10

```
1  select application.first_name,application.last_name
2  from tourist_visa
3  join application on tourist_visa.application_id = application.application_id
4  join covid19 on covid19.application_id = application.application_id
5  where vaccine_status='No'
```

Data Output | Explain | Messages | Notifications

	first_name character varying (20)	last_name character varying (20)
1	Ryan	Johns
2	Nigel	Caldwell
3	Quinlan	Salas
4	Gil	Harding
5	Tad	Woodward
6	Ulysses	Cross
7	Donovan	Pope
8	Travis	Woods
9	Kamal	Ford
10	Tucker	Trevino

8. Show how many applicants are coming to AIIMS on a medical visa and group them by their nationality.

```
select applicant_nationality.nationality,count(application.application_id)
from medical_visa
join application on medical_visa.application_id = application.application_id
join applicant_nationality on application.application_id = applicant_nationality.application_id
where hospital='AIIMS'
group by applicant_nationality.nationality
```

No of tuples : 4

```
select applicant_nationality.nationality,count(application.application_id)
from medical_visa
join application on medical_visa.application_id = application.application_id
join applicant_nationality on application.application_id = applicant_nationality.application_id
where hospital='AIIMS'
group by applicant_nationality.nationality
```

Data Output | Explain | Messages | Notifications

	nationality character varying (50)	count bigint
1	England	1
2	Germany	1
3	Nepal	1
4	UK	1

9. Find the full name of applicants whose covid report is negative and they did covid test before their appointment with a consultant officer.

select first_name,last_name
from application
join appointment_details on application.application_id = appointment_details.application_id
join covid19 on application.application_id = covid19.application_id
where report_status='Negative' and covid19.report_date < appointment_details.date

No of Tuples : 19

```
select first_name,last_name
from application
join appointment_details on application.application_id = appointment_details.application_id
join covid19 on application.application_id = covid19.application_id
where report_status='Negative' and covid19.report_date < appointment_details.date
```

Data Output | Explain | Messages | Notifications

	first_name character varying (20)	last_name character varying (20)
5	Arthur	Logan
6	Carl	Adams
7	Devin	Hull
8	Cole	Leach
9	Fitzgerald	Donaldson
10	Warren	Guzman
11	Clinton	Skinner
12	Holmes	Tyson
13	Ryan	Johns
14	Nigel	Caldwell
15	Quinlan	Salas
16	Burke	Coffey
17	Merrill	Sanchez
18	Gil	Harding
19	Kamal	Ford

10. List all universities according to course offered and no. of students applied for student visa for that course.

select university_name,course,count(application_id)
from student_visa
group by university_name,course
order by university_name

No of Tuples: 18

```
1  select university_name,course,count(application_id)
2  from student_visa
3  group by university_name,course
4  order by university_name
```

