Database Term Project
Market Place for File Sharing

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Category

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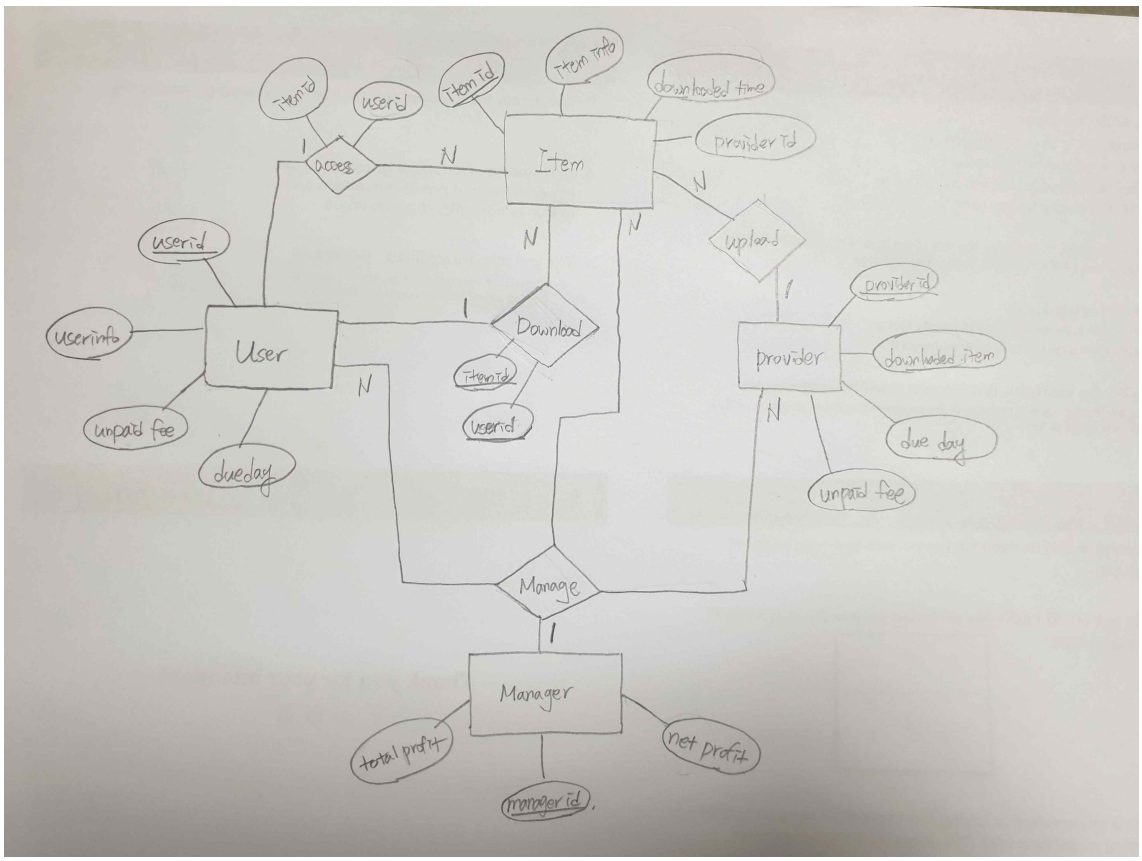
1. Schema diagram using E-R model

First of all, the E-R diagram I designed is as follows.



I describe diagram with a big emphasis on four items user, provider, manager, ite m,

User table has primary key id, which identifies user, user information (name, ad dress, phone number...), unpaid amount and due day respectively.

Provider table has information about the number of downloads of the primary ke y id, which identifies provider, provider information, unpaid amount, dueday, and uploaded item.

Item table has its own primary key (id), the uploaded provider's id, and the infor mation and number of times it has been downloaded.

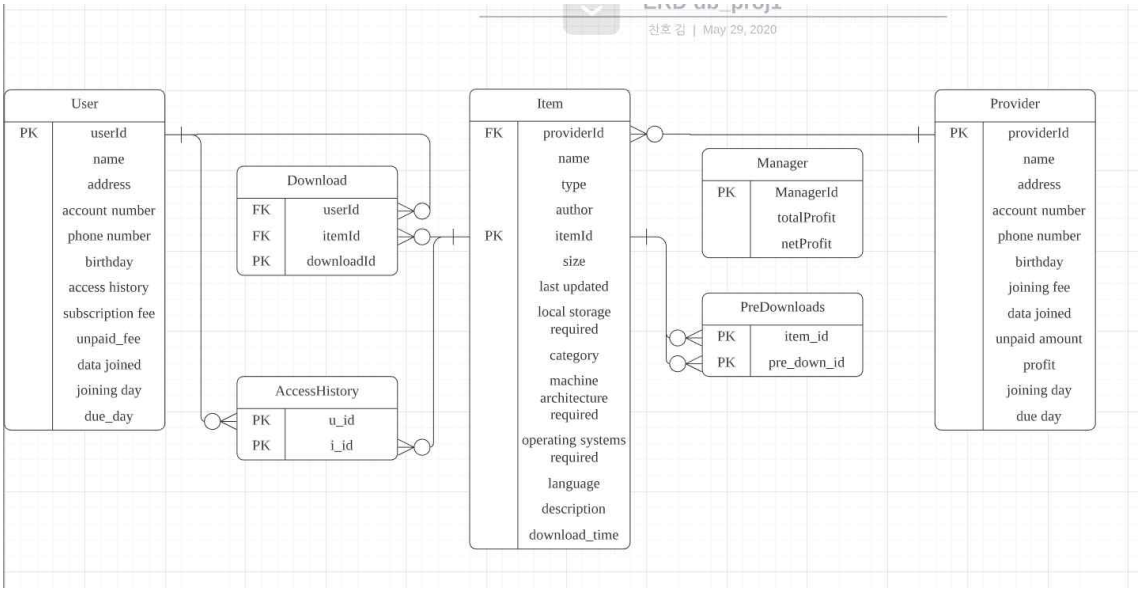
The Manager has a relationship that manages all users, providers, and items. He re, since Manager 1 manages all the data, a 1:N relationship is created.

