The National Institute of Engineering, Mysuru

(Autonomous Institution)

Department of Information Science and Engineering
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DBMS MINI PROJECT REPORT

"TELECOM NETWORK ANALYSIS SYSTEM"

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Certificate

This is to certify that the Mini project work entitled "Telecom network analysis system" is a work carried out by **SHYAM KAUSHIK, SOURAB JOHN JACOB, SRIRAM V AND VINAY PANDHARIWAL**in partial fulfilment for the Mini project prescribed by National Institute of Engineering, Autonomous Institution under Vishvesvaraya Technological University, Belagavi for the fourth Semester B.E Information Science & Engineering. It is certified that all correction/suggestions indicated for Internal Assessment have been incorporated. The Mini project report has been approved as it satisfies the academic requirements in respect of the Mini project work prescribed for the Fourth Semester.

Signature of Guide

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ABSTRACT

Internet is a necessary requirement in the 21st century. The internet has enabled communication, information access and so on and so forth much easier than before. A country's development can be assessed based on the internet access available in the country. Therefore there are many number of service providers that have various plans for users to get internet access. The task of selecting a plan is usually a confusing and intimidating task as there are many options available.

The "telecom network analysis system" provides the user with plan options and analytics on the plans which makes it easier for the user to select a plan. Theuser has an option to apply for the sim using the application. The user is also provided with an option to change from one service provider to another.

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LIST OF FIGURES

Chapter 1

INTRODUCTION

This is an age of information, InfoTech and computers. Information is now multi-billion dollar business resulting in computer proliferation worldwide. Information super highway or internet has revolutionized life and information technology. By having internet access you can have access to anything anywhere in the world. Internet is a melting pot of so many technologies which provides multimedia information facilities at low cost and great speeds. Internet offers a wealth of opportunities and advantages. It promises a whole new brave world.

One can gain access to the internet in many ways such as cellular networks, broadband connections and so on and so forth due to which the person faces a predicament when it comes to choosing a plan for internet access. Our project makes this process of choosing a plan easier. The "telecom network system analysis" provides information based on which the user will be able identify which plan would meet his needs.

This project focuses on the database of the service providers and analytics (trends and variation) on it. The front end is an application/web application. The back end is the database (MYSQL). The information about all the service providers will be displayed.

In the front end the user is given a choice between viewing the plans of the service provider, applying for a new connection, changing the service provider or having a look at the comparison amongst the companies. In the comparison, he/she can have look at various things, such as

1. The best plan provided by a particular service provider.
2. The current popular service provider.
3. The best plan for the age groups on basis of feedbacks.
4. Feedback for a certain plan or a certain service provider, and many more.

The back end we'll be using MYSQL to store the data in the database. Using the data stored in the database we will display the information about the service provider like the plans they are offering, which is the most used plan, etc. Also we will extract data from these data in the database which is going to tell us the trend and variations among the plans or the companies. This variation in data will be represented in the form of a chart or a graph in the front end.

Chapter 2

SYSTEM REQUIREMENS

HARDWARE REQUIREMNETS:
A working computer with the following attributes
Processor :
Preferred: Intel Core i5/i7.
Minimum requirement: Intel core 2 duo

