

# **TrueMed Application**

Project Report

By

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## **Application:**

### **Problem:**

- 8 out of 10 prescriptions in INDIA are not using generic medicines. Where INDIA is the largest exporter of generic Medicines. Even in 2014, people are dying due of lack of access to inexpensive medicines.

### **Solution:**

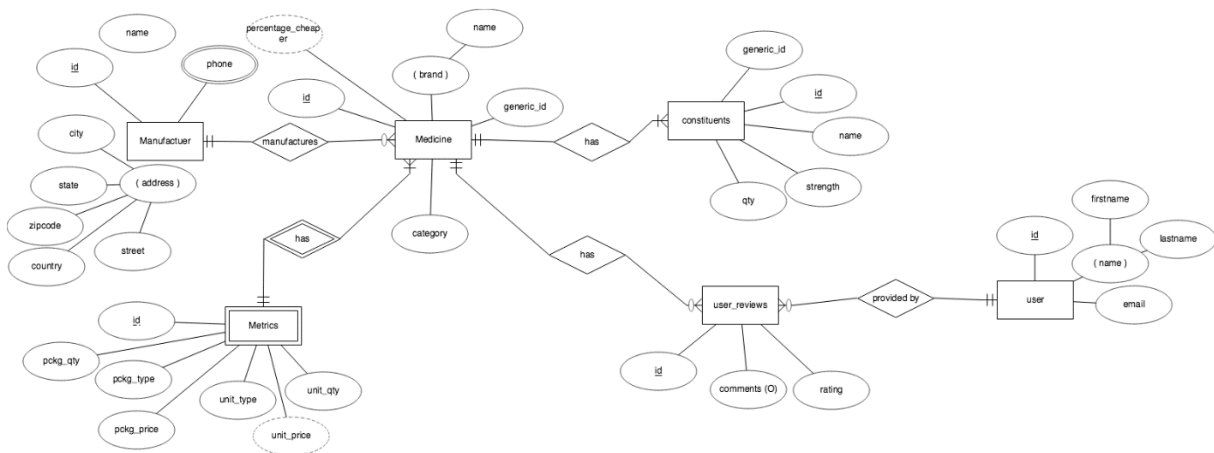
- We have built a search engine to help people search for generic medicines or cheaper branded substitutes of the medicines.
- We make people more aware about generic drugs. We provide cheapest medicine recommendations to the users, so that they may probably ask their doctor next time to prescribe generic drugs.

## **Data Used:**

- We got data from True MD API.
- We wrote python script to fetch details of 1 million medicines from True MD API.
- We got information about manufactures of medicines, cost of the medicines, constituents of medicines and metrics.
- For Fact table we have generated 15 millions of records.

## Data Models:

### Conceptual Model (ER Diagram):



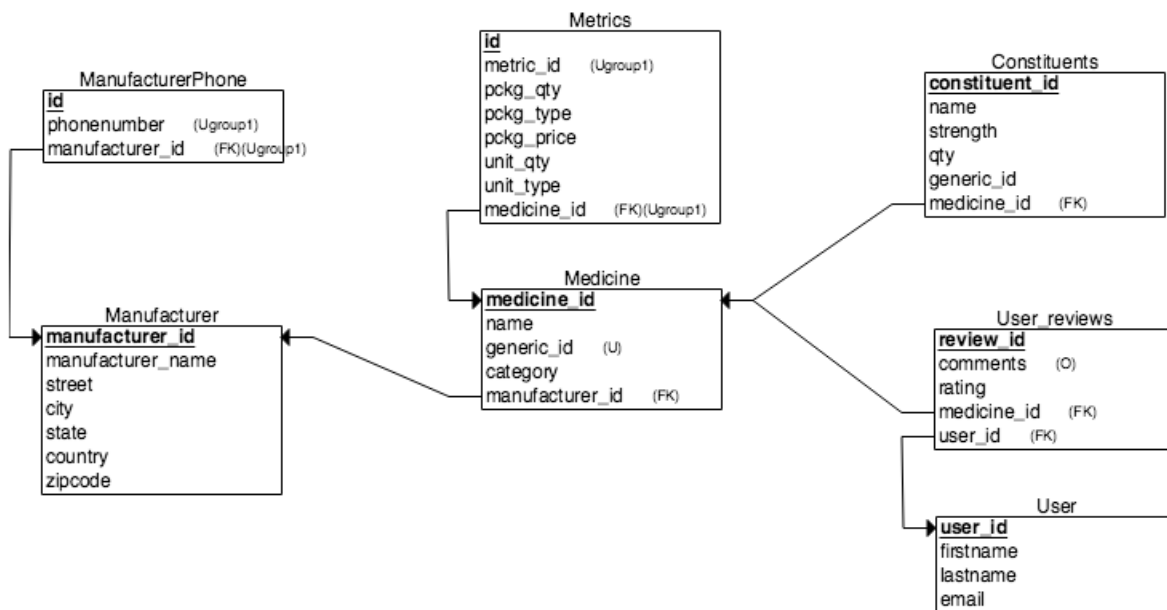
- 1) Manufacturer manufactures medicines. Manufacturer has the details like manufacturer\_name, address, phone numbers and manufacturer\_id. The address of the manufacturer contains information about street, city, state, zip code, country.
- 2) Medicine has attributes like medicine\_id, generic\_id, brand (Cetricon (10 mg)) and calculated percent cheaper. The brand of medicine consists of name, quantity and type. Each medicine has unique generic\_id using which it can identify its constituents.
- 3) Each medicine belongs to a category like Infusion, syrup, tablet etc...
- 4) Each category has category\_id and type of category (Infusion, syrup, tablet etc...)
- 5) Each medicine has its own metrics. Metrics has attributes like pckg\_qty, pckg\_type (like 100 ml or 100 mg.), pckg\_price, unit\_type, unit\_qty and calculated unit\_price.