Data Output | Explain | Messages | Notifications

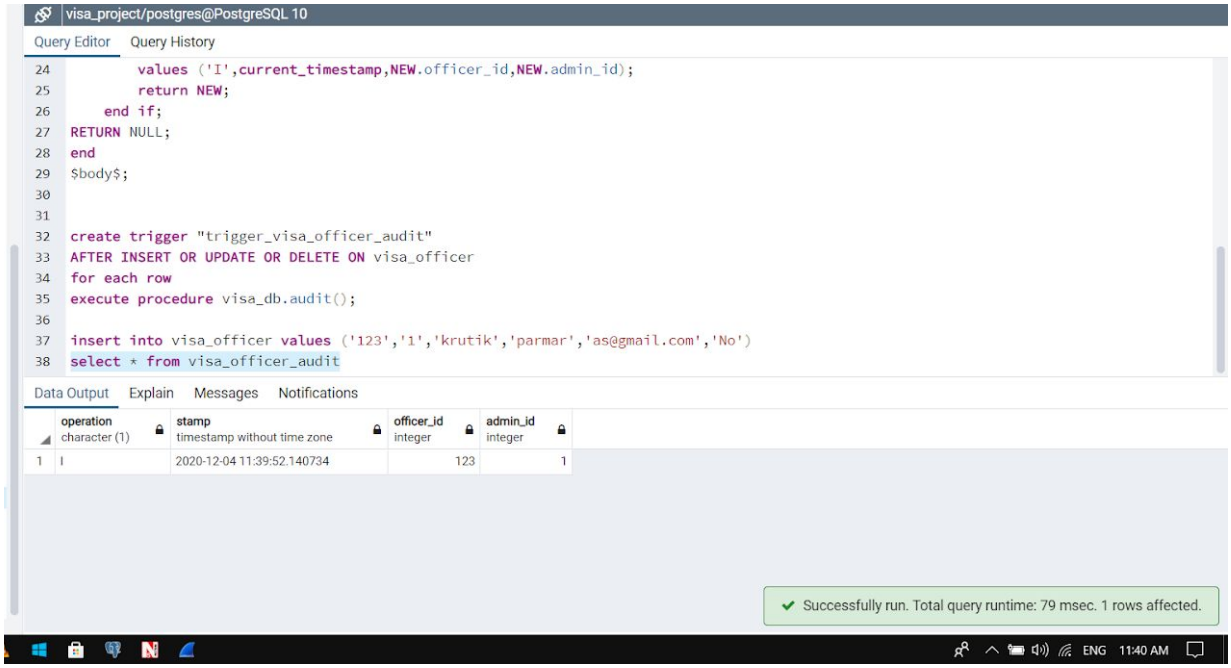
	university_name character varying (50)	course character varying (20)	count bigint
1	AMITYA	Civil	2
2	BITS	CS	2
3	DAIICT	CS	2
4	IIT-B	Civil	2
5	IIT-B	CS	3
6	IIT-B	Mechanical	1
7	IIT-KH	CS	1
8	IIT-KH	Mechanical	2
9	Nirma	CS	1
10	Nirma	Mechanical	1
11	NITK	CS	2
12	PDPU	CS	1
13	PDPU	Mechanical	1
14	SVNIT	Civil	1
15	SVNIT	CS	1

11. Create a trigger function which will ensure that insert, update , delete operations performed on the visa_officer table are recorded in the visa_officer_audit table.

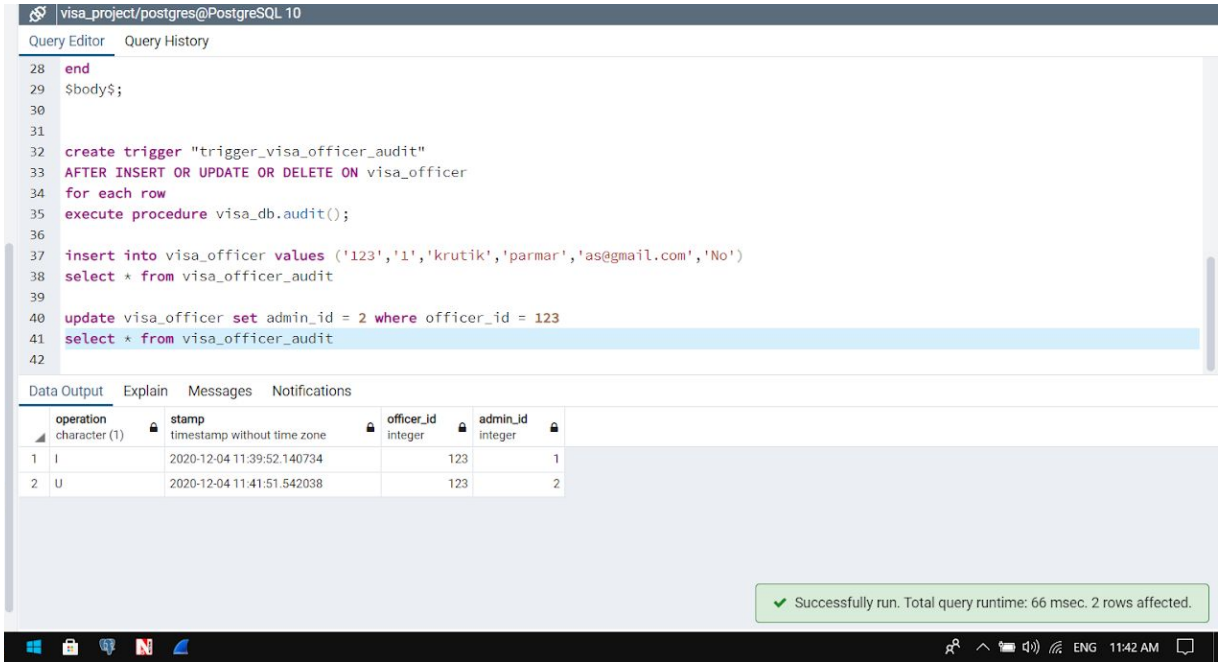
create table visa_db.visa_officer_audit
(
operation char(1),
stamp timestamp,
officer_id int,
admin_id int
)

```
create or replace function visa_db.audit()
returns trigger
language 'plpgsql'
as $body$
begin
	if (TG_OP = 'DELETE') then
		insert into visa_officer_audit(operation,stamp,officer_id,admin_id)
		values ('D',current_timestamp,OLD.officer_id,OLD.admin_id);
		return OLD;
	elsif (TG_OP = 'UPDATE') then
		insert into visa_officer_audit(operation,stamp,officer_id,admin_id)
		values ('U',current_timestamp,NEW.officer_id,NEW.admin_id);
		return NEW;
	elsif (TG_OP = 'INSERT') then
		insert into visa_officer_audit(operation,stamp,officer_id,admin_id)
		values ('I',current_timestamp,NEW.officer_id,NEW.admin_id);
		return NEW;
	end if;
RETURN NULL;
end
$body$;


create trigger "trigger_visa_officer_audit"
AFTER INSERT OR UPDATE OR DELETE ON visa_officer
for each row
execute procedure visa_db.audit();

insert into visa_officer values ('123','1','krutik','parmar','as@gmail.com','No')
select * from visa_officer_audit

update visa_officer set admin_id = 2 where officer_id = 123
select * from visa_officer_audit

delete from visa_officer where officer_id = 123
select * from visa_officer_audit
```