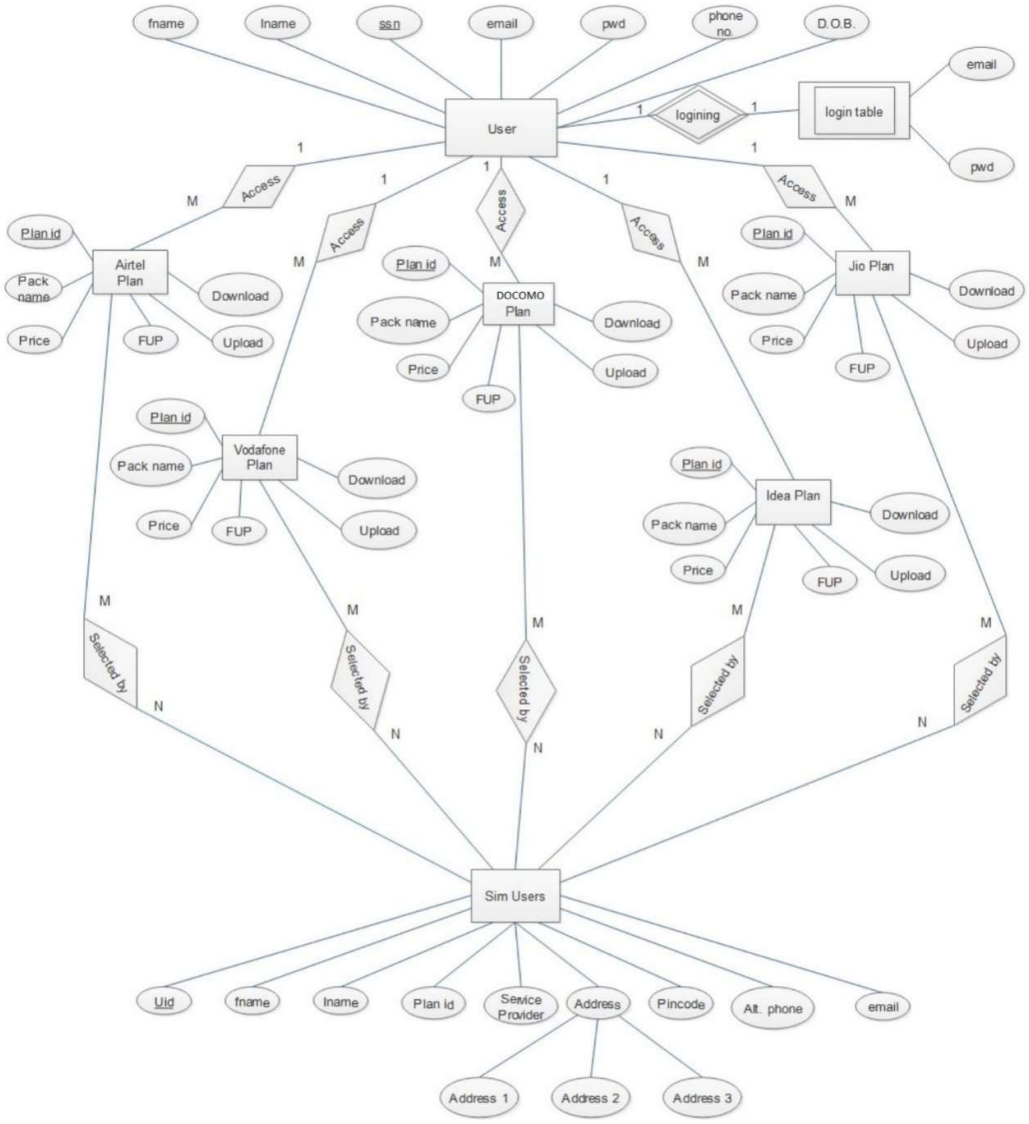
Memory :
Preferred: 4GB/8GB RAM.
Minimum requirement: 2 GB RAM

SOFTWARE REQUIREMENTS:
Operating system: Windows 7/8/10
Programming language: 1. NetBeans/HTML (front end).
2. MYSQL (back end).
Software used: 1. ERD Plus. (ER Diagram)

Chapter 3

SYSTEM DESIGN

ER DIAGRAM:



ENTITIES:

1. USER: User is anyone who wishes to access the application to view the available plans in the database. A user has to login or sign up if he is a new user to view the plans.
2. PLANS (Airtel plan, BSNL plan, Jio Plan, Idea Plan, and Vodafone Plan): Plans are the entities that contain all the plans that a user can go through and select for each service provider.
3. SIM USERS: Are the users who have gone through the plans and wish to apply for the new sim cards through our application.
4. LOGIN TABLE: Login table is a weak entity. It contains the login details of every user. It is a weak entity as it cannot exist without the existence of the user entity.