6) Each medicine has constituents (like Cetrizine,10 mg,1 quantity) in it.The constituent has attributes like id, name, strength, qty, generic\_id (of medicine).

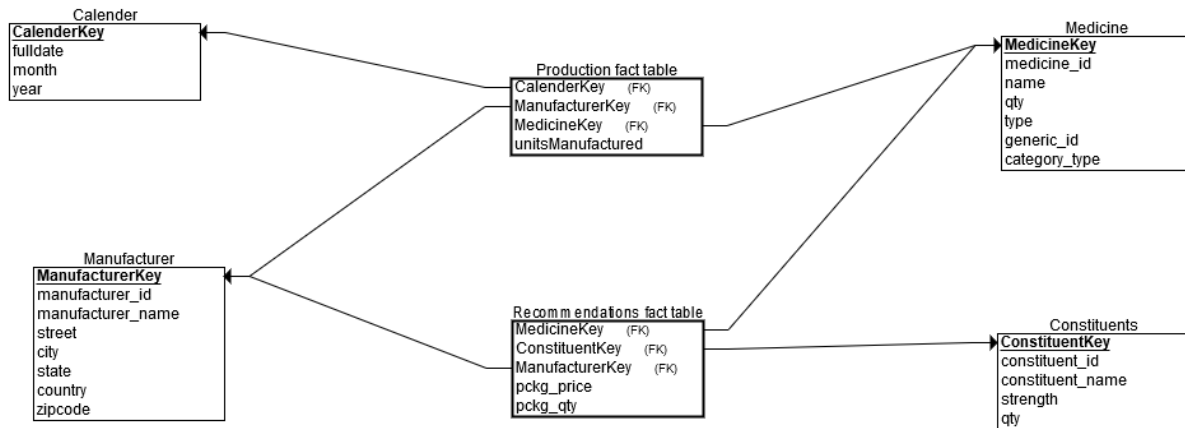
7) Each medicine also has reviews associated with it. Each review has review\_id, optional comments field and rating.

8) Each review is provided by user who has details like name, email. Name consists of both firstname and lastname.

## Relational Schema:



## Star Schema:



**Dimension tables:** Medicine, Manufacturer, Calendar, Constituents

**Fact Tables:** Production, Recommendation

### Production Fact Table:

This table gives the production details for a medicine by a manufacturer in a given year/month. The star scheme consists of 4 dimension tables (Medicine, Manufacturer, Calendar, and Constituents) and 1 Fact table with the columns (Medicine Key, Manufacturer Key, Calendar Key, unitsManufactured).

The Medicine dimension table is populated from Medicine and Category tables of Relation Schema. The columns medicine\_id, medicine\_name, qty, type, generic\_id are populated from columns of medicine table and category\_type is populated from category table of relation schema.

All the columns of Manufacturer dimension table are populated from Manufacturer table of Relation Schema.

The Calendar dimension table consists fields like fulldate, month and year which is filled with artificial data. It is not taken from operational tables.

The Production fact table contains all foreign keys for above dimension tables and unitsManufactured which indicates the number of units of medicine manufactured which is artificial data.

