

DBMS - MINI PROJECT

DOCUMENT MANAGEMENT SYSTEM

DIGILOCKER

Submitted By:

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SECTION:C

ABSTRACT

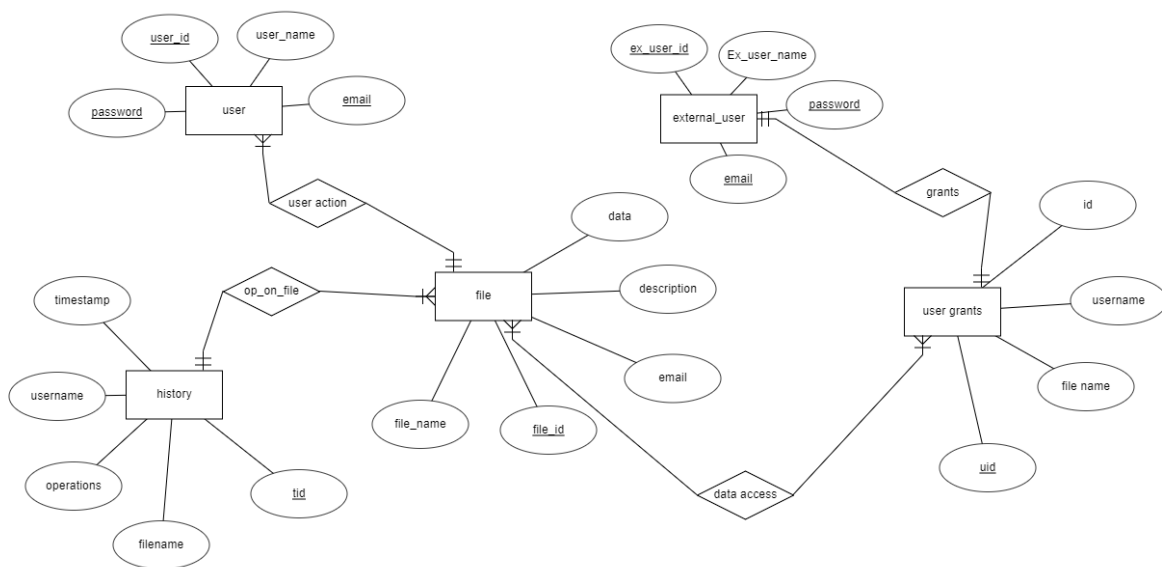
Document management system is a database based on 'Digilocker' application. The user with admin access can enter data and maintain it, while an external user will have access to those files for which the user has granted permission

(based on concept of KYC update where bank authorities have access to view specific files). User is provided with various functionalities such as insert, edit, delete of the data from the database. The User as well as external user can download files from database.

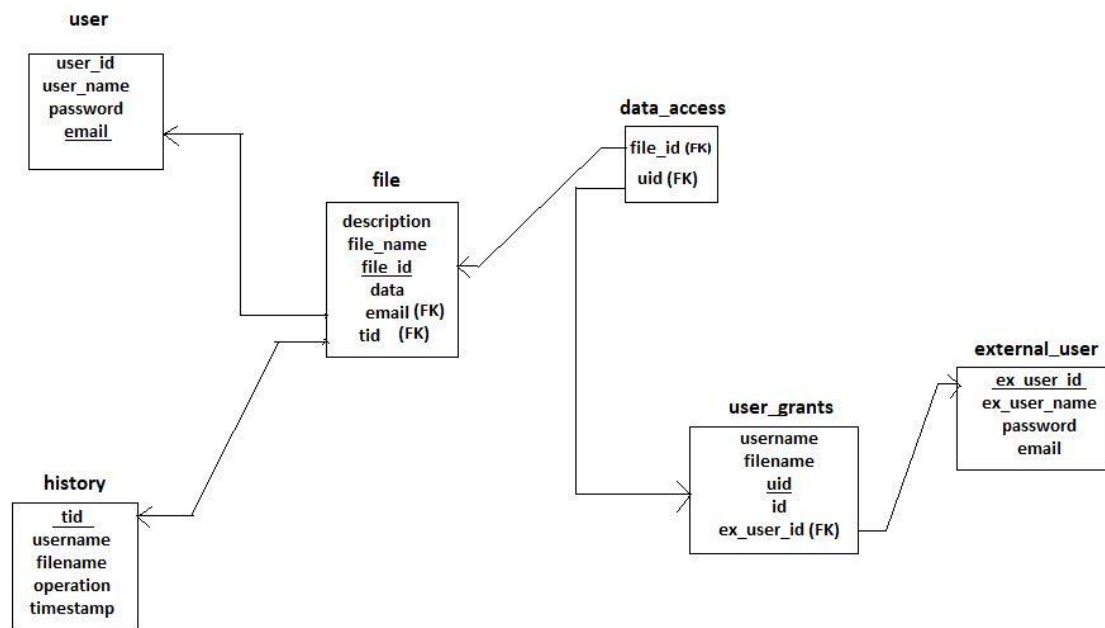
- Documents management system consists of file and user data management.
- The user will be able to upload and enter data to the database using his/her login credentials while an external user will only be able to access the files which the user is allowed to access.