SCHEMA DIAGRAM:

Schema is the description of a database. The database of the project contains eight tables. The description of the schema of each table can be viewed using the DESC command in SQL. The schema diagrams are as shown.

1. User table:

```
mysql> desc user_detail;
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| fname | varchar(50) | YES  |     | NULL    |       |
| lname | varchar(50) | YES  |     | NULL    |       |
| ssn   | int(8)      | NO   | PRI | NULL    |       |
| email | varchar(50) | YES  | UNI | NULL    |       |
| pswd  | varchar(50) | NO   |     | NULL    |       |
| phno  | bigint(10)  | YES  |     | NULL    |       |
+-------+-------------+------+-----+---------+-------+
6 rows in set (0.17 sec)
```

2. Sim user table: There are two table for this entity as the database is in fist N.F and multivalued attributes such as address have been considered as single valued attributes in the second table.

```
mysql> desc sim_users;
+-----------------+-------------+------+-----+---------+-------+
| Field           | Type        | Null | Key | Default | Extra |
+-----------------+-------------+------+-----+---------+-------+
| uid             | int(8)      | NO   | PRI | NULL    |       |
| fname           | varchar(20) | NO   |     | NULL    |       |
| lname           | varchar(20) | NO   |     | NULL    |       |
| plan_id         | int(3)      | YES  | UNI | NULL    |       |
| service_provide | varchar(10) | NO   |     | NULL    |       |
+-----------------+-------------+------+-----+---------+-------+
5 rows in set (0.17 sec)
```

```
mysql> desc sim_user_detail;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| uid      | int(8)      | YES  | MUL | NULL    |       |
| address1 | varchar(50) | YES  |     | NULL    |       |
| address2 | varchar(50) | YES  |     | NULL    |       |
| address3 | varchar(50) | YES  |     | NULL    |       |
| pincode  | int(6)      | NO   |     | NULL    |       |
| alt_phno | bigint(10)  | YES  |     | NULL    |       |
| email    | varchar(50) | YES  |     | NULL    |       |
| BOD      | date        | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
8 rows in set (0.03 sec)
```

3. PLANS:

Airtel plan:

```
mysql> desc airtel_plan;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| plan_id   | int(3)       | NO   | PRI | NULL    |       |
| pack_name | varchar(50)  | NO   |     | NULL    |       |
| price     | decimal(6,2) | NO   |     | NULL    |       |
| fup       | varchar(50)  | NO   |     | NULL    |       |
| upload    | varchar(10)  | NO   |     | NULL    |       |
| download  | varchar(10)  | NO   |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

Jio plan:

```
mysql> desc jio_plan;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| plan_id   | int(3)       | NO   | PRI | NULL    |       |
| pack_name | varchar(50)  | NO   |     | NULL    |       |
| price     | decimal(6,2) | NO   |     | NULL    |       |
| fup       | varchar(50)  | NO   |     | NULL    |       |
| upload    | varchar(10)  | NO   |     | NULL    |       |
| download  | varchar(10)  | NO   |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

Idea plan:

```
mysql> desc idea_plan;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| plan_id   | int(3)       | NO   | PRI | NULL    |       |
| pack_name | varchar(50)  | NO   |     | NULL    |       |
| price     | decimal(6,2) | NO   |     | NULL    |       |
| fup       | varchar(50)  | NO   |     | NULL    |       |
| upload    | varchar(10)  | NO   |     | NULL    |       |
| download  | varchar(10)  | NO   |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
6 rows in set (0.06 sec)
```

Docomo plan:

```
mysql> desc docomo_plan;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| plan_id   | int(3)       | NO   | PRI | NULL    |       |
| pack_name | varchar(50)  | NO   |     | NULL    |       |
| price     | decimal(6,2) | NO   |     | NULL    |       |
| fup       | varchar(50)  | NO   |     | NULL    |       |
| upload    | varchar(10)  | NO   |     | NULL    |       |
| download  | varchar(10)  | NO   |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
6 rows in set (0.01 sec)
```