### **Recommendation Fact Table:**

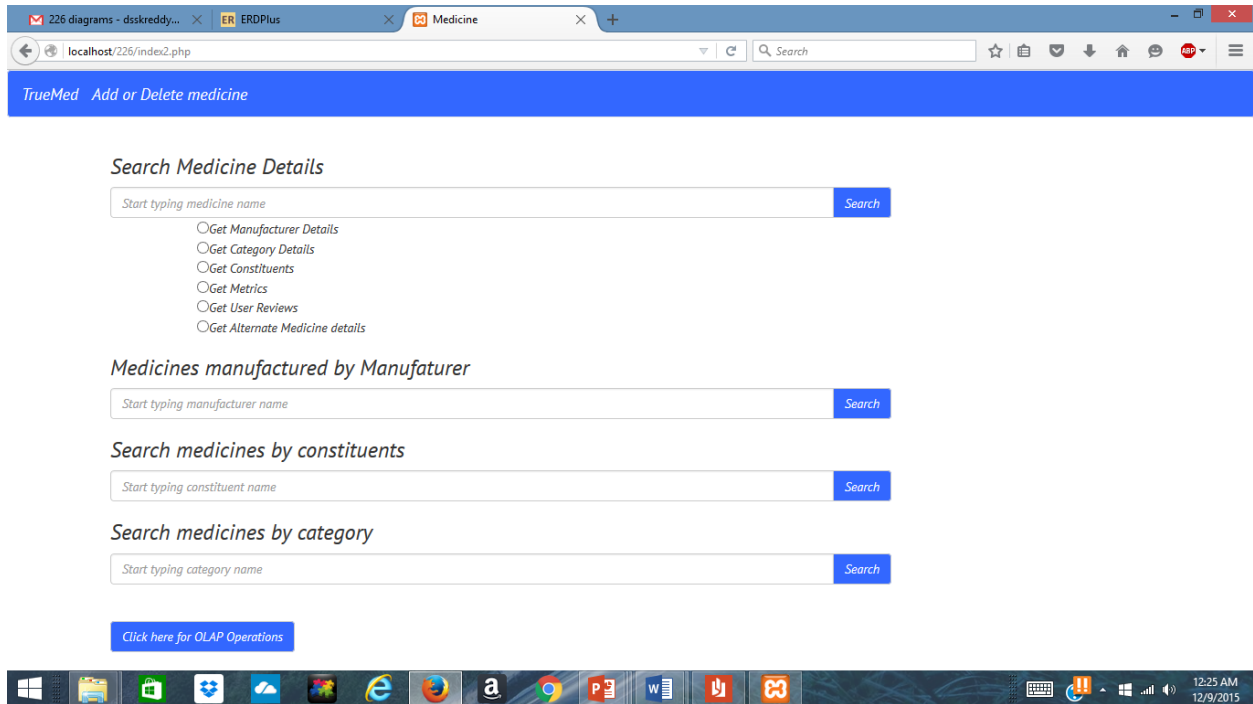
This Fact Table give the details about the recommendations about the alternate medicines based on the constituents of the medicine, price of the medicine manufactured from different manufacturers. The star schema consists of 4 dimension tables (Medicine, Manufacturer and Constituents) and 1 Fact Table with columns (Medicine Key, Manufacturer Key, Constituents Key, pckg\_Price and pckg\_qty).

The medicine and manufacturer dimension tables are populated as mentioned above. The constituents dimension table is populated from constituents table of relation schema.

The Recommendations fact table consists of foreign keys for above dimension tables. It also contains pckg\_price and pckg\_qty which are populated from metrics table.

## Screenshots:

### Home Page:



User entered medicine name and selected choice to get manufacturer details

Medicine

localhost/226/index2.php

TrueMed Add or Delete medicine

### Search Medicine Details

Telmax (40 mg) [Search](#)

- ☒ Get Manufacturer Details
- ☐ Get Category Details
- ☐ Get Constituents
- ☐ Get Metrics
- ☐ Get User Reviews
- ☐ Get Alternate Medicine details

### Medicines manufactured by Manufacturer

Start typing manufacturer name [Search](#)

### Search medicines by constituents

Start typing constituent name [Search](#)