User can access and download the item respectively, and this is indicated as a r

elationship. Since users can access and download various items, a 1:N relationship is created.

Upload indicated a relationship in which the item can be uploaded. Since one pr ovider can upload multiple items, it shows a 1:N relationship.

2. List of attributes of each entity and relationship



1. User Entity -> Table for user information. User table has basic information of t he user, data download count, subscription fee, and payment date etc.

2. Provider Entity -> Table to indicate information about Provider. Similar to User, Table has basic information on Provider, the number of data uploaded, and the a mount to be paid, and information on payment date, revenue, etc.

3. Item Entity -> Table to indicate information about the Item. Item table contains information such as various needs, capacity, id of uploaded provider, number of d ownloads, category, etc.

4. Manager Entity -> Table created to represent the information of Manager. Mana ger table contains information Total profit and Net profit. The information on the Net profit is profit that difference between the total profile and the amount to be p aid to the provider.

5. Download Entity -> When a user downloads a specific item, the id of the user a nd the id of the item are saved.

6. Access History -> When a user views a specific item in detail, the id of the use r and the id of the item are saved.

7. preDownload -> contains information about prior programs to be downloaded w hen an item is downloaded or executed later.

The relationship of additional tables is as follows:

First, for Download entity and Access History entity, refer to userId of User entit y and itemId of Item entity respectively. At this time, there is only one foreign key for the Download entity and the Access History entity, respectively, in the originall y referenced table. Therefore, one to one relationship is created. In the opposite c ase, userId and itemId can appear on the Download entity or Access History entity several times, so they have a relationship of 0 or Many.

If you look at Item Entity and Provider Entity, one provider can upload multiple i tems, while the other item has only one provider id.

For preDownload, there may be several itemIds for each. Conversely, the Item ta ble should match only one data.

If you look at the attribute for each entity,

The first user entity has a total of 12 attributes, including userId, name, addres s, account number, phone number, birthday, access history, subscription fee, unpa id fee, data joined, joining day, and due day.

1. userId -> ID that distinguishes users (Primary Key)
2. name -> user's name
3. address -> user's address
4. account number -> account number of user
5. phone number -> user’s phone number
6. birthday -> user's birthday
7. access history -> user access records
8. subscription fee -> subscription fee (30000 per month fixed)
9. unpaid fee -> the amount due to be paid to the manager
10. data_joined -> number of downloads
11. joining day -> subscription date
12. due day -> payment date

In the second Provider entity, 12 attributes of providerId, name, address, accoun t number, phone number, birthday day, joining fee, data joined, unpaid fee, accou nt, joining day, and due date were recorded.

1. providerId -> ID that distinguishes provides (Primary Key)
2. name -> provider's name
3. address -> provider’s address

4. account number -> provider's account number
5. phone number -> provider's phone number
6. birthday -> provider's birthday
7. joining fee -> provider's joining fee
8. data joined -> number of downloads of items uploaded by provider
9. unpaid amount -> provider's amount of unpaid fee
10. profit -> provider's profit
11. joining fee -> provider's joining day
12. due day -> provider's payment day

third Item Entity has attributes provider Id, name, type, author, itemId, size, last _updated, local storage required, machine required, os required, language, descript ion, download_time and the following features are recorded.

1. providerId -> provider id of uploader
2. name -> item's name
3. type -> item's type(category)
4. author -> item's author
5. itemId -> item's Unique id
6. last_updated -> last updated day of item
7. local storage required -> item's required local storage
8. machine required -> item's required machine
9. os required -> item's required Operating System
10. language -> item's language
11. description -> short description
12. download_time -> item's downloaded time

The predownload table stores item id and predownload item id.

Download table stores id of user and downloaded item.

The access history stores the id of the user who approached and the id of the it em that was accessed.

Finally, the Manager table stores net profit and total profit.

*** Other additional set values ***

1. All users and providers pay the manager a fixed fee for the due day every mo nth. Set to (30000) (this implemented in mysql events)

2. Certain users can download items at any time. Downloading an item increases t he number of downloads for the item.

3. For all users and providers, after due day, the unpaid fee increases by 30000. User and provider can always pay to the manager the remaining costs after log in. And every time user downloads, the manager gets a profit of 10000 and pays Provi der a profit in proportion to the size.