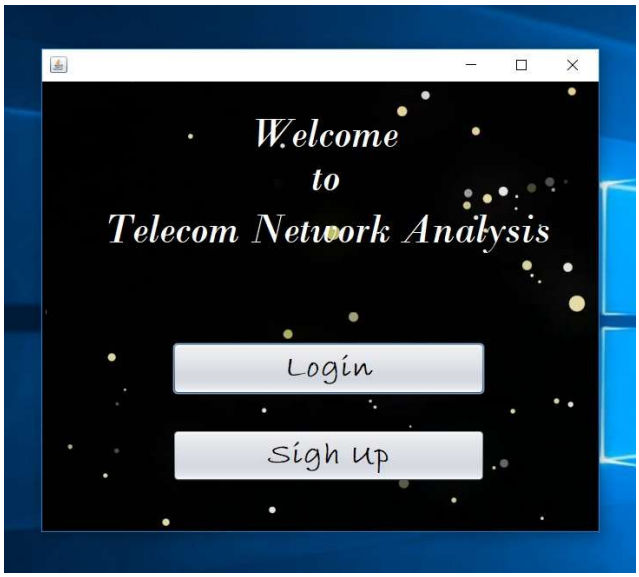
Vodafone plan:

```
mysql> desc voda_plan;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| plan_id   | int(3)       | NO   | PRI | NULL    |       |
| pack_name | varchar(50)  | NO   |     | NULL    |       |
| price     | decimal(6,2) | NO   |     | NULL    |       |
| fup       | varchar(50)  | NO   |     | NULL    |       |
| upload    | varchar(10)  | NO   |     | NULL    |       |
| download  | varchar(10)  | NO   |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
5 rows in set (0.02 sec)
```

Chapter 4

QUERY IMPLEMENTATION:

1. Inserting command: The user has to sign up before he can use the application. The following menu appears and the insert command is executed on the database to insert the values.



To insert the user's sign up details into the user_detail table

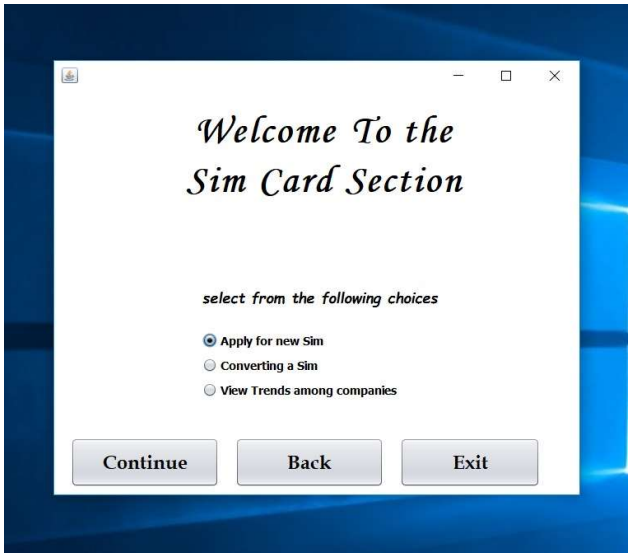
```
mysql> insert into user_detail values('Sriram','Venkatesh',25478964,'sriramvenki@gmail.com','sriramvenk','8547219854');
Query OK, 1 row affected (0.11 sec)

mysql> select * from user_detail;
+----------+------------+----------+--------------------------+-------------+------------+
| fname    | lname      | ssn      | email                    | pswd        | phno       |
+----------+------------+----------+--------------------------+-------------+------------+
| Nishu    | Prasad     | 11223344 | nishuprasad@gmail.com    | shyam1998   | 9113220677 |
| Vinita   | Prasad     | 11335577 | vinita.prasad42@gmail.com| asdf1234    | 9553398550 |
| Aditi    | Prasad     | 12341234 | adtprsd@gmail.com        | aditi2003   | 8105127216 |
| Shivang  | Kumar      | 12343456 | shivakumar@gmail.com     | asdf1234    | 8669021780 |
| Shyam    | Kaushik    | 12345678 | shymkshk@gmail.com       | optimusprime| 8792882360 |
| Mukul    | Prasad     | 13579246 | mukulprasad@gmail.com    | mukulprasad | 9663398550 |
| Shashank | Shaurya    | 23923563 | ssshauryaa@gmail.com     | asdfgh      | 8235627455 |
| Ashutosh | Priyadarshi| 24569874 | ashup@gmail.com          | ashup       | 7019032911 |
| Sriram   | Venkatesh  | 25478964 | sriramvenki@gmail.com    | sriramvenk  | 8547219854 |
| abc      | xyz        | 58741369 | abcxyz@gmail.com         | abcxyz      | 9587412458 |
| sourab   | jacob      | 70196506 | sourabjohn@gmail.com     | ROCKYa12    | 7019650699 |
+----------+------------+----------+--------------------------+-------------+------------+
11 rows in set (0.00 sec)
```