- The external user has to enter his user name and the password provided to login and to download the permitted files they have to enter the key provided by the user.
- The user can add the record, view history of all the data that is uploaded to the file, can manage data upload using the edit, delete and download options provided.
- User can also search for a particular file by entering the file name, which then provides the complete details of the file.
- User can create grants to external users using the grant permission option where the user will be able to select a particular file name and generate a key by encrypting the file id. The key generated can be shared with the external user who can later access that particular file.

ER Diagram



Relational Schema



DDL statements - Building the database

```
CREATE TABLE history
```

```
(
```

```
  uname varchar(50) NOT NULL,
```

```
  finame varchar(50) NOT NULL,
```

```
  action varchar(50) NOT NULL,
```

```
  timestamp INT NOT NULL,
```

```
  tid INT NOT NULL,
```

```
  PRIMARY KEY (tid)
```

```
);
```

```
CREATE TABLE external_user
```

```
(
```

```
  id INT NOT NULL,
```

```
  uname varchar(50) NOT NULL,
```

```
  password INT NOT NULL,
```

```
  email varchar(50) NOT NULL,
```

```
  PRIMARY KEY (id),
```

```
  UNIQUE (password),
```

```
  UNIQUE (email)
```

```
);
```

```
CREATE TABLE user_grants
```

```
(
```

```
  uname varchar(50) NOT NULL,
```

```
  fname varchar(50) NOT NULL,
```

```
  uid INT NOT NULL,
```

```
  id INT NOT NULL,
```

```
  ex_user_id INT NOT NULL,
```

```
  PRIMARY KEY (uid),
```

```
  FOREIGN KEY (ex_user_id) REFERENCES external_user(ex_user_id)
```

```
);
```

```
CREATE TABLE file
```

```
(
```

```
  description varchar(50) NOT NULL
```

```
  file_name varchar(50) NOT NULL
```

```
  file_id INT NOT NULL,
```

```
  data BLOB,
```

```
email varchar(50) NOT NULL

tid INT NOT NULL,

PRIMARY KEY (file_id),

FOREIGN KEY (tid) REFERENCES history(tid)

);

CREATE TABLE data_access

(

file_id INT NOT NULL,

uid INT NOT NULL,

PRIMARY KEY (file_id, uid),

FOREIGN KEY (file_id) REFERENCES file(file_id),

FOREIGN KEY (uid) REFERENCES user_grants(uid)

);

CREATE TABLE user

(

user_id INT NOT NULL,

user_name varchar(50) NOT NULL

password varchar(50) NOT NULL

email varchar(50) NOT NULL

PRIMARY KEY (user_id),

UNIQUE (password),

UNIQUE (email)

);
```

Populating the Database

Table Name: user

```
Insert into user (user_id,user_name,password,email)
values(24,'shaym','123','shaym@gmail.com'),
```

(26,'gautam','245','gautam@gmail.com'),
(29,'supreeth','226','supreeth@gmail.com'),
(31,'binod','672','binod@gmail.com'),
(32,'ram','783','ram@gmail.com'),
(33,'om','234','om@gmail.com');

Table Name: file

Add File Details

File Name

gautam ra

Email

gautamra624@gmail.com

Data

Browse...

PES1.py

Description

first commit

Add Record

Add File Details

File Name

supreeth n p

Email

supreeth@gmail.com

Data

Browse...

ERDPlus.html

Description

first commit

Add Record

Add File Details

File Name

PES1UG20CS151

Email

gautamra624@gmail.com

Data

Browse...

sql review qp.pdf

Description

first commit

Add Record

Add File Details

File Name

PES1UG20CS708

Email

supreeth@gmail.com

Data

Browse...