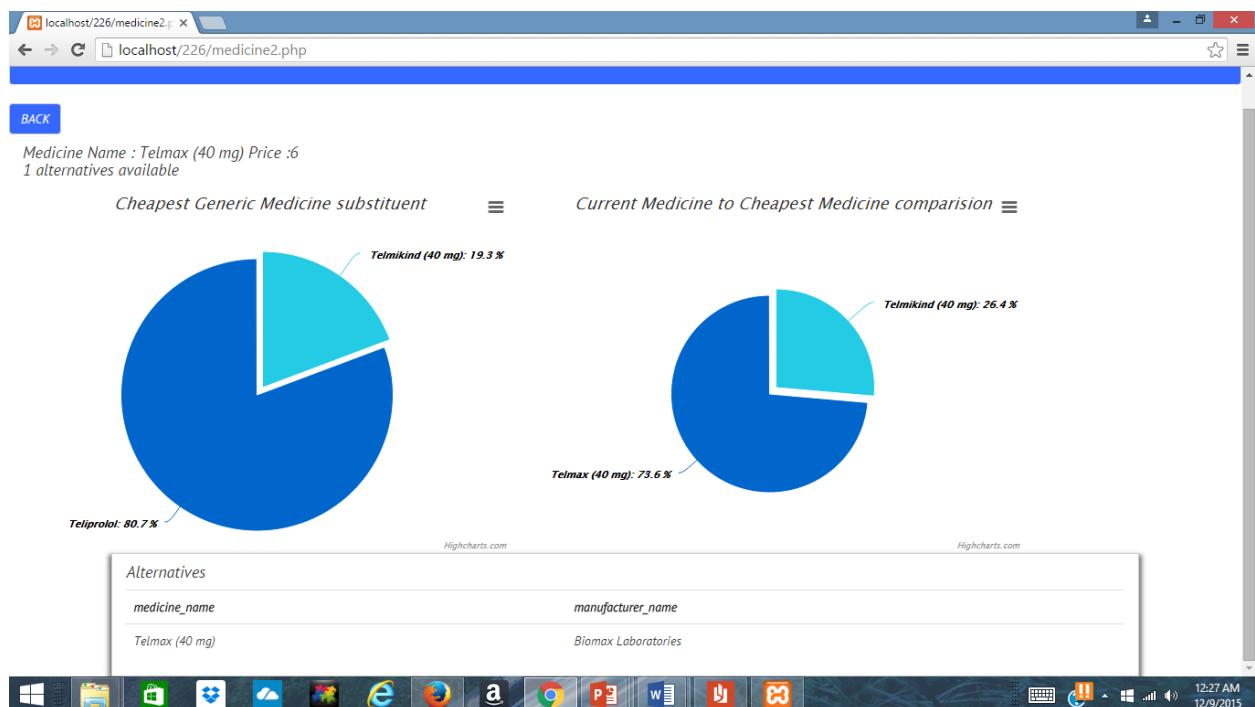
### Search medicines by category

Start typing category name [Search](#)

[Click here for OLAP Operations](#)

Windows Taskbar: 12:26 AM 12/9/2015

Below is screenshot showing cheapest alternative and also manufacturer details





User selected choice to get Alternative medicine details.

The screenshot shows a web browser window with the URL `localhost/226/index2.php`. The page has a blue header with the text "TrueMed Add or Delete medicine". Below the header, there is a section titled "Search Medicine Details" with a search bar containing "Telmax (40 mg)" and a "Search" button. Under the search bar, there are several radio button options: "Get Manufacturer Details", "Get Category Details", "Get Constituents", "Get Metrics", "Get User Reviews", and "Get Alternate Medicine details". The "Get Alternate Medicine details" option is selected. Below this, there are three more search sections: "Medicines manufactured by Manufacturer", "Search medicines by constituents", and "Search medicines by category", each with a search bar and a "Search" button. At the bottom of the search section, there is a blue button labeled "Click here for OLAP Operations". The Windows taskbar is visible at the bottom of the browser window.

Search Medicine Details

Telmax (40 mg) Search

- ☐ Get Manufacturer Details
- ☐ Get Category Details
- ☐ Get Constituents
- ☐ Get Metrics
- ☐ Get User Reviews
- ☒ Get Alternate Medicine details

Medicines manufactured by Manufacturer

Start typing manufacturer name Search

Search medicines by constituents

Start typing constituent name Search

Search medicines by category

Start typing category name Search

[Click here for OLAP Operations](#)

Below are the results for alternative medicines for provided medicine.