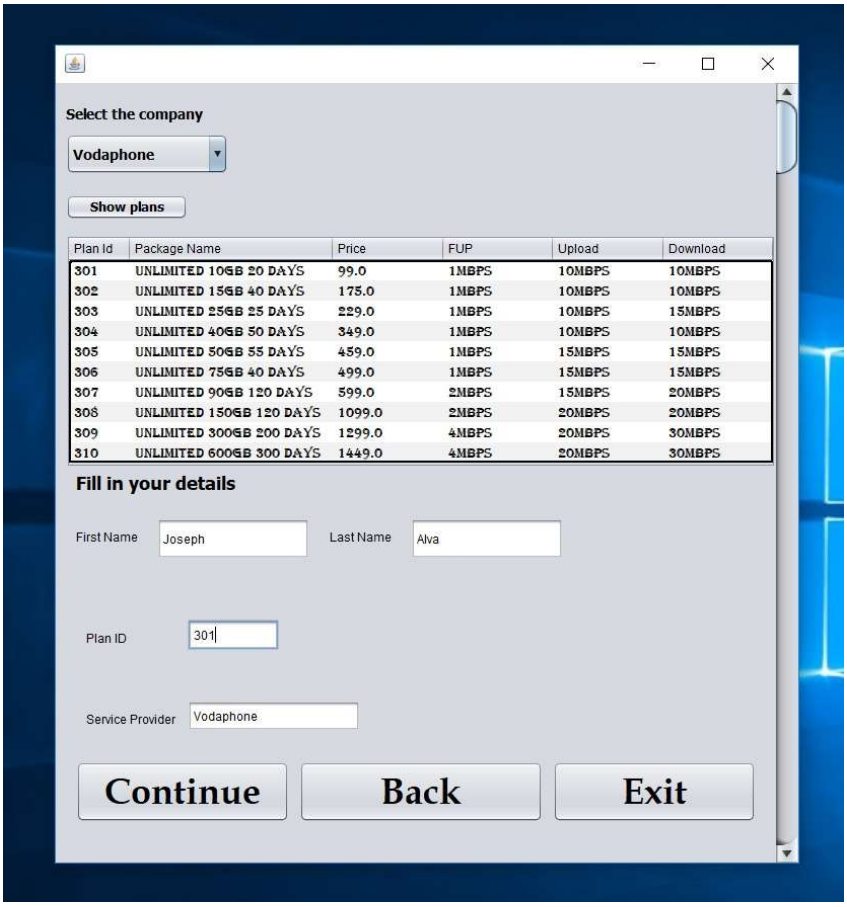
2. Select command: Once the user as signed up he needs to login. The login details are verified by retrieving all the login details from the login table using select command and comparing the login input given by the user with the retrieved values.

```
mysql> select * from login_tbl;
+---------------------------+--------------+
| username                  | pswd         |
+---------------------------+--------------+
| shymkshk@gmail.com        | optimusprime |
| nishuprasad@gmail.com     | shyam1998    |
| adtprsd@gmail.com         | aditi2003    |
| ssshauryaa@gmail.com      | asdfgh       |
| vinita.prasad42@gmail.com | asdf1234     |
| shivakumar@gmail.com      | asdf1234     |
| mukulprasad@gmail.com     | mukulprasad  |
| ashup@gmail.com           | ashup        |
| sourabjohn@gmail.com      | ROCKYa12     |
| abcxyz@gmail.com          | abcxyz       |
| sriramvenki@gmail.com     | sriramvenk   |
+---------------------------+--------------+
11 rows in set (0.00 sec)
```

3. Select command for displaying plans: Once the user has logged in, he hasthree options. The following windows is displayed to the user.