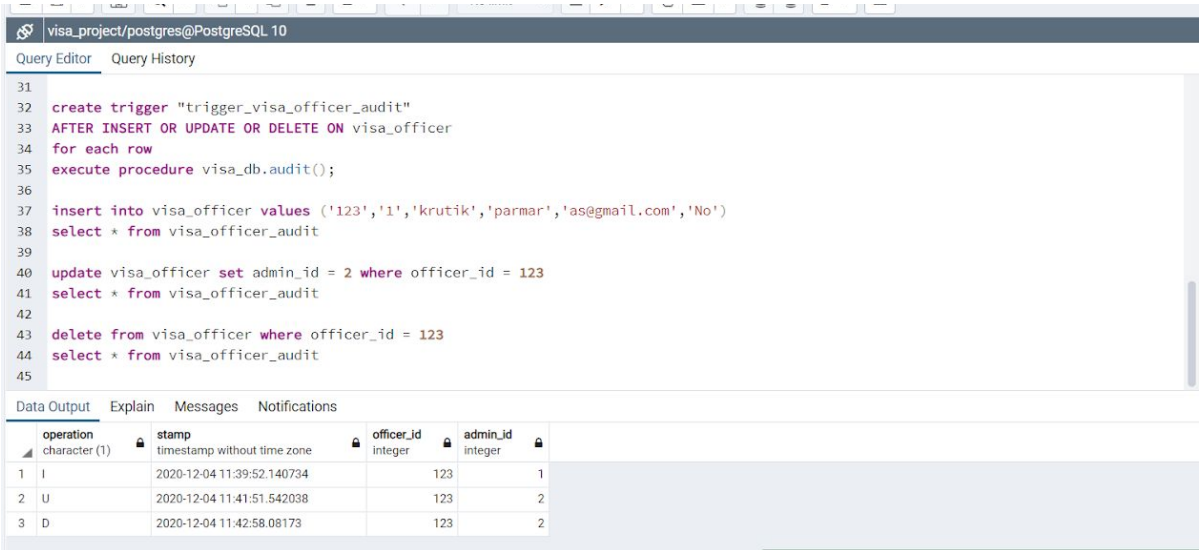
Insert :


visa_project/postgres@PostgreSQL 10
Query Editor
Query History
values ('I',current_timestamp,NEW.officer_id,NEW.admin_id);
return NEW;
end if;
RETURN NULL;
end
$body$;
create trigger "trigger_visa_officer_audit"
AFTER INSERT OR UPDATE OR DELETE ON visa_officer
for each row
execute procedure visa_db.audit();
insert into visa_officer values ('123','1','krutik','parmar','as@gmail.com','No')
select * from visa_officer_audit
Data Output
Explain
Messages
Notifications
operation character (1)
stamp timestamp without time zone
officer_id integer
admin_id integer
1 I 2020-12-04 11:39:52.140734 123 1
Successfully run. Total query runtime: 79 msec. 1 rows affected.
ENG 11:40 AM