4. When the provider uploads the item, it pays the manager an amount proportion al to the capacity.

5. All due days automatically increase by one month in duration.

3. DDL statements

show table in 'db2016310526' contains the following information.

```
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [db2016310526]> show tables;
+------------------------+
| Tables_in_db2016310526 |
+------------------------+
| AccessHistory          |
| Downloads              |
| Items                  |
| Manager                |
| Providers              |
| Users                  |
| preDownloads           |
+------------------------+
7 rows in set (0.01 sec)

MariaDB [db2016310526]>
```

The information in each table is as follows.

```
MariaDB [db2016310526]>
MariaDB [db2016310526]>
MariaDB [db2016310526]> desc AccessHistory;
+------------+------------------+------+-----+---------+----------------+
| Field      | Type             | Null | Key | Default | Extra          |
+------------+------------------+------+-----+---------+----------------+
| history_Id | int(10) unsigned | NO   | PRI | NULL    | auto_increment |
| user_id    | int(10) unsigned | NO   | MUL | NULL    |                |
| item_id    | int(10) unsigned | NO   | MUL | NULL    |                |
+------------+------------------+------+-----+---------+----------------+
3 rows in set (0.00 sec)
```

```
MariaDB [db2016310526]> desc Downloads;
+------------+------------------+------+-----+---------+----------------+
| Field      | Type             | Null | Key | Default | Extra          |
+------------+------------------+------+-----+---------+----------------+
| downloadId | int(10) unsigned | NO   | PRI | NULL    | auto_increment |
| u_Id       | int(10) unsigned | NO   | MUL | NULL    |                |
| i_Id       | int(10) unsigned | NO   | MUL | NULL    |                |
+------------+------------------+------+-----+---------+----------------+
3 rows in set (0.00 sec)
```

```
MariaDB [db2016310526]> desc Items;
+------------------------------+------------------+------+-----+---------+----------------+
| Field                        | Type             | Null | Key | Default | Extra          |
+------------------------------+------------------+------+-----+---------+----------------+
| itemId                       | int(10) unsigned | NO   | PRI | NULL    | auto_increment |
| p_Id                         | int(10) unsigned | NO   | MUL | NULL    |                |
| name                         | varchar(32)      | NO   |     | NULL    |                |
| type                         | varchar(32)      | NO   |     | NULL    |                |
| author                       | varchar(32)      | YES  |     | NULL    |                |
| size                         | int(32)          | NO   |     | NULL    |                |
| last_updated                 | date             | NO   |     | NULL    |                |
| local_storage_required       | int(32)          | NO   |     | NULL    |                |
| machine_architecture_required | varchar(32)     | YES  |     | NULL    |                |
| operating_systems_required   | varchar(32)      | YES  |     | NULL    |                |
| language                     | varchar(20)      | YES  |     | NULL    |                |
| description                  | varchar(5000)    | NO   |     | NULL    |                |
| downloaded_time              | int(32)          | YES  |     | 0       |                |
+------------------------------+------------------+------+-----+---------+----------------+
13 rows in set (0.00 sec)

MariaDB [db2016310526]>
```

```
MariaDB [db2016310526]> desc Manager;
+-------------+---------+------+-----+---------+-------+
| Field       | Type    | Null | Key | Default | Extra |
+-------------+---------+------+-----+---------+-------+
| managerId   | int(11) | NO   | PRI | 1       |       |
| totalProfit | int(11) | YES  |     | 0       |       |
| netProfit   | int(11) | YES  |     | 0       |       |
+-------------+---------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

```
MariaDB [db2016310526]> desc Providers;
+----------------+------------------+------+-----+---------+----------------+
| Field          | Type             | Null | Key | Default | Extra          |
+----------------+------------------+------+-----+---------+----------------+
| providerId     | int(10) unsigned | NO   | PRI | NULL    | auto_increment |
| name           | varchar(32)      | NO   |     | NULL    |                |
| address        | varchar(20)      | NO   |     | NULL    |                |
| account_number | int(20)          | NO   |     | NULL    |                |
| phone_number   | varchar(20)      | NO   |     | NULL    |                |
| birthday       | date             | NO   |     | NULL    |                |
| joining_fee    | int(20)          | YES  |     | 30000   |                |
| data_joined    | int(20)          | NO   |     | 0       |                |
| unpaid_amount  | int(20)          | YES  |     | 0       |                |
| providerProfit | int(20)          | YES  |     | 0       |                |
| joining_day    | date             | NO   |     | NULL    |                |
| due_day        | date             | YES  |     | NULL    |                |
+----------------+------------------+------+-----+---------+----------------+
12 rows in set (0.00 sec)
```

```
MariaDB [db2016310526]> desc Users;
+------------------+------------------+------+-----+---------+----------------+
| Field            | Type             | Null | Key | Default | Extra          |
+------------------+------------------+------+-----+---------+----------------+
| userId           | int(10) unsigned | NO   | PRI | NULL    | auto_increment |
| name             | varchar(32)      | NO   |     | NULL    |                |
| address          | varchar(32)      | NO   |     | NULL    |                |
| phone_number     | varchar(20)      | NO   |     | NULL    |                |
| birthday         | date             | YES  |     | NULL    |                |
| access_history   | date             | YES  |     | NULL    |                |
| subscription_fee | int(20)          | YES  |     | 30000   |                |
| unpaid_fee       | int(20)          | YES  |     | 0       |                |
| data_joined      | int(20)          | NO   |     | 0       |                |
| account_number   | int(20)          | YES  |     | NULL    |                |
| joining_day      | date             | NO   |     | NULL    |                |
| due_day          | date             | YES  |     | NULL    |                |
+------------------+------------------+------+-----+---------+----------------+
12 rows in set (0.00 sec)
```