ON_GRAPH_THEORY_...LICATIONS-1.pdf

Description

first commit

Add Record

Table Name : history

```
Insert into history (uname , fname , action , timestamp , tid)
values('shaym','adhar','FILE INSERTED', ' 2022-11-17 21:42:46',1),
('PES1UG20CS151','PAN CARD','FILE INSERTED', ' 2022-11-17 21:42:49',2),
(' PES1UG20CS708','ID','FILE INSERTED', ' 2022-11-17 21:52:46',3));
```

NOTE: Below mentioned trigger has been added to automatically update history table upon doing following operations (insert, update, delete)to the file table so that there's no need to update history table manually.

Implementation along with screenshot:

DELIMITER \$\$

```
CREATE TRIGGER `DELETE` BEFORE DELETE ON `file` FOR EACH ROW INSERT
INTO history VALUES(null,OLD.fname,OLD.email,'FILE DELETED',NOW())
```

\$\$

DELIMITER ;

DELIMITER \$\$

```
CREATE TRIGGER `Insert` AFTER INSERT ON `file` FOR EACH ROW INSERT INTO
history VALUES(null,NEW.fname,NEW.email,'FILE INSERTED',NOW())
```

\$\$

DELIMITER ;

DELIMITER \$\$

```
CREATE TRIGGER `UPDATE` AFTER UPDATE ON `file` FOR EACH ROW INSERT
INTO history VALUES(null,NEW.fname,NEW.email,'FILE UPDATED',NOW())
```

\$\$

DELIMITER ;

Before operation on file:

```
MariaDB [digilocker]> select * from file;
```

id	fname	data	email	description
7	adhar	s41698-017-0029-7.pdf	supreeth@gmail.com	first commit
8	pan	proj_mod.zip	supreeth@gmail.com	first
9	voter	ERDPlus.html	gautamra624@gmail.com	12
10	results"	Lab-8_Functions and Storedprocedures_Assignment (1).docx	gautamra624@gmail.com	first

```
4 rows in set (0.012 sec)
```

```
MariaDB [digilocker]> select * from history;
```

tid	fname	uname	action	timestamp
10	adhar card	supreeth@gmail.com	FILE INSERTED	2022-11-18 11:10:28
11	pan card	supreeth@gmail.com	FILE INSERTED	2022-11-18 11:10:50
12	voter id	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:11:32
13	results	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:11:54
14	first record	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:13:01
15	adhar	supreeth@gmail.com	FILE UPDATED	2022-11-18 11:13:23
16	pan	supreeth@gmail.com	FILE UPDATED	2022-11-18 11:15:00
17	voter	gautamra624@gmail.com	FILE UPDATED	2022-11-18 11:15:11
18	results"	gautamra624@gmail.com	FILE UPDATED	2022-11-18 11:17:36
19	first record	gautamra624@gmail.com	FILE DELETED	2022-11-18 11:17:50

```
10 rows in set (0.006 sec)
```

Deleting a record from file table: deleting record with

Id=10; file name: results";email:gautamra624@gmail.com

```
MariaDB [digilocker]> delete from file where id = 10;
```

Query OK, 1 row affected (0.004 sec)

```
MariaDB [digilocker]> select * from file;
```

id	fname	data	email	description
7	adhar	s41698-017-0029-7.pdf	supreeth@gmail.com	first commit
8	pan	proj_mod.zip	supreeth@gmail.com	first
9	voter	ERDPlus.html	gautamra624@gmail.com	12

```
3 rows in set (0.001 sec)
```

History table after trigger updating table:

```
MariaDB [digilocker]> select * from history;
```

tid	fname	uname	action	timestamp
10	adhar card	supreeth@gmail.com	FILE INSERTED	2022-11-18 11:10:28
11	pan card	supreeth@gmail.com	FILE INSERTED	2022-11-18 11:10:50
12	voter id	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:11:32
13	results	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:11:54
14	first record	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:13:01
15	adhar	supreeth@gmail.com	FILE UPDATED	2022-11-18 11:13:23
16	pan	supreeth@gmail.com	FILE UPDATED	2022-11-18 11:15:00
17	voter	gautamra624@gmail.com	FILE UPDATED	2022-11-18 11:15:11
18	results"	gautamra624@gmail.com	FILE UPDATED	2022-11-18 11:17:36
19	first record	gautamra624@gmail.com	FILE DELETED	2022-11-18 11:17:50
20	results"	gautamra624@gmail.com	FILE DELETED	2022-11-22 19:01:15

```
11 rows in set (0.001 sec)
```