Update:


visa_project/postgres@PostgreSQL 10
Query Editor
Query History
end
$body$;
create trigger "trigger_visa_officer_audit"
AFTER INSERT OR UPDATE OR DELETE ON visa_officer
for each row
execute procedure visa_db.audit();
insert into visa_officer values ('123','1','krutik','parmar','as@gmail.com','No')
select * from visa_officer_audit
update visa_officer set admin_id = 2 where officer_id = 123
select * from visa_officer_audit
Data Output
Explain
Messages
Notifications
operation character (1)
stamp timestamp without time zone
officer_id integer
admin_id integer
1 I 2020-12-04 11:39:52.140734 123 1
2 U 2020-12-04 11:41:51.542038 123 2
Successfully run. Total query runtime: 66 msec. 2 rows affected.
ENG 11:42 AM

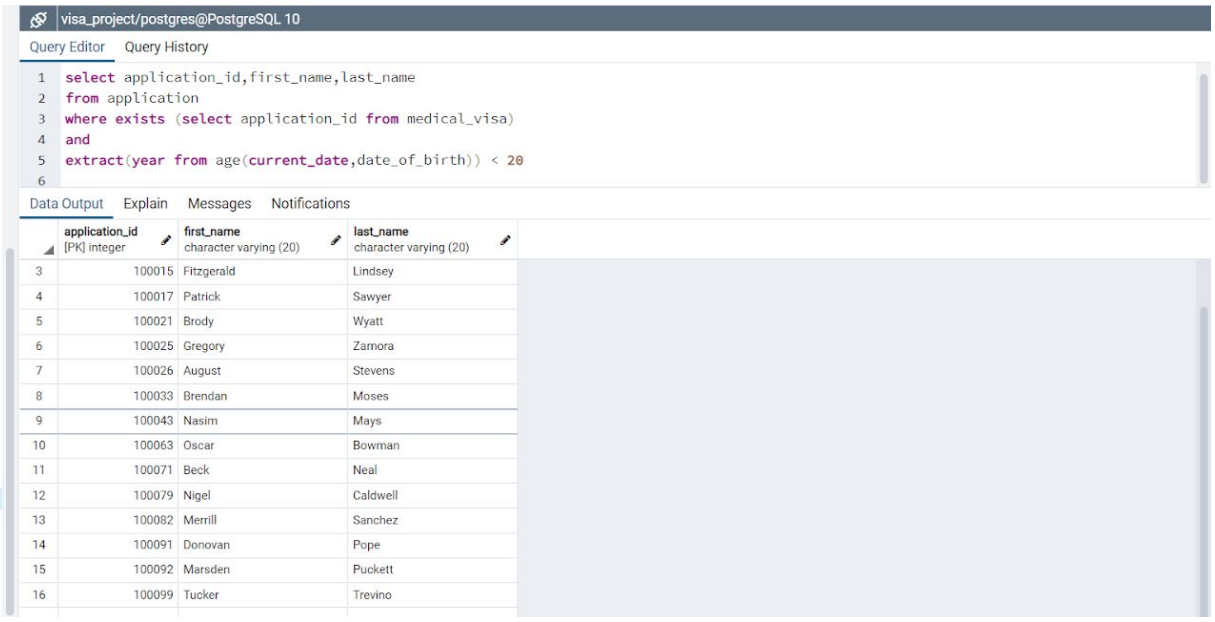
Delete :



12. Find all applicant's names and application ids who have applied for medical visa and whose age is less than 20.

```
select application_id,first_name,last_name
from application
where exists (select application_id from medical_visa)
                and
                extract(year from age(current_date,date_of_birth)) < 20
```