```
MariaDB [db2016310526]> desc preDownloads;
+-------------+------------------+------+-----+---------+-------+
| Field       | Type             | Null | Key | Default | Extra |
+-------------+------------------+------+-----+---------+-------+
| item_id     | int(10) unsigned | NO   | PRI | NULL    |       |
| pre_down_id | int(10) unsigned | NO   | PRI | NULL    |       |
+-------------+------------------+------+-----+---------+-------+
2 rows in set (0.00 sec)

MariaDB [db2016310526]>
```

And the DDL query, each creating a table, is as follows.

```
CREATE TABLE Users
(userId      int(10) unsigned NOT NULL auto_increment,
 name        varchar(32) NOT NULL,
 address     varchar(32) NOT NULL,
 phone_number   varchar(20) NOT NULL,
 birthday   date DEFAULT NULL,
 access_history      date DEFAULT NULL,
 subscription_fee   int(20) DEFAULT 30000,
 unpaid_fee          int(20) DEFAULT 0,
 data_joined         int(20) NOT NULL DEFAULT 0,
 account_number      int(20) DEFAULT NULL,
 joining_day         date NOT NULL,
 due_day             date DEFAULT NULL,
```

```
  PRIMARY KEY (userId)
);

CREATE TABLE Providers (
  providerId int(10) unsigned NOT NULL AUTO_INCREMENT,
  name varchar(32) NOT NULL,
  address varchar(20) NOT NULL,
  account_number int(20) NOT NULL,
  phone_number varchar(20) NOT NULL,
  birthday date NOT NULL,
  joining_fee int(20) DEFAULT 30000,
  data_joined int(20) NOT NULL DEFAULT 0,
  unpaid_amount int(20) DEFAULT 0,
  providerProfit int(20) DEFAULT 0,
  joining_day date NOT NULL,
  due_day date DEFAULT NULL,
  PRIMARY KEY (providerId)
);

CREATE TABLE Items (
  itemId int(10) unsigned NOT NULL AUTO_INCREMENT,
  p_Id int(10) unsigned NOT NULL,
  FOREIGN KEY(p_Id)
  REFERENCES Providers(providerId) ON UPDATE CASCADE ON DELETE CASCADE,
  name varchar(32) NOT NULL,
  type varchar(32) NOT NULL,
  author varchar(32) DEFAULT NULL,
  size int(32) NOT NULL,
  last_updated date NOT NULL,
  local_storage_required int(32) NOT NULL,
  machine_architecture_required varchar(32) DEFAULT NULL,
  operating_systems_required varchar(32) DEFAULT NULL,
  language varchar(20) DEFAULT NULL,
  description varchar(5000) NOT NULL,
  downloaded_time int(32) DEFAULT 0,
  PRIMARY KEY (itemId)
);

create table Downloads (
  downloadId INT unsigned NOT NULL AUTO_INCREMENT,
```

```
  u_Id INT unsigned NOT NULL,
  FOREIGN KEY(u_Id)
  REFERENCES Users(userId) ON DELETE CASCADE,

  i_Id INT unsigned NOT NULL,
  FOREIGN KEY(i_Id)
  REFERENCES Items(itemId) on delete cascade,
  PRIMARY KEY (downloadId)
);

create table preDownloads
(
    item_id INT unsigned NOT NULL,
    pre_down_id INT unsigned NOT NULL,

    primary key(item_id, pre_down_id),
    foreign key(item_id)  references Items(itemId)
      on delete cascade,
    foreign key(pre_down_id) references Items(itemId) on delete cascade
);

create table AccessHistory
(
    history_Id INT unsigned not null AUTO_INCREMENT,
    user_id INT unsigned NOT NULL,
    item_id INT unsigned NOT NULL,

    primary key(history_Id),
    foreign key(item_id)  references Items(itemId)
      on delete cascade,
    foreign key(user_id) references Users(userId)
      on delete cascade
);

create table Manager(
  managerId INT NOT NULL DEFAULT 1,
  totalProfit INT DEFAULT 0,
  netProfit INT DEFAULT 0,
  PRIMARY KEY(managerId)
);
```

4. Triggers and events and some DML statements

Total three triggers and two events have been set up for this project.

Triggers.

```
delimiter //
create trigger update_downloads
        after insert on Downloads
        for each row
        begin
                update Users set data_joined = data_joined + 1
                where userId = new.u_Id;

                update Manager set totalProfit = totalProfit + 10000;
                update Manager set netProfit = totalProfit - 5000;

                update Providers set data_joined = data_joined + 1
                where providerId =
                (select p_Id from Items where new.i_Id = Items.itemId);

                update Providers set providerProfit = providerProfit + 5000
                where providerId =
                (select p_Id from Items where new.i_Id = Items.itemId);
        end //
delimiter ;
```

The first trigger increases the manager's revenue when the user downloads and in creases the provider's download count by 1. And adds provider's fixed revenue by 5000.
(Additional revenue from capacity was operated by executing query within Java cod e.)