Table Name: external_user

```
Insert into user (user_id,user_name,password,email)
values(24,'shaym','123','shaym@gmail.com'),
(26,'gautam','245','gautam@gmail.com'),
(29,'supreeth','226','supreeth@gmail.com'),
(31,'binod','672','binod@gmail.com'),
(32,'ram','783','ram@gmail.com'),
(33,'om','234','om@gmail.com');
```

Table Name: user_grants

```
Insert into user (user_id,user_name,password,email)
values('shaym','adhar',21,123,'shaym@gmail.com', 24),
('adithya','id',1,23,'dhanyam@gmail.com', 4),
('ram','pan card',21,123,'aym@gmail.com', 4);
```

Tool Used

Front End : HTML,CSS,JAVASCRIPT,BOOTSTRAP

Back End: MySql (MariaDB) ,PYTHON(FLASK)

Queries

REGULAR JOIN

1. Join the user and file tables to return user_name and filename of user with a particular email

COMMAND:

Select user.email , file.id , file.fname from file

INNER Join user on file.email = user.email;

```
MariaDB [digilocker]> Select user.email , file.id , file.fname from file
-> INNER Join user on file.email = user.email;
+-----+-----+-----+
| email          | id | fname |
+-----+-----+-----+
| supreeth@gmail.com | 7 | adhar |
| supreeth@gmail.com | 8 | pan   |
| gautamra624@gmail.com | 9 | voter |
+-----+-----+-----+
3 rows in set (0.005 sec)
```

2. Displays all the external users who can access particular files from the database based on file_id in the user_grants table.

Command: select file.id , user_grants.username from user_grants

INNER join file on user_grants.id = file.id;

```
on for the right syntax to use near 'INNER join file on user_grants.id = file'
MariaDB [records2]> select file.id , user_grants.username from user_grants
-> INNER join file on user_grants.id = file.id;
+-----+-----+
| id | username |
+-----+-----+
| 7 | Gautam ra |
| 7 | Supreeth |
+-----+-----+
2 rows in set (0.001 sec)
```

NESTED QUERIES

3.Show the names of all usernames associated with files committed by email 'gautamra624@gmail.com' from user table.

Command:

select username from user

where email in (select email from file where email = "gautamra624@gmail.com");

```
MariaDB [records2]> select username from user
-> where email in (select email from file where email = "gautamra624@gmail.com");
+-----+
| username |
+-----+
| Gautam R A |
+-----+
1 row in set (0.001 sec)
```

4.Select all users who have access to download file with name adhar card.

Command: select username from user_grants

where username in (select username from user_grants

where fname ='adhar');

```
MariaDB [digilocker]> select username from user_grants
-> where username in (select username from user_grants
-> where fname ='adhar' );
+-----+
| username |
+-----+
| Gautam R A |
| Supreeth |
+-----+
2 rows in set (0.001 sec)
```

CO RELATED QUERIES

5. Find the details of all files from a specific user.

Command:

select fname from file

where email = (select email from user where email = "gautamra624@gmail.com");

```
MariaDB [records2]> select fname from file
-> where email = (select email from user where email = "gautamra624@gmail.com");
+-----+
| fname |
+-----+
| voter |
| DL" |
| gautam ra |
| PES1UG20CS151 |
+-----+
4 rows in set (0.001 sec)
```

6. Select usernames of all users who have inserted a file into the database.

Command:

select username from user

where email in (select uname from history

where action ='FILE INSERTED');

```

MariaDB [digilocker]> select username from user
-> where email in (select uname from history
-> where action ='FILE INSERTED' );
+-----+
| username |
+-----+
| Supreeth |
| Gautam R A |
+-----+
2 rows in set (0.001 sec)

```

Aggregate Functions

1. Count the number of distinct users grants

Command:

```
select count(distinct(id))
```

```
from user_grants;
```

```

MariaDB [records2]> select count(distinct(id))
-> from user_grants;
+-----+
| count(distinct(id)) |
+-----+
| 3 |
+-----+
1 row in set (0.001 sec)

```

2. Count the number of files in the database

Command:

```
select count(id)
```

```
from file;
```

```

MariaDB [records2]> select count(id)
-> from file;
+-----+
| count(id) |
+-----+
| 7 |
+-----+
1 row in set (0.001 sec)

```

Set Operations

1. Retrieve the username of all users who have inserted and deleted a file from the database.

Command: (select username from user

where email in (select uname from history

where action ='FILE INSERTED'))

UNION

(select username from user

where email in (select uname from history

where action ='FILE UPDATED'));

```
MariaDB [digilocker]> (select username from user
-> where email in (select uname from history
-> where action ='FILE INSERTED' ))
-> UNION
-> (select username from user
-> where email in (select uname from history
-> where action ='FILE UPDATED'));
```

username
Supreeth
Gautam R A

```
2 rows in set (0.004 sec)
```

2.Retreive all the file names which have a view permission granted for the admin user.