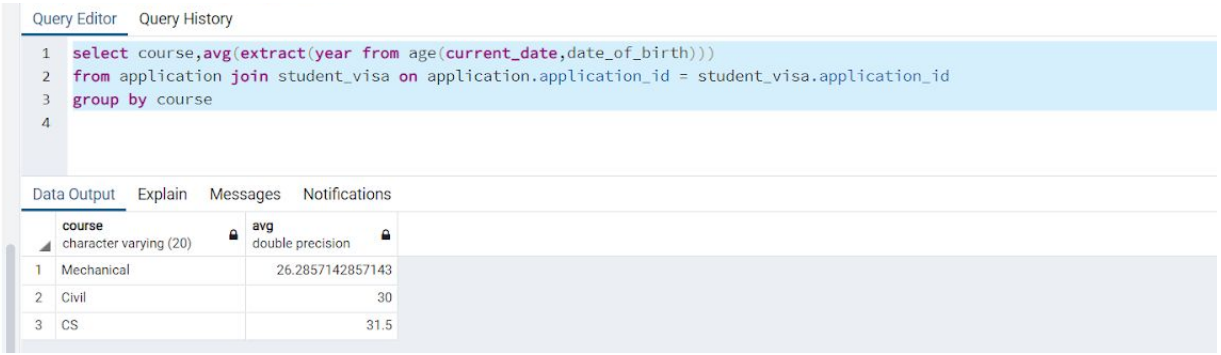
No. of tuples = 16



13. What is the average age of student applying for same course.

```
select course,avg(extract(year from age(current_date,date_of_birth)))
from application join student_visa on application.application_id =
student_visa.application_id
group by course
```

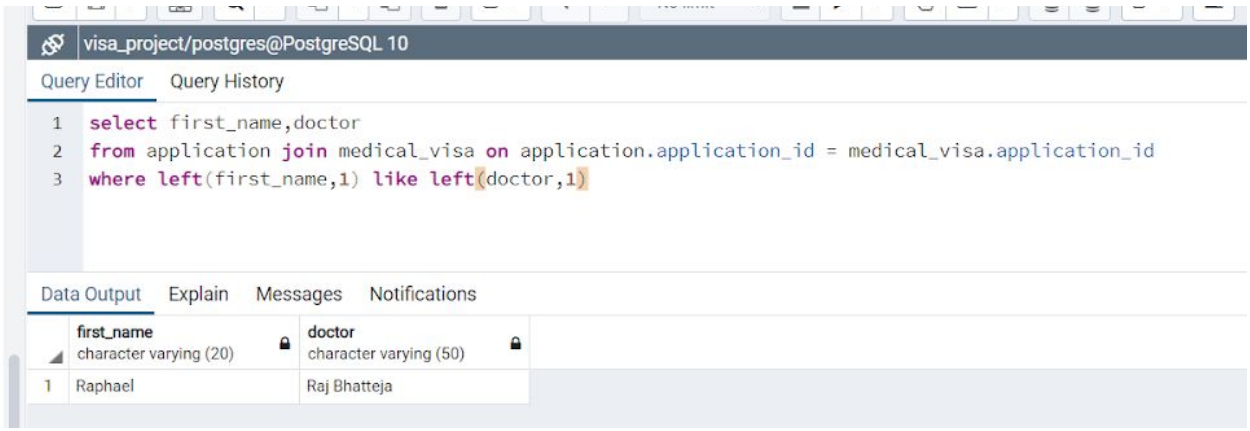
No. of tuples : 3



14. Find the name of those patients and doctors whose name starts with same letter and the patient has applied for medical visa to get treatment from same doctor.

```
select first_name,doctor
from application join medical_visa on application.application_id =
medical_visa.application_id
where left(first_name,1) like left(doctor,1)
```

