NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

Approved and Accredited by AICTE, Affiliated to Visvesvaraya Technological University

Yelahanka, Bangalore – 560 064.

DATABASE MANAGEMENT SYSTEM PROJECT REPORT ON

"LAUNDRY SERVICE DATABASE"

SUBMITTED BY:

ROSHAN BADRINATH

1NT15CS140

GUIDED BY:

DR.PRITI MISHRA	MRS.JAGDEVI N KALSHETTY
(ASSOCIATE PROFESSOR)	(ASSISTANT PROFESSOR)
(DEPT.OF CSE)	(DEPT.OF CSE)

NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

Approved and Accredited by AICTE, Affiliated to Visvesvaraya Technological University

Yelahanka, Bangalore – 560 064.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

Certified that the project work entitled STUDENT MANAGEMENT SYSTEM is a bonafied work carried out by Roshan Badrinath[1NT15CS140] of semester V, in partial fulfillment for the award of degree of **bachelor of engineering of Visvesvaraya Technological University, Belgaum** during the year 2017-18. It is certified that all the corrections or suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for bachelor of engineering degree.

Guide 1	**Guide 2**	**Head of Department**
(Dr. Priti Mishra	(Mrs. Jagdevi N Kalshetty	(Dr. Thippeswamy M N
Assoc. Professor	Asst. Professor	Hod &Professor
Dept Of Cse	Dept Of Cse	Dept Of Cse
Nmit, Bangalore-64)	Nmit, Bangalore-64)	Nmit, Bangalore-64)

External VIVA

Name of the Examiners	**Signature with Date**
1._____	_____

ACKNOWLEDGEMENT

We are extremely grateful to our HOD, Dr. Thippeswamy who extended his support towards our project.

We remain indebted to our teacher Dr. Priti Mishra for her constant support in the Design, Implementation and Evaluation of the project. We are thankful to her for constructive criticism and valuable suggestions, which benefited us a lot while developing the project.

With candor and pleasure we take this opportunity to thank Mrs. Jagdevi N Kalshetty for the encouragement, co-operation and consent, without which we might not have been able to accomplish this project.

Finally, we gratefully acknowledge the support, encouragement and patience of our friends.

TABLE OF CONTENTS

ABSTRACT

In today's fast paced busy world, many people don't have any enough time to wash clothes and iron it. So this is a small project for the implementation of the laundry service.

Laundry processes include washing (usually with water containing detergents or other chemicals), agitation, rinsing, drying, pressing (ironing), and folding. The washing will often be done at a temperature above room temperature to increase the activities of any chemicals used and the solubility of stains, and high temperatures kill micro-organisms that may be present on the fabric.

A self-service laundry, coin laundry, or coin wash is a facility where clothes are washed and dried without much personalized professional help.

This helps us in our eternal quest for work-life balance. So with the help of this we can stop wasting our time doing dirty laundry, instead do something that makes us happy – build our business, or spend some time with our beloved ones.

Our application allows customers to wash different types of clothes such as cotton,nylon,silk,etc..It also provides information on the rates for different types of clothes. This Project helps in managing the customer details who has provided clothes for washing and it also maintains the cost and due dates within which the clothes has to be returned to the customer.

1. INTRODUCTION

DATABASE:A database is a collection of related data. Defining a database involves specifying the data type, attributes and constraints for the data to be stored.

Constructing a database is a process of storing itself on some storage medium like disk or tape that can be handled by the DBMS. Manipulating a database includes such functions like querying a database, to retrieve a specific data, updating the database, to reflect the changes in the miniworld and generate reports from the data.

DBMS: It is a collection of programs that enables us to create, maintain and manipulate the database. It is hence the general-purpose software system that facilitates the process of defining, constructing and manipulating databases for various applications.

DATA MODEL: Is a set of concepts that is used to describe the structure of the database.

HIERARCHICAL DATA MODEL:This model represents data hierarchy which has to be maintained.

DATABASE ABSTRACTION: Major objective of databases is to provide the user with an abstract view of the data i.e. the system hides the details about the storage of the database. They include:

- LOW LEVEL ABSTRACTION: it defines how exactly the data is stored in the database. It is a detailed view dealing with the actual constructs used and the storage details of the database.
- CONCEPTUAL LEVEL: The next level of the abstraction defines how exactly the data is stored and the relationship that exists between the data. Implementation of the complex physical storage is hidden from the user.
- VIEW LEVEL: This s the highest level of data abstraction and provides the users wit facility to view the part of the database. This is to exploit the fact that many users will not need the intricate details of the data storage.

2. REQUIREMENTS

This application is actually a suite of applications developed using:

Hardware interfaces

- Memory minimum of 1GB RAM
- Hard disk of 40 GB
- Monitor
- Mouse
- Keyboard
- Printer

Software interfaces

- Operating System --------- Linux
- Front End --------- HTML, CSS
- Backend --------- PHP, Apache2 Server, MySQL

3. ER DIAGRAM OF STUDENT MANAGEMENT SYSTEM