```
delimiter //
create trigger update_user
        after insert on Users
        for each row
        begin
                update Manager set totalProfit = totalProfit + 30000;
                update Manager set netProfit = netProfit + 30000;
        end //
delimiter ;
```

```
delimiter //
create trigger update_provider_Profits
        after insert on Providers
        for each row
        begin
                update Manager set totalProfit = totalProfit + 30000;
                update Manager set netProfit = netProfit + 30000;
        end //
delimiter ;
```

The second trigger and the third trigger, respectively, increased fixed subscription costs to the manager's revenue when the user and provider were newly registered.

Events.

```
delimiter //
create event if not exists update_due_day
    on schedule every 1 day
    starts now()
    on completion preserve enable
    do
    begin
        update Providers
        set unpaid_amount = unpaid_amount + 30000
        where due_day = curdate();
        update Providers
        set due_day = date_add(due_day, interval 1 month)
        where due_day = curdate();
    end//
delimiter ;

delimiter //
create event if not exists update_due_day_user
    on schedule every 1 day
    starts now()
    on completion preserve enable
    do
    begin
        update Users
        set unpaid_fee = unpaid_fee + 30000
        where due_day = curdate();
        update Users
        set due_day = date_add(due_day, interval 1 month)
        where due_day = curdate();
    end//
delimiter ;
```

Each set up an event that runs every day, so if the user or provider's due day is today, it increased the unpaid fee by 30000 and changed the due day back by a month.
(The trigger and event code have been added to DDL.sql)

DML query running within Java code

```
ResultSet rset = stmt.executeQuery(
        "select * from preDownloads where item_id = '"+item_id+"'");

while(rset.next()){
    System.out.printf("recommend to down: %d\n", rset.getInt(2));
}
```

If user selects the preDownload item check before download, item ids that need pr edownload from the predownload table are brought.

```
size_ = size_*500;
result = stmt.executeUpdate("update Users set unpaid_fee = unpaid_fee + '"+size_+"' where userId='"+uid+"'");

if(result >0)  System.out.println("unpaid amount is increase " + size_);
else{
    System.out.println("Pay Failed");
    System.exit(0);
}

rset = stmt.executeQuery("select p_Id from Items where itemId ='"+down_id+"'");
int pid = 0;
while(rset.next()){
    pid = rset.getInt(1);
}
result = stmt.executeUpdate("update Providers set providerProfit = providerProfit +'" + size_+"' where providerId ='"+
```

And when the download occurs, the user is required to pay additional cost based on capacity, and the provider is given additional cost based on capacity.

```
int pay_left = unpaid_fee - pay;

int result = stmt.executeUpdate("update Users set unpaid_fee = unpaid_fee - '"+pay+"' where userId='"+uid+"'");

if(result >0)  System.out.println("unpaid amount is " + pay_left);
else{
    System.out.println("Pay Failed");
    System.exit(0);
}

result = stmt.executeUpdate("update Manager set totalProfit = totalProfit + '" +pay+"'");
result = stmt.executeUpdate("update Manager set netProfit = netProfit + '" +pay+"'");
```

And when the user proceeded with the pay, the unpaid charge minus the payment fee was reset to the unpaid charge, and the manager's profile was increased by th e payment fee. (Provider Common)

```
result = stmt.executeUpdate("update Providers set unpaid_amount = unpaid_amount +'" + fee+"' where providerId ='"

if(result >0){
    ResultSet rset = stmt.executeQuery(
        "select itemId from Items where p_Id = '"+pid+"' and name = '"+name+"'");

        while(rset.next()){
            _item_id = rset.getInt(1);
            System.out.printf("upload success, your item_id is %d ~\n", rset.getInt(1));
        }
}
else{
    System.out.println("upload fail...");
}

System.out.print("Do you want to make predownload list? [y/n] :");
String choice = br.readLine();

if(choice.equals("y") || choice.equals("Y")){
    System.out.print("how much item you want to upload predownload: ");
    String _input = br.readLine();
    int num = Integer.parseInt(_input);
    for(int i =0; i <num; i++){
        System.out.print("Enter predown item id: ");
        String _id = br.readLine();
        int id = Integer.parseInt(_id);
        result = stmt.executeUpdate(
            "insert into preDownloads(item_id, pre_down_id) values('"+_item_id+"','"+id+"')");
```

And when the provider upload was in progress, we had the manager pay the additi onal upload cost based on capacity, and if the preDownload item exists, we had th e ability to add it to the predownload item as a query.

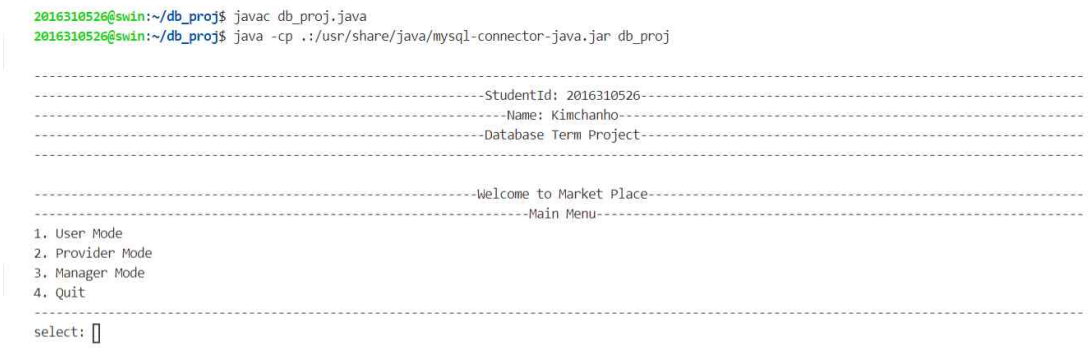
```
System.out.print("Do you want to delete providers with total 5 downloads or less? [y/n]: ");
String choice = br.readLine();