The screenshot shows the same web browser window, but now displaying a table of alternative medicines. The URL in the address bar is `localhost/226/medicine2.php`. A blue callout bubble points to the text "Teliprolol: 80.7 %". The table is titled "Alternatives" and has four columns: "medicine\_name", "pkg\_price", "pkg\_qty", and "pkg\_price/pkg\_qty". The table lists 17 alternative medicines. The Windows taskbar is visible at the bottom of the browser window.

medicine_name	pkg_price	pkg_qty	pkg_price/pkg_qty
Telmikind (40 mg)	21.5	10.0	2.15
Temson (40 mg)	27.45	10.0	2.745
Newtel (40 mg)	46.9	14.0	3.35
Cortel (40 mg)	35.0	10.0	3.5
Telvas (40 mg)	40.8	10.0	4.08
Aishtel (40 mg)	45.0	10.0	4.5
Misart (40 mg)	45.0	10.0	4.5
Inditel (40 mg)	47.14	10.0	4.714
Telestat (40 mg)	48.0	10.0	4.8
Mytel (40 mg)	48.0	10.0	4.8
Oditel (40 mg)	49.0	10.0	4.9
Elmy (40 mg)	50.7	10.0	5.07
Telmicard (40 mg)	54.9	10.0	5.49
Astel (40 mg)	57.0	10.0	5.7

User entered manufacturer name to get details of all medicines manufactured by that manufacturer

The screenshot shows a web browser window with the URL `localhost/226/index2.php?`. The page has a blue header with the text "TrueMed Add or Delete medicine". Below the header, there is a section titled "Search Medicine Details" with a text input field labeled "Start typing medicine name" and a "Search" button. A dropdown menu is open, showing several options: "Get Manufacturer Details", "Get Category Details", "Get Constituents", "Get Metrics", "Get User Reviews", and "Get Alternate Medicine details". Below this, there is a section titled "Medicines manufactured by Manufaturer" (note the typo) with a text input field containing "Health Biomed Pharma" and a "Search" button. Further down, there are two more search sections: "Search medicines by constituents" and "Search medicines by category", each with a text input field and a "Search" button. At the bottom of the search area, there is a blue button labeled "Click here for OLAP Operations". The Windows taskbar is visible at the bottom of the browser window.

Output:

The screenshot shows the same web browser window, but now displaying the results of the search. The URL is `localhost/226/manufacture.php`. The page title is "Results: Health Biomed Pharma". Below the title, there is a table with two columns: "medicine\_name" and "manufacturer\_name". The table contains 15 rows of data, all of which list "Health Biomed Pharma" as the manufacturer. The medicines listed are: HB Cefi DS (30 ml), Mefflox (200 mg), Amblocin (500 mg), HB Pod (200 mg), Mefflox OZ (60 ml), Ceftomed (250 mg), HB Cefi (100 mg), Trammed (100 mg), Tramamed (100 mg), Ceftomed (1000 mg), I Fer (Inj), HB Cefi (200 mg), Amblocin (100 mg), Azromed (500 mg), and Biomyxin B (5 Lacs). The Windows taskbar is visible at the bottom of the browser window.

medicine_name	manufacturer_name
HB Cefi DS (30 ml)	Health Biomed Pharma
Mefflox (200 mg)	Health Biomed Pharma
Amblocin (500 mg)	Health Biomed Pharma
HB Pod (200 mg)	Health Biomed Pharma
Mefflox OZ (60 ml)	Health Biomed Pharma
Ceftomed (250 mg)	Health Biomed Pharma
HB Cefi (100 mg)	Health Biomed Pharma
Trammed (100 mg)	Health Biomed Pharma
Tramamed (100 mg)	Health Biomed Pharma
Ceftomed (1000 mg)	Health Biomed Pharma
I Fer (Inj)	Health Biomed Pharma
HB Cefi (200 mg)	Health Biomed Pharma
Amblocin (100 mg)	Health Biomed Pharma
Azromed (500 mg)	Health Biomed Pharma
Biomyxin B (5 Lacs)	Health Biomed Pharma

## Get all medicine details which has provided constituent.

The screenshot shows the TrueMed application interface. At the top, there's a navigation bar with "TrueMed" and a link "Add or Delete medicine". Below this, the "Search Medicine Details" section contains a text input field with the placeholder "Start typing medicine name" and a "Search" button. Underneath the input field is a list of radio button options: "Get Manufacturer Details", "Get Category Details", "Get Constituents", "Get Metrics", "Get User Reviews", and "Get Alternate Medicine details". The "Get Constituents" option is selected. Below this is the "Medicines manufactured by Manufacturer" section with a text input field "Start typing manufacturer name" and a "Search" button. The "Search medicines by constituents" section has a text input field containing "Potassium Iodide" and a "Search" button. The "Search medicines by category" section has a text input field "Start typing category name" and a "Search" button. At the bottom of the form area, there is a blue button labeled "Click here for OLAP Operations". The Windows taskbar at the bottom shows various application icons and the system clock indicating 12:35 AM on 12/9/2015.