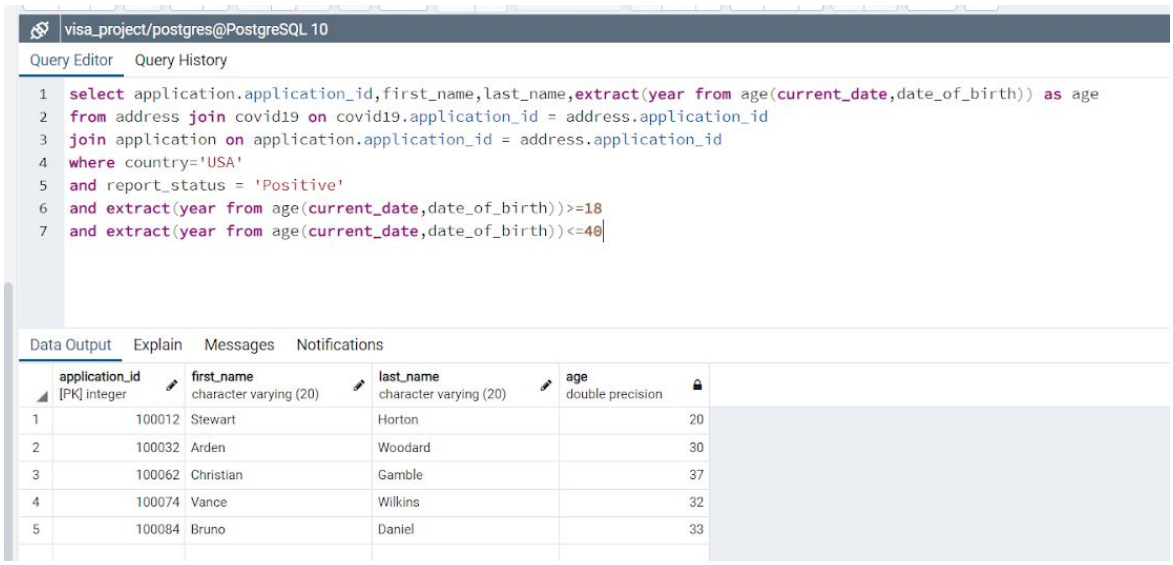
No of tuples = 1



15. Find the application_id,name and age of patients who is COVID19 positive and age is between 18 to 40 and living in USA.

```
select application.application_id,first_name,last_name,extract(year from
age(current_date,date_of_birth)) as age
from address join covid19 on covid19.application_id = address.application_id
join application on application.application_id = address.application_id
where country='USA'
        and report_status = 'Positive'
        and extract(year from age(current_date,date_of_birth))>=18
        and extract(year from age(current_date,date_of_birth))<=40
```

No. of tuples = 5



16. Find the total no. of applicants who got approved for a tourist visa this year by each visa officer.

```
select application.officer_id, count(application.application_id)
from application join tourist_visa on
application.application_id=tourist_visa.application_id
where application_status='Approved'
group by application.officer_id
```

No.of tuples: 5

Query Editor Query History

```
1  select application.officer_id, count(application.application_id)
2  from application join tourist_visa on application.application_id=tourist_visa.application_id
3  where application_status='Approved'
4  group by application.officer_id
```

Data Output Explain Messages Notifications

	officer_id integer	count bigint
1	1002	4
2	1001	1
3	1007	2
4	1009	2
5	1005	2

17. Find application status of all canadian applications scheduled to visa officer with ID 1007.

select application_status,visa_officer.officer_id,country
from application join address on application.application_id=address.application_id
join visa_officer on visa_officer.officer_id=application.officer_id
where address.country='Canada' and visa_officer.officer_id=1007

No. of tuples: 1

visaproject/postgres@PostgreSQL 10

Query Editor Query History

```
1  select application_status,visa_officer.officer_id,country
2  from application join address on application.application_id=address.application_id
3  join visa_officer on visa_officer.officer_id=application.officer_id
4  where address.country='Canada' and visa_officer.officer_id=1007
5
```