if(choice.equals("y") || choice.equals("Y")){
    System.out.print("Drop prividerId: ");
    choice = br.readLine();
    int del_id = Integer.parseInt(choice);

    int result = stmt.executeUpdate("delete from Providers where providerId ='"+del_id+"'");
    if(result >0)   System.out.println("drop success");
    else{
        System.out.println("drop failed");
    }
}
```

In Manager mode add a case that check download time by each provider and rem ove the provider

5. Screen shots of your system and user manual for each function



The initial interfaces are as follows: User Mode, Provider Mode, and Manager Mod e.
From User Mode,

There are total eight options. Except User Enrollment and Return to Main Menu, it is possible to select after log in.

User enrolment is carried out as follows:

```
select: 1
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-------------------------------------------------------------User Enroll-------------------------------------------------------------
name: Kim
address: Suwon
phone number: 01023234545
account number: 11111111
today(for joining day): 2020-05-29
Congratulations! Enrollment Success
-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------

------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
--------------------------------------------------------------User Mode--------------------------------------------------------------
1. User Enrollment
2. User Delete
3. Show Items
4. Sign up
5. Sign out
6. Downloads Item
7. Pay Subscription Fee
```

After entering a few user information and completing the registration, the user is automatically logged in with the corresponding ID. In the case of log in, it is imple mented so that id can be entered through Sign up.

```
------------------------------------------------------------------------------------------------------------------------------------------

select: 4
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-------------------------------------------------------------User Signup-------------------------------------------------------------
1. log in with user id
2. Fine user id with Sign in name
select: 2
User name: Kaka
Your user id is    28 ~
-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------

------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-------------------------------------------------------------User Signup-------------------------------------------------------------
1. log in with user id
2. Fine user id with Sign in name
select: 1
User id: 28
welcome       Kaka ~
------------------------------------------------------------------------------------------------------------------------------------------

------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
--------------------------------------------------------------User Mode--------------------------------------------------------------
1. User Enrollment
2. User Delete
3. Show Items
```

Because user id is set to PK, it can be identified only by user id. Therefore, the fu nction to find id with signup user name is also implemented.

Select Show Items to show information of the item by category. The first screen is the files in the program category, and when you press next, the category is passed in order of videooclip -> soundclip -> document -> image. Prev turns in the oppos ite direction. If you select check more information,

```
select: 3
-------------------------------------------------------------Welcome to Market Place-------------------------------------------------------------
-----------------------------------------------------------------Item List-----------------------------------------------------------------
------------------------------------------------------------ program------------------------------------------------------------
 [item_id]          [item_name] [item_type] [item_size]  [storage_size]                                [description]
        32                Java     program         10             50                          java programming tools
        33           JavaTools     program          5             25                                    Java tools
        35          Cprograming    program        100            300                                CprogrammingTool
-------------------------------------------------------------------------------------------------------------------------------------------

1. prev
2. next
3. check more information
4. Quit
-------------------------------------------------------------------------------------------------------------------------------------------

select: 2
-------------------------------------------------------------Welcome to Market Place-------------------------------------------------------------
-----------------------------------------------------------------Item List-----------------------------------------------------------------
-----------------------------------------------------------videoclip-----------------------------------------------------------
 [item_id]          [item_name] [item_type] [item_size]  [storage_size]                                [description]
-------------------------------------------------------------------------------------------------------------------------------------------

1. prev
```

```
6. Downloads Item
7. Pay Subscription Fee
8. Return to Main menu
-------------------------------------------------------------------------------------------------------------------------------------------

select: 6
-------------------------------------------------------------Welcome to Market Place-------------------------------------------------------------
-----------------------------------------------------------------User Download-----------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------------------------------
1. Show Item List with short description
2. Check preDownload items
3. Download items
4. Quit
-------------------------------------------------------------------------------------------------------------------------------------------

select: 1
-------------------------------------------------------------Welcome to Market Place-------------------------------------------------------------
-----------------------------------------------------------------Item List-----------------------------------------------------------------
------------------------------------------------------------ program------------------------------------------------------------
 [item_id]          [item_name] [item_type] [item_size]  [storage_size]                                [description]
        32                Java     program         10             50                          java programming tools
        33           JavaTools     program          5             25                                    Java tools
        35          Cprograming    program        100            300                                CprogrammingTool
-------------------------------------------------------------------------------------------------------------------------------------------

1. prev
2. next
```

The details of the item can be printed as follows.