## Output:

The screenshot shows the search results for "Potassium Iodide" in the TrueMed application. The results are displayed in a table with two columns: "medicine\_name" and "constituent\_name". The table lists 12 medicines, all of which have "Potassium Iodide" as the constituent. A "BACK" button is visible in the top left corner of the results area. The Windows taskbar at the bottom shows the system clock indicating 12:36 AM on 12/9/2015.

medicine_name	constituent_name
Bactivate (200 ml)	Potassium Iodide
Combitone	Potassium Iodide
M Vim	Potassium Iodide
Sea Vital	Potassium Iodide
Cyltabs	Potassium Iodide
Unijfit (100 ml)	Potassium Iodide
Zoxavit Plus	Potassium Iodide
New Viminta (100 ml)	Potassium Iodide
Zentop (200 ml)	Potassium Iodide
Lycomed (200 ml)	Potassium Iodide
Zib (200 ml)	Potassium Iodide
Guard	Potassium Iodide

## User can also search medicines by category name

The screenshot shows a web browser window with the URL `localhost/226/index2.php?`. The page has a blue header with the text "TrueMed Add or Delete medicine". Below the header, there is a section titled "Search Medicine Details" with a search bar containing the placeholder text "Start typing medicine name" and a blue "Search" button. Below the search bar, there is a list of radio buttons with the following labels: "Get Manufacturer Details", "Get Category Details", "Get Constituents", "Get Metrics", "Get User Reviews", and "Get Alternate Medicine details". Below this list, there is a section titled "Medicines manufactured by Manufacturer" with a search bar containing the placeholder text "Start typing manufacturer name" and a blue "Search" button. Below this, there is a section titled "Search medicines by constituents" with a search bar containing the placeholder text "Start typing constituent name" and a blue "Search" button. Below this, there is a section titled "Search medicines by category" with a search bar containing the text "Capsule" and a blue "Search" button. At the bottom of the page, there is a blue button with the text "Click here for OLAP Operations". The Windows taskbar is visible at the bottom of the browser window.

TrueMed Add or Delete medicine

Search Medicine Details

Start typing medicine name Search

- ☐ Get Manufacturer Details
- ☐ Get Category Details
- ☐ Get Constituents
- ☐ Get Metrics
- ☐ Get User Reviews
- ☐ Get Alternate Medicine details

Medicines manufactured by Manufacturer

Start typing manufacturer name Search

Search medicines by constituents

Start typing constituent name Search

Search medicines by category

Capsule Search

Click here for OLAP Operations

## Output:

The screenshot shows a web browser window with the URL `localhost/226/category.php`. The page has a blue header with the text "TrueMed". Below the header, there is a blue button with the text "BACK". Below the button, there is a section titled "Search results Category name: Capsule". Below this section, there is a table with two columns: "medicine\_name" and "category\_type". The table contains 14 rows of data, all of which have "Capsule" in the "category\_type" column. The "medicine\_name" column contains the following values: "Fenacor (200 mg)", "Imferon Cap", "Neozine (50 mg)", "Oxete (20 mg)", "Covita (268 mg)", "Gayvit Forte", "Ulozet (40 mg)", "Ramicard (2.5 mg)", "Terapal (250 mg)", "Flutee (40 mg)", "Psychopin (10 mg)", and "Zircon Cap". The Windows taskbar is visible at the bottom of the browser window.

TrueMed

BACK

Search results Category name: Capsule

medicine_name	category_type
Fenacor (200 mg)	Capsule
Imferon Cap	Capsule
Neozine (50 mg)	Capsule
Oxete (20 mg)	Capsule
Covita (268 mg)	Capsule
Gayvit Forte	Capsule
Ulozet (40 mg)	Capsule
Ramicard (2.5 mg)	Capsule
Terapal (250 mg)	Capsule
Flutee (40 mg)	Capsule
Psychopin (10 mg)	Capsule
Zircon Cap	Capsule

## Page to Insert or Delete Medicine:

The screenshot shows a web browser window with the address bar displaying `localhost/226/addetails.php`. A `BACK` button is visible in the top left corner. The page content is divided into two sections: *Insert Medicine* and *Delete Medicine*.

**Insert Medicine**

This section contains a form with the following fields:

- Medicine Name
- ManuFaacturer Name
- Category
- Package Type
- Package Price
- Package Quantity
- Unit Quantity
- Unit Type
- Constituent Name
- Constituent Strength
- Constituent Quantity

At the bottom of the form are two buttons: `insert` and `delete`.