Command:

SELECT fname from file INTERSECT SELECT fname from user_grants;

```
MariaDB [digilocker]> SELECT fname from file INTERSECT SELECT fname from user_grants;
```

fname
adhar
pan
voter

```
3 rows in set (0.018 sec)
```

View

A view is created for grants of each file along with information about its filename and information of the user to which the permissions were granted.

Command:

Create view v2 as

(select external_user.id,external_user.username,external_user.email,user_grants.fname

from external_user,user_grants

where external_user.username=user_grants.username);

select * from v2;

```
MariaDB [digilocker]> Create view v2 as
-> ( select external_user.id,external_user.username,external_user.email,user_grants.fname
-> from external_user,user_grants
-> where external_user.username=user_grants.username );
Query OK, 0 rows affected (0.007 sec)

MariaDB [digilocker]> select * from v2;
+-----+-----+-----+-----+
| id | username | email | fname |
+-----+-----+-----+-----+
| 13 | Gautam R A | gautamra624@gmail.com | adhar |
| 14 | Supreeth | supreeth@gmail.com | adhar |
| 13 | Gautam R A | gautamra624@gmail.com | pan |
| 14 | Supreeth | supreeth@gmail.com | pan |
| 13 | Gautam R A | gautamra624@gmail.com | voter |
| 14 | Supreeth | supreeth@gmail.com | voter |
+-----+-----+-----+-----+
6 rows in set (0.002 sec)
```

Triggers (Functions or Procedures)

Create a Function or a Procedure. State the objective of the function / Procedure. Run and display the results.

- Function named grant_per_user() calculates the grants for the specific user provided as input.
- The parameters passed to the function is the varchar containing username to which the grants have to be calculated.
- The user_grants table contains the username for every file we find count of each username using the count function.

Command:

DELIMITER \$\$

DELIMITER \$\$

CREATE FUNCTION grant_per_user(user_name varchar(30))

RETURNS int

BEGIN

DECLARE count_files int;

```
select count(*) into count_files from user_grants where username like user_name
```

```
RETURN count_files;
```

```
END; $$
```

DELIMITER ;

OUTPUT:

```
MariaDB [digilocker]> DELIMITER $$
MariaDB [digilocker]> CREATE FUNCTION grant_per_user(user_name varchar(30))
  -> RETURNS FLOAT(10,2)
  -> DETERMINISTIC
  -> BEGIN
  -> DECLARE count_files FLOAT(10,2);
  -> select count(*) into count_files from user_grants where user_grants.username like user_name;
  -> RETURN count_files;
  -> END; $$
Query OK, 0 rows affected (0.011 sec)
```

EXTERNAL USER:

```
MariaDB [digilocker]> select * from external_user;
```

id	username	email	password
13	Gautam R A	gautamra624@gmail.com	pbkdf2:sha256:260000\$MegHcwXABDeoCPXL\$0960916b65e674369a6cc99bf4ea53fee9a7c499698b34a77bafd6055be4166c
14	Supreeth	supreeth@gmail.com	pbkdf2:sha256:260000\$zNd4r7f1QikXnLCh\$82c4d5b1ece88cd2b1312332e522e2075be4e66181e405d1904cc21fce282b48

```
2 rows in set (0.001 sec)
```

USER GRANTS:

```
MariaDB [digilocker]> select * from user_grants;
```

id	uid	username	fname
7	23	Gautam R A	adhar
7	24	Supreeth	adhar
8	25	Gautam R A	pan
8	26	Supreeth	pan
9	27	Gautam R A	voter
9	28	Supreeth	voter
8	29	Gautam R A	pan

```
7 rows in set (0.001 sec)
```

```
MariaDB [digilocker]> _
```

CALLING THE FUNCTION:

```

Database changed
MariaDB [digilocker]> select grant_per_user("Gautam R A");
+-----+
| grant_per_user("Gautam R A") |
+-----+
| 4.00 |
+-----+
1 row in set (0.004 sec)

MariaDB [digilocker]> select grant_per_user("Supreeth");
+-----+
| grant_per_user("Supreeth") |
+-----+
| 3.00 |
+-----+
1 row in set (0.001 sec)

MariaDB [digilocker]>

```

Developing a Frontend

Addition, Modification and Deletion of records

HOME PAGE



USER SIGN UP/ LOGIN PAGE

LOGIN

Logout SuccessFul

Email address

Gautam R A

Password

...