If he chooses to the “apply for new sim” option the following window is displayed which provides a drop down menu for selecting the company whose plans needs to be displayed.



Once the user selects a company the plan details are retrieved from the database using the select command.

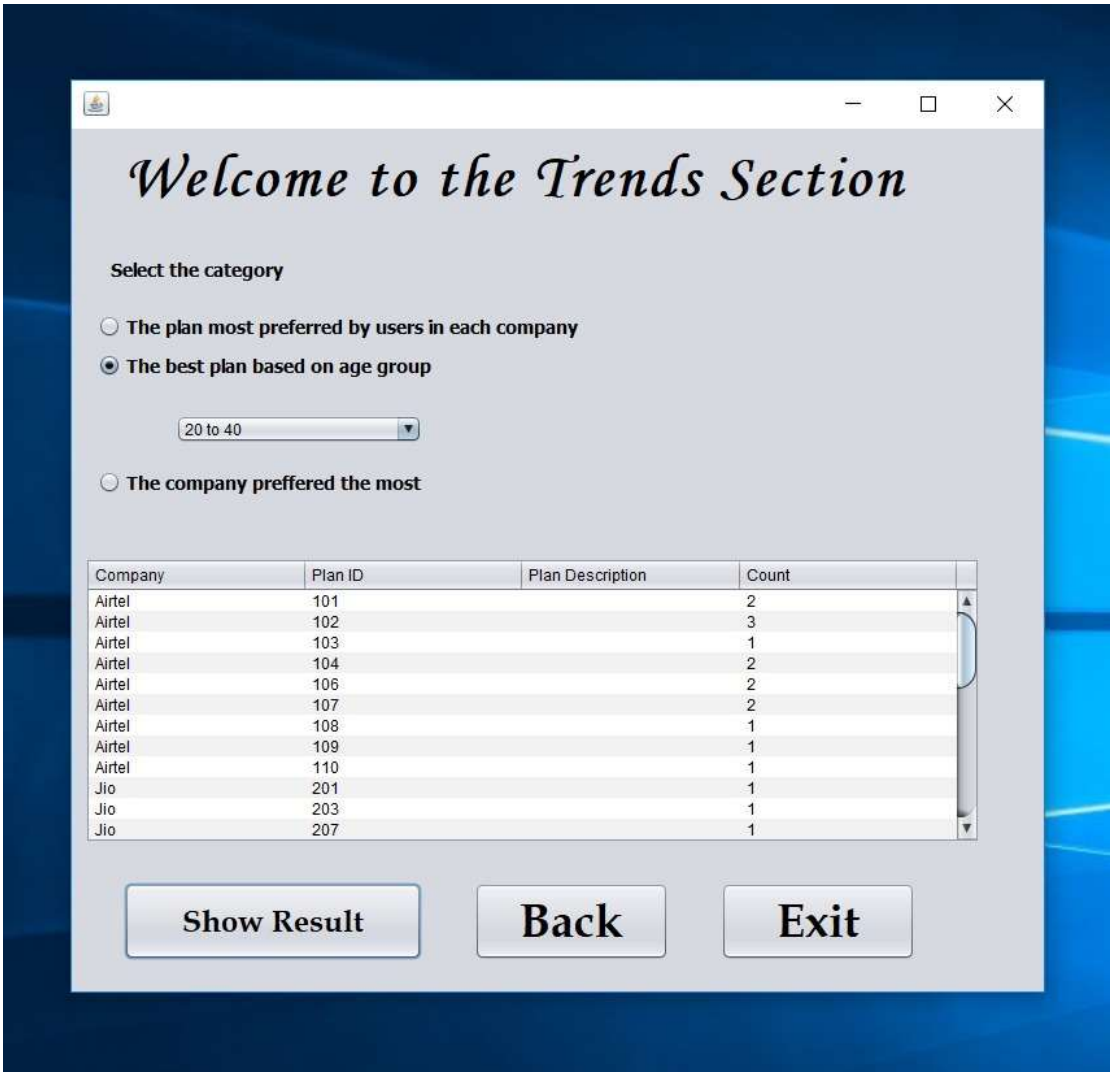
```
mysql> select * from voda_plan;
+---------+--------------------------+---------+-------+--------+----------+
| plan_id | pack_name                | price   | fup   | upload | download |
+---------+--------------------------+---------+-------+--------+----------+
|     301 | Unlimited 10GB 20 days   |   99.00 | 1Mbps | 10Mbps | 10Mbps   |
|     302 | Unlimited 15GB 40 days   |  175.00 | 1Mbps | 10Mbps | 10Mbps   |
|     303 | Unlimited 25GB 25 days   |  229.00 | 1Mbps | 10Mbps | 15Mbps   |
|     304 | Unlimited 40GB 50 days   |  349.00 | 1Mbps | 10Mbps | 10Mbps   |
|     305 | Unlimited 50GB 55 days   |  459.00 | 1Mbps | 15Mbps | 15Mbps   |
|     306 | Unlimited 75GB 40 days   |  499.00 | 1Mbps | 15Mbps | 15Mbps   |
|     307 | Unlimited 90GB 120 days  |  599.00 | 2Mbps | 15Mbps | 20Mbps   |
|     308 | Unlimited 150GB 120 days | 1099.00 | 2Mbps | 20Mbps | 20Mbps   |
|     309 | Unlimited 300GB 200 days | 1299.00 | 4Mbps | 20Mbps | 30Mbps   |
|     310 | Unlimited 600GB 300 days | 1449.00 | 4Mbps | 20Mbps | 30Mbps   |
+---------+--------------------------+---------+-------+--------+----------+
10 rows in set (0.04 sec)
```