**Delete Medicine**

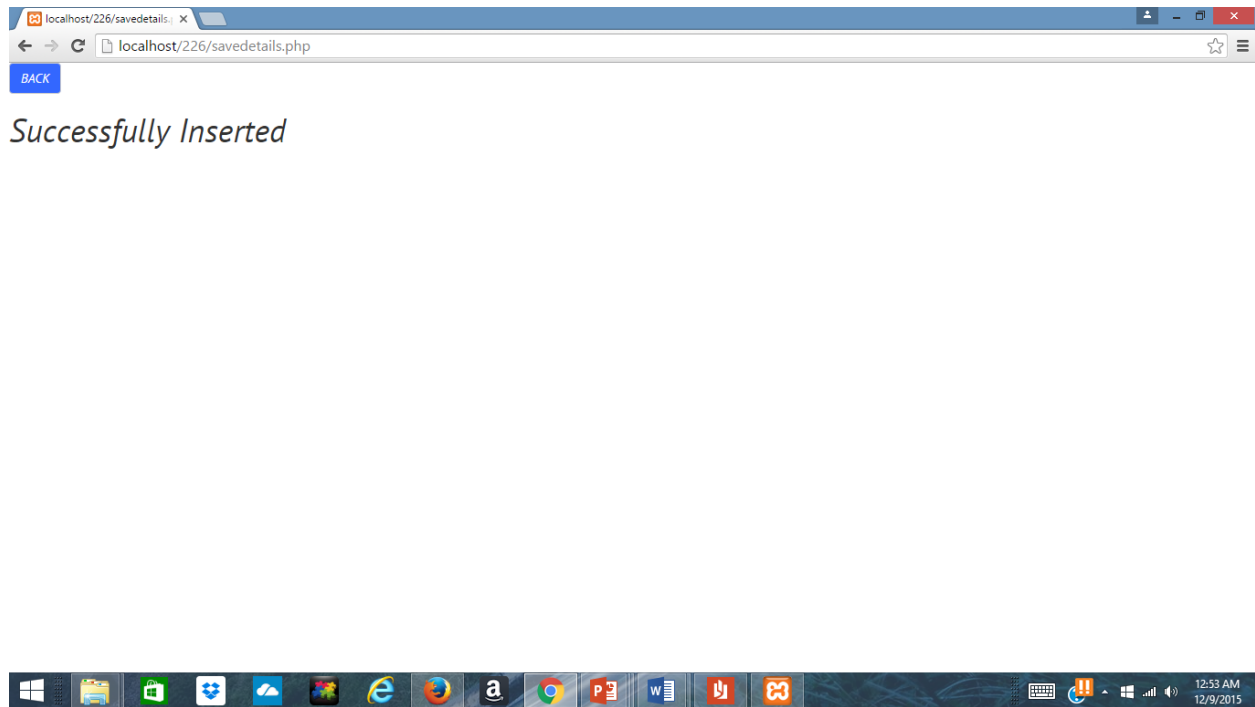
This section contains a single text input field labeled `Medicine Name`. Below the input field is a `delete` button.

The Windows taskbar at the bottom shows various application icons and the system clock indicating 12:31 AM on 12/9/2015.