```
select: 3
-------------------------------------------------------------Welcome to Market Place-------------------------------------------------------------
-----------------------------------------------------------------Item List-----------------------------------------------------------------
------------------------------------------------------------ program------------------------------------------------------------
 [item_id]          [item_name] [item_type] [item_size]  [storage_size]                                [description]
        37           Galaxy App    program          5             25                this is the mobile app for android
-------------------------------------------------------------------------------------------------------------------------------------------

1. prev
2. next
3. check more information
4. Quit
-------------------------------------------------------------------------------------------------------------------------------------------

select: 3
check y if you want more information [y/n]: y
which item you want to check(item id): 37
-------------------------------------------------------------------------------------------------------------------------------------------

 [item_id]          [item_name] [item_size]  [storage_size]       [machine]           [Os]                                [description]
        37           Galaxy App          5             25            NONE           NONE                this is the mobile app for android
-------------------------------------------------------------------------------------------------------------------------------------------

-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------
```

If you look at the download item, there is choice 1 where you can see the item wit h a short description, choice 2 to check if there is a pre-download item, and choi ce 3 to download.

```
select: 2
which item you want to check: 33
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-----------------------------------------------------------Check preDownloads-----------------------------------------------------------
-----------------------------------------------------------------------------------------------------------------------------------------------
```

(The pre-download item is not currently up and has not been printed.)

```
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-------------------------------------------------------------User Download-------------------------------------------------------------
-----------------------------------------------------------------------------------------------------------------------------------------------
1. Show Item List with short description
2. Check preDownload items
3. Download items
4. Quit
-----------------------------------------------------------------------------------------------------------------------------------------------

select: 3
which item you want to Download(item id needed): 33
download success!
unpaid amount is increase 2500
AccessHistory updated
```

Finally, if you select the download item, the download will proceed with the inform ation of the userId currently logged in and itemId selected. Here the basic cost of the item is 5000, and an additional amount is paid in proportion to the capacity.

The user pay item prints the unpaid fee that is first recorded in the id. If you ent er the amount here, the difference is stored in the unpaid fee and the amount pai d by the manager's revenue is added.

```
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
--------------------------------------------------------------User Signup--------------------------------------------------------------
User id: 25
welcome       Kim ~
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
--------------------------------------------------------------User Mode----------------------------------------------------------------
1. User Enrollment
2. User Delete
3. Show Items
4. Sign up
5. Sign out
6. Downloads Item
7. Pay Subscription Fee
8. Return to Main menu
-----------------------------------------------------------------------------------------------------------------------------------------------

select: 7
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
--------------------------------------------------------------User PayFee--------------------------------------------------------------
How much you want to pay? your unpaid fee is 32500
30000
unpaid amount is 2500
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
--------------------------------------------------------------User Mode----------------------------------------------------------------
1. User Enrollment
2. User Delete
3. Show Items
4. Sign up
5. Sign out
```

Check provider mode

```
4. Quit
--------------------------------------------------------------------------------------------------------------------------------------------
select: 2
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Mode-------------------------------------------------------------
1. Provider Enrollment
2. Provider Delete
3. Show your items
4. Sign up
5. Sign out
6. Uploads item
7. Pay fee to Manager
8. Show my Profits
9. Return to Main menu
--------------------------------------------------------------------------------------------------------------------------------------------

select: 1
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Enroll-------------------------------------------------------------
name: Kim
address: Suwon
account number: 111122222
phone number: 01032329432
birthday: 1995-00-00
today(for joining day): 2020-05-30
Congratulations! Enrollment Success
-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------

-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Mode-------------------------------------------------------------
1. Provider Enrollment
```

Providers can register in the same context as users, and when registered, they aut omatically log in.

```
4. Sign up
5. Sign out
6. Uploads item
7. Pay fee to Manager
8. Show my Profits
9. Return to Main menu
--------------------------------------------------------------------------------------------------------------------------------------------

select: 6
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Upload-------------------------------------------------------------
Item name: Python
Item type(program/document/image/videoclip/soundclip): program
Item size: 5
today(xxxx-xx-xx): 2020-05-30
local storage needed: 25
short description: this is Python IDE
author(if needed or NONE): NONE
language(if needed or NONE): NONE
machine needed(if needed or NONE): NONE
operating system needed(if needed or NONE): NONE
upload success, your item_id is 36 ~
Do you want to make predownload list? [y/n] :y
how much item you want to upload predownload: 1
Enter predown item id: 32
-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------

-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
```

If you proceed with Item upload, you can enter the required information of the ite m and then upload it. You can add predownload items here. If y is entered, item i d that requires predown is entered and added to the predownload item.

```
select: 3
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Your Items--------------------------------------------------------------
 [item_id]          [item_name] [item_type] [item_size]  [storage_size]                                [description]
        36               Python    program          5              25                              this is Python IDE
-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------

-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Mode-----------------------------------------------------------------
1. Provider Enrollment
2. Provider Delete
3. Show your items
4. Sign up
5. Sign out
6. Uploads item
7. Pay fee to Manager
8. Show my Profits
9. Return to Main menu
```

If you select 3, you can see the items provider uploaded.

And you can check my profit information by entering number 8.