4. Insert command for entering user details: If the user wishes to proceed for buying the sim with our application he needs to enter his details that are required for applying a new sim. These details are entered into sim_users table using the insert into command.

```
mysql> insert into sim_users values(22,'Cristiano','Messi',301,'Vodaphone');
Query OK, 1 row affected (0.09 sec)

mysql> select * from sim_users;
+-----+------------+-------------+---------+-----------------+
| uid | fname      | lname       | plan_id | service_provide |
+-----+------------+-------------+---------+-----------------+
|   2 | Bernard    | Tran        |     202 | Jio             |
|  22 | Cristiano  | Messi       |     301 | Vodaphone       |
|  25 | Leo        | Slater      |     305 | Vodaphone       |
|  42 | Ryder      | Gardner     |     204 | Jio             |
|  44 | Yvette     | Norris      |     402 | Idea            |
|  45 | Jordan     | Nieves      |     402 | Idea            |
|  48 | Gil        | Fisher      |     410 | Idea            |
|  60 | Hilel      | Eaton       |     108 | Airtel          |
|  70 | Destiny    | Mejia       |     102 | Airtel          |
|  82 | Irene      | Lyons       |     408 | Idea            |
|  98 | Rebekah    | Hess        |     406 | Idea            |
| 102 | Sean       | Wyatt       |     401 | Idea            |
| 111 | Ross       | Gilliam     |     507 | Docomo          |
| 112 | Branden    | Thornton    |     201 | Jio             |
| 124 | Quintessa  | Simon       |     508 | Docomo          |
| 126 | Orson      | Summers     |     209 | Jio             |
| 146 | Lacy       | Harmon      |     101 | Airtel          |
| 150 | abc        | xyz         |     306 | Jio             |
| 155 | Melissa    | Guerra      |     503 | Docomo          |
| 159 | Clark      | Roy         |     407 | Idea            |
| 186 | Christian  | Ellis       |     403 | Idea            |
| 188 | Scarlett   | Mcconnell   |     207 | Jio             |
| 203 | Ferris     | Schroeder   |     104 | Airtel          |
| 205 | Anthony    | Mcgowan     |     403 | Idea            |
| 212 | Carson     | Dickerson   |     208 | Jio             |
| 221 | Farrah     | Huff        |     302 | Vodaphone       |
| 227 | Lawrence   | Austin      |     110 | Airtel          |
| 244 | Oren       | Salas       |     309 | Vodaphone       |
| 257 | Cruz       | Rojas       |     110 | Airtel          |
| 260 | Cade       | Davenport   |     102 | Airtel          |
| 265 | Roanna     | Atkinson    |     101 | Airtel          |
| 272 | Kelsie     | Patterson   |     506 | Docomo          |
| 288 | Eugenia    | Dunn        |     408 | Idea            |
| 299 | Prescott   | Hanson      |     105 | Airtel          |
| 311 | Kirestin   | Miranda     |     505 | Docomo          |
| 337 | Damon      | Leblanc     |     507 | Docomo          |
| 340 | Stuart     | Stuart      |     103 | Airtel          |
| 383 | Sheila     | Ross        |     109 | Airtel          |
```

