For this assignment I have uploaded 3 sql files,which are data creation.sql,migration.sql and rollback.sql.

By compiling “creation” file user will be able to create the data set.

Firstly, user will run those queries, which create table called “STUDENTS” that will hold values for ST\_ID,ST\_NAME\_ST\_LAST.

create table STUDENTS(  
 ST\_ID integer,  
 ST\_NAME varchar(15),  
 ST\_LAST varchar(15)  
);

Secondly,user must run following queries for adding values to the columns.

insert into STUDENTS (ST\_ID , ST\_NAME , ST\_LAST) values (1, 'Laman', 'Taghiyeva');  
insert into STUDENTS (ST\_ID , ST\_NAME , ST\_LAST) values (2, 'Orxan', 'Taghiyev');  
insert into STUDENTS (ST\_ID , ST\_NAME , ST\_LAST) values (3, 'Ailin', 'Baghirova');

Lastly,to retrieve what we create user must run

select\*from STUDENTS;

End result for Students table shall look like this.

Text

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Now,we should create our “Interests” table. Again for doing this user should compile following queries which perform same functions we did while creating” Students” table.

create table INTERESTS (  
 STUDENT\_ID integer,  
 INTEREST varchar(15)  
 );

insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Tennis');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Literature');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Math');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(2,'Tennis');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(3,'Math');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(3,'Music');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(2,'Football');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Chemistry');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(3,'Chess');

To retrieve “INTERESTS” tables at the end we will execute

select\*from INTERESTS;

A screenshot of a computer

Description automatically generated with medium confidence

Now we switch to “migration.sql” file. In the first part of the migration user will be able to rename the STUDENTS.ST\_ID to STUDENTS.STUDENT\_ID and change the length of STUDENTS.ST\_NAME and STUDENTS.ST\_LAST. For doing this first I select the table with alter table students,and use rename command to rename ST\_ID to STUDENT\_ID.

alter table students  
 rename column st\_id to STUDENT\_ID;

Now to change the length of STUDENTS.ST\_NAME and STUDENTS.ST\_LAST from 15 to 30 user will again compile alter commands.

alter t able STUDENTS  
 alter column ST\_NAME type varchar(30);  
alter table STUDENTS  
 alter column ST\_LAST type varchar (30);

When user compile

Select\*  
from students;

end result shall look like this

Graphical user interface, application

Description automatically generated

Now in the 2nd part of migration user will change the Change the name of the INTERESTS.INTEREST to INTERESTS and its type to array of strings. In this part instead of using rename command I create new column called Interests,because we are expected to change array values also,just doing rename is not enough. To add INTERESTS column user will execute following commands.

alter table INTERESTS  
add column INTERESTS text[];

To insert values accordingly user now execute this part

insert into INTERESTS(STUDENT\_ID,INTERESTS) values ('1','{{"Tennis"}, { "Literature"}, {"Math"}, { "Chemistry"} }');  
insert into interests (STUDENT\_ID , INTERESTS) values ('2','{{"Tennis"}, { "Football"}}');  
insert into interests (STUDENT\_ID , INTERESTS) values ('3','{{"Math"}, { "Music"}, {"Chess"}}');

We don’t need Interest column anymore,therefore, we should drop Interest by executing

alter table interests  
drop column INTEREST

If user retrieve the table,it will be shown that rows that previously created have NULL values to avoid them user shall execute

delete from INTERESTS where interests is null;

and end result will look like this

Text

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In the last file, user is expected to get back to the previous version of the two tables. In first version we have st\_id,st\_name and st\_last. First we should add st\_id column again by using

alter table STUDENTS  
add column ST\_ID integer ;

commands. To transfer values of Student\_id to new added column user will execute set command.After that with the drop command Student\_ID column will be deleted.

update STUDENTS  
SET ST\_ID=STUDENT\_ID;

alter table STUDENTS  
drop column STUDENT\_ID;  
select\* from STUDENTS;

Now we will perform almost same functions that we did on migration to change the length of column ST\_NAME and ST\_LAST

alter table STUDENTS  
alter column ST\_NAME type varchar(15);  
alter table STUDENTS  
alter column ST\_LAST type varchar(15);  
select ST\_ID,ST\_NAME,ST\_LAST  
FROM STUDENTS;

Lastly,to roll back Interests table I repeat the almost same processes.

User expected to execute following commands to get the initial version of Interests Table.

alter table INTERESTS  
add column interest varchar(15);

alter table INTERESTS  
drop column interests;

insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Tennis');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Literature');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Math');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(2,'Tennis');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(3,'Math');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(3,'Music');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(2,'Football');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(1,'Chemistry');  
insert into INTERESTS (STUDENT\_ID , INTEREST) values(3,'Chess');  
delete from INTERESTS where interest is null;

select\*from INTERESTS;