Login

New User?

Signup

SIGN UP

UserName

Email address

Password

Sign In

Already User?

Login

CRUD OPERATIONS FOR FILE TABLE

Add File Details


File Name

Email

Data

Description

[Add Record](#)

 Digilocker

Edit Details

File Name

Insert your file

Description

[Submit](#)

->delete operation can be executed on clicking delete button

File Details

Login Success

File ID	File Name	Email	Data	DESCRIPTION	EDIT	DELETE	DOWNLOAD
7	adhar	supreeth@gmail.com	b's41698-017-0029-7.pdf'	first commit	Edit	Delete	DOWNLOAD
8	pan	supreeth@gmail.com	b'proj_mod.zip'	first	Edit	Delete	DOWNLOAD
9	voter	gautamra624@gmail.com	b'ERDPlus.html'	12	Edit	Delete	DOWNLOAD

HISTORY/TRIGGER

Files Triggers Records

TID	FILE NAME	EMAIL	ACTION	TIMESTAMP
10	adhar card	supreeth@gmail.com	FILE INSERTED	2022-11-18 11:10:28
11	pan card	supreeth@gmail.com	FILE INSERTED	2022-11-18 11:10:50
12	voter id	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:11:32
13	results	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:11:54
14	first record	gautamra624@gmail.com	FILE INSERTED	2022-11-18 11:13:01
15	adhar	supreeth@gmail.com	FILE UPDATED	2022-11-18 11:13:23
16	pan	supreeth@gmail.com	FILE UPDATED	2022-11-18 11:15:00
17	voter	gautamra624@gmail.com	FILE UPDATED	2022-11-18 11:15:11
18	results"	gautamra624@gmail.com	FILE UPDATED	2022-11-18 11:17:36
19	first record	gautamra624@gmail.com	FILE DELETED	2022-11-18 11:17:50

VIEW RECORDS

File Details

File ID	File Name	Email	Data	DESCRIPTION	EDIT	DELETE	DOWNLOAD
7	adhar	supreeth@gmail.com	b's41698-017-0029-7.pdf'	first commit	Edit	Delete	DOWNLOAD
8	pan	supreeth@gmail.com	b'proj_mod.zip'	first	Edit	Delete	DOWNLOAD
9	voter	gautamra624@gmail.com	b'ERDPlus.html'	12	Edit	Delete	DOWNLOAD
10	results"	gautamra624@gmail.com	b'Lab-8_Functions and Storedprocedures_Assignment (1).docx'	first	Edit	Delete	DOWNLOAD

GRANT PERMISSION

This functionality enables the user to grant external user the access the specific record, procedure for granting permission

Step 1: User must enter filename , and the username of the user for whom the permissions have to be granted.

Grant Permissions

Enter Your Username

Gautam R A

Enter Your Filename

adhar

Grant Permission

Permissions

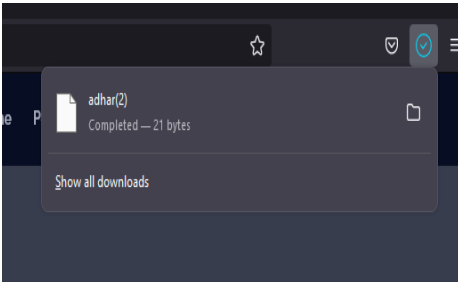
• Key : #dig\$7\$a\$a

Step 2: If the user enters the encrypted key in the grant permission option in the external user portal they will be granted access for the specific file. (if access granted file will be downloaded)

Enter Key

#dig\$7\$a\$a

Download



2. There should be a window to accept and run any SQL statement and display the result

INPUT QUERY RESULT

Displays all the external users who can access particular files from the database based on file_id in the user_grants table.

Command: select file.id , user_grants.username from user_grants

INNER join file on user_grants.id = file.id;

Enter query

select file.id , user_grants.username from user_grant

Search

OUTPUT:

```
[{ 'id': 7, 'username': 'Gautam R A'}, { 'id': 7, 'username': 'Supreeth'},  
{ 'id': 8, 'username': 'Rakshith'}, { 'id': 7, 'username': 'Gautam R A' }]
```