5. View command: If the user selects the view trends option in the first window the following window is displayed. In this window the user can select what kind of trend he wants to view and the corresponding trend will be displayed below.



Once the user has selected the option the specific trend is retrieved from the database. The trends have been stored in the database in the form of views which get updated whenever a change is made to the database.

```
mysql> select * from display_age_40;
+------+--------+
| plan | number |
+------+--------+
|  101 |      2 |
|  102 |      3 |
|  103 |      1 |
|  104 |      2 |
|  106 |      2 |
|  107 |      2 |
|  108 |      1 |
|  109 |      1 |
|  110 |      1 |
|  201 |      1 |
|  203 |      1 |
|  207 |      1 |
|  209 |      3 |
|  210 |      1 |
|  302 |      1 |
|  303 |      1 |
|  305 |      2 |
|  308 |      1 |
|  310 |      1 |
|  401 |      1 |
|  402 |      2 |
|  403 |      1 |
|  404 |      1 |
|  405 |      1 |
|  407 |      1 |
|  408 |      1 |
|  410 |      1 |
|  501 |      1 |
|  505 |      1 |
|  506 |      1 |
|  507 |      2 |
|  508 |      1 |
+------+--------+
32 rows in set (0.00 sec)
```

The view for the trend between the age groups of 20 and 40 are named as display-age-40 and is retrieved using the select command.

Query for creating the view:

```
mysql> create view display_age_40(plan, number) as select plan_id, count(plan_id) from sim_users group by plan_id;
```

Chapter 5

ADVANTAGES:

- This project helps users to select an internet plan and hence makes the process less confusing.
- Our application provides analytics on the network database and hence the users will be able to select a plan based on the various user statistics.
- A user can apply for a new sim through our application and hence makes the process less cumbersome.
- The user can apply a change of sim through our application which is usually a time consuming process.

DISADVANTAGES:

- A few companies that provide internet plans might not be displayed.
- The user needs to download the application before using it and hence can't access the features of the project without downloading the app.

Chapter 6

FUTURE ENHANCEMENTS:

- The security for the application can be made better.
- The application services can be extended to provide broadband connection plans as well.
- More companies can be included in the database.
- The services can be extended to other states.

CONCLUSION:

The "telecom network system analysis" is an application that provides network selection services. The user can apply for a sim or change to a different service provider using the application. The "telecom network system analysis" is a project that uses SQL as backend and hence uses queries to retrieve information from the database and update it.

The project provides the user with analytics that makes it easier for the user to select a plan. The project uses NetBeans for front end and hence provides a user friendly interface. Therefore the application simplifies the process of choosing a plan provided by a service provider by providing analytics on the plans and displaying them on a user friendly environment.

Chapter 7

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