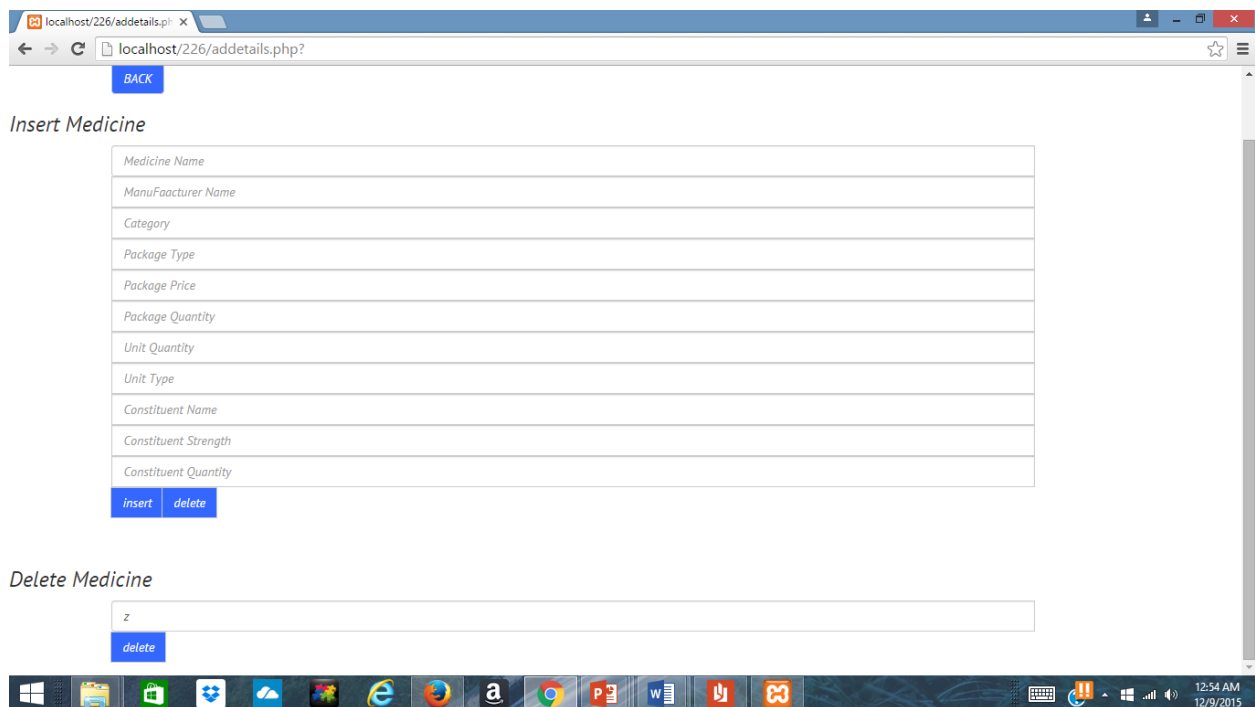
## Insert:

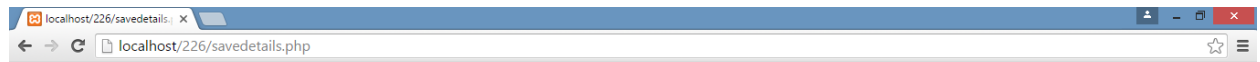
This screenshot is similar to the previous one, showing the same web browser window and page layout. However, the *Insert Medicine* form is now populated with the letter `z` in all ten input fields. The `delete` button in the *Delete Medicine* section is also visible.

The Windows taskbar at the bottom shows the same application icons and system clock indicating 12:33 AM on 12/9/2015.



## Delete medicine:





`string(5) '72923'`

*Successfully Deleted.*



## OLAP Operations:

### Analyze by Medicine Name or Manufacturer Name

226 diagrams - dsskreddy... ERDPlus Medicine

localhost/226/index3.php

TrueMed

OLAP Operations

Analyze by Medicine Name

Start typing medicine name

Year

Quarter All Quarters

Search

Analyze by Manufacturer Name

Start typing manufacturer name

Year

Quarter All Quarters

Search

Windows taskbar: 12:38 AM 12/9/2015



## Total Number of units of Medicine “Bactivate (200 ml)” manufactured in the quarter “Q2” of the year 2014

Medicine x

localhost/226/index3.php

TrueMed

OLAP Operations

Analyze by Medicine Name

Bactivate (200 ml)

Year: 2014

Quarter: Q2

Search

Analyze by Manufacturer Name

Start typing manufacturer name

Year:

Quarter: All Quarters

Search

Windows taskbar: 12:44 AM 12/9/2015

## Output:

localhost/226/olap.php x

localhost/226/olap.php

TrueMed

BACK

medicine_name	sum(production.unitsManufactured)	manufacturer_name	year	quarter
Bactivate (200 ml)	67118	BMW Pharmaco India Pvt Ltd	2014	Q2

Windows taskbar: 12:43 AM 12/9/2015

**Total Number of units of Medicine “Bactivate (200 ml)” manufactured in all the years.**

Medicine x

localhost/226/index3.php

TrueMed

OLAP Operations

Analyze by Medicine Name

Bactivate (200 ml)

Year

Quarter: All Quarters

Search

Analyze by Manufacturer Name

Start typing manufacturer name

Year

Quarter: All Quarters

Search

Windows taskbar icons: File Explorer, Edge, Chrome, Amazon, PowerPoint, Word, Outlook, etc.

System clock: 12:46 AM 12/9/2015

## Output:

localhost/226/olap.php

TrueMed

BACK

medicine_name	sum(production.unitsManufactured)	manufacturer_name
Bactivate (200 ml)	1342190	BMW Pharmaco India Pvt Ltd

12:51 AM  
12/9/2015

## Created View called medicineView