```
select: 8
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Profits--------------------------------------------------------------
Your profits:    0
want to get more info? [y/n]: y
your item(itemId: 36)     Python downloaded 0 time
-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------

-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Mode-----------------------------------------------------------------
1. Provider Enrollment
```

Here also you can check how many times item downloaded I uploaded.

```
select: 7
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider PayFee---------------------------------------------------------------
How much you want to pay? your unpaid fee is 32500
3000
unpaid fee is 29500
-----------------------------------------------------------Press Enter to continue-----------------------------------------------------------

-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Provider Mode-----------------------------------------------------------------
1. Provider Enrollment
2. Provider Delete
```

The same mechanism as User mode is used to pay the money.

Finally, check the Manager mode.

```
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-----------------------------------------------------------------Main Menu-----------------------------------------------------------------
1. User Mode
2. Provider Mode
3. Manager Mode
4. Quit
-----------------------------------------------------------------------------------------------------------------------------------------------
select: 3
Enter Password...(for test use 1234)  :1234
Access complete
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-----------------------------------------------------------------Manager Mode-----------------------------------------------------------------
1. Show All Users
2. Show All Providers
3. Show All Downloads Info
4. Show Access Info
```

Because the manager was one and in charge, give a password for log in. For the t est, the password was '1234'.

```
select: 1
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-----------------------------------------------------------------Show all Users-----------------------------------------------------------------
[user_id]         [user_name]         [user_addr]         [phone_num]           [unpaid]         [downloads]           [account]
       21                 Kim               Suwon         01032123212              30000                   3           102301923
       22             KimChan            CheongJu         01032123212                  0                   0          1010232123
       23               Messi               Seoul         01032123212              30000                   0            10102321
       24               Momo               Suwon         01032123333               3000                   1          1112321232
       25                 Kim               Suwon         01023234545               2500                   1            11111111
-------------------------------------------------------------Press Enter to continue-------------------------------------------------------------

------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-----------------------------------------------------------------Manager Mode-----------------------------------------------------------------
1. Show All Users
```

The Manager can access all user's information.

```
select: 2
------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-----------------------------------------------------------------Show all Providers-----------------------------------------------------------------
  [provider_id]      [provider_name]      [provider_addr]           [account]          [phone_num]          [downloads]             [unpaid]
             12                  Kim                   LA           123123123           0103123112                    3                    0
             14                 KOKO                   ko          1010101010           0101010101                    0                 2500
             16                Lapla                Ulsan             10231231          01022321212                    1                80000
             18                  Kim               Suwon            111122222          01032329432                    0                30000
             19                  Lee               Suwon             11112222          01032323232                    0                29500
-------------------------------------------------------------Press Enter to continue-------------------------------------------------------------

------------------------------------------------------------Welcome to Market Place------------------------------------------------------------
-----------------------------------------------------------------Manager Mode-----------------------------------------------------------------
1. Show All Users
2. Show All Providers
```

Information from all providers is also available.

```
select: 3
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Show all Downloads--------------------------------------------------------------

-----------------------------------------------------------Show Users Download Info----------------------------------------------------------
          [User_id]           [Item_id]
                 21                  32
                 21                  32
                 24                  32
                 25                  33
-----------------------------------------------------------Show Itemss Download Info---------------------------------------------------------
          [Item_id]    [Downloaded time]
                 32                   3
                 33                   1
                 35                   0
                 36                   0
-------------------------------------------------------------Press Enter to continue-------------------------------------------------------

-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Manager Mode----------------------------------------------------------------
```

You can also view information about the relationship between all users and downlo ads, and view the number of downloads for a particular item.

```
6. Return to Main menu
-------------------------------------------------------------------------------------------------------------------------------------------

select: 4
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Show Access History---------------------------------------------------------------

-----------------------------------------------------------Show Access Item History----------------------------------------------------------
          [Item_id]       [Access_time]
                 32                   3
                 33                   1
-----------------------------------------------------------Show Provider History-------------------------------------------------------------
          [Item_id]             [name]        [downloaded]
                 12                Kim                   3
                 14               KOKO                   0
                 16              Lapla                   1
                 18                Kim                   0
                 19                Lee                   0
-------------------------------------------------------------------------------------------------------------------------------------------
Do you want to delete providers with total 5 downloads or less? [y/n]: y
Drop prividerId: 18
drop success
-------------------------------------------------------------Press Enter to continue-------------------------------------------------------
```

In addition, the manager can access Access History and force the to withdraw at t he same time that the number of downloaded item is below a certain level.

```
6. Return to Main menu
-------------------------------------------------------------------------------------------------------------------------------------------

select: 5
-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Show Manager Profit---------------------------------------------------------------

     [Total_profit]        [Net_profit]
            1385500             1380500
-------------------------------------------------------------Press Enter to continue-------------------------------------------------------

-----------------------------------------------------------Welcome to Market Place-----------------------------------------------------------
-------------------------------------------------------------Manager Mode----------------------------------------------------------------
1. Show All Users
2. Show All Providers
3. Show All Downloads Info
```

Finally, information about total revenue to date can also be found.