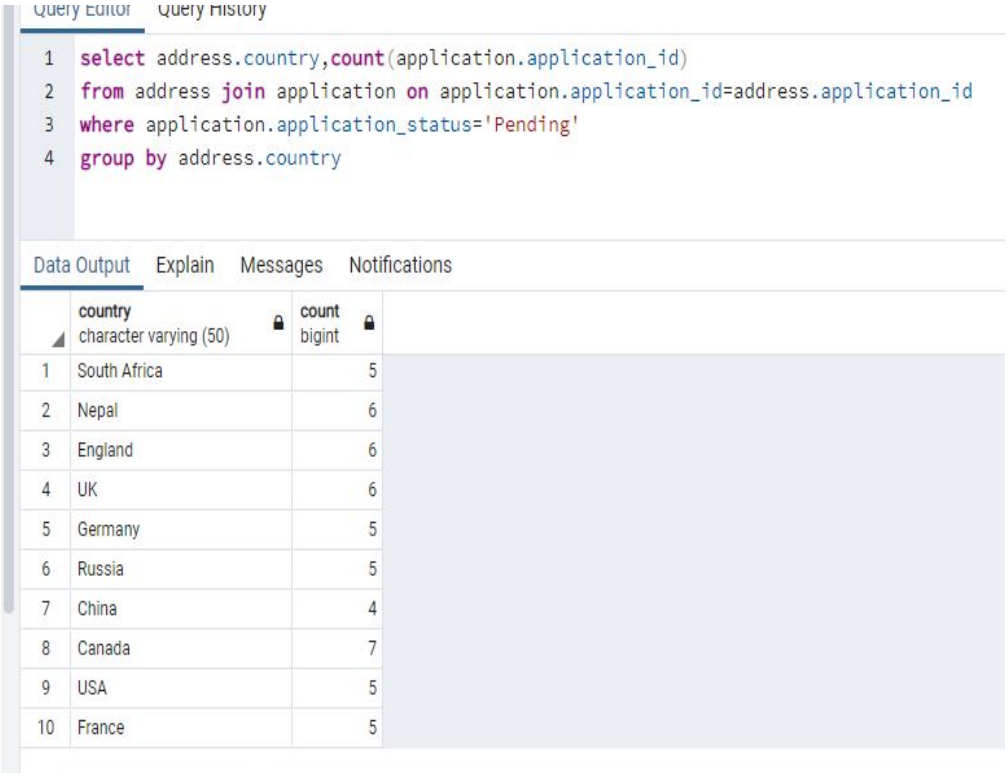
Data Output Explain Messages Notifications

	application_status character varying (20)	officer_id integer	country character varying (50)
1	Pending	1007	Canada

18. Find total number of pending applications for each country.

```
select address.country,count(application.application_id)
from address join application on application.application_id=address.application_id
where application.application_status='Pending'
group by address.country
```

No.of tuples: 10



Query Editor Query History

```
1  select address.country,count(application.application_id)
2  from address join application on application.application_id=address.application_id
3  where application.application_status='Pending'
4  group by address.country
```

Data Output | Explain | Messages | Notifications

	country character varying (50)	count bigint
1	South Africa	5
2	Nepal	6
3	England	6
4	UK	6
5	Germany	5
6	Russia	5
7	China	4
8	Canada	7
9	USA	5
10	France	5

19. Find the total number of applicants whose covid19 report is positive from each country.

```
select country,count(address.application_id)
from address join covid19 on covid19.application_id = address.application_id
group by (report_status,country)
having report_status = 'Positive'
```

No. of tuples = 11

Query Editor Query History

```
select country,count(address.application_id)
from address join covid19 on covid19.application_id = address.application_id
group by (report_status,country)
having report_status = 'Positive'
```

Data Output Explain Messages Notifications

	country character varying (50)	count bigint
1	Nepal	4
2	Nationality	1
3	France	5
4	China	7
5	Germany	5
6	Canada	5
7	England	3
8	Russia	5
9	USA	5
10	South Africa	3
11	UK	5

20. Find the number of applicants from each country who have applied for tourist visa and have taken the covid19 vaccine.

```
select country,count(address.application_id)
from address join covid19 on covid19.application_id = address.application_id
join tourist_visa on tourist_visa.application_id = address.application_id
group by (vaccine_status,country)
having vaccine_status = 'Yes'
```

No. of tuples = 9

Query Editor Query History

```
select country,count(address.application_id)
from address join covid19 on covid19.application_id = address.application_id
join tourist_visa on tourist_visa.application_id = address.application_id
group by (vaccine_status,country)
having vaccine_status = 'Yes'
```

Data Output Explain Messages Notifications

	country character varying (50)	count bigint
1	France	2
2	China	1
3	Russia	3
4	Nepal	1
5	England	2
6	Germany	1
7	Canada	2
8	USA	2
9	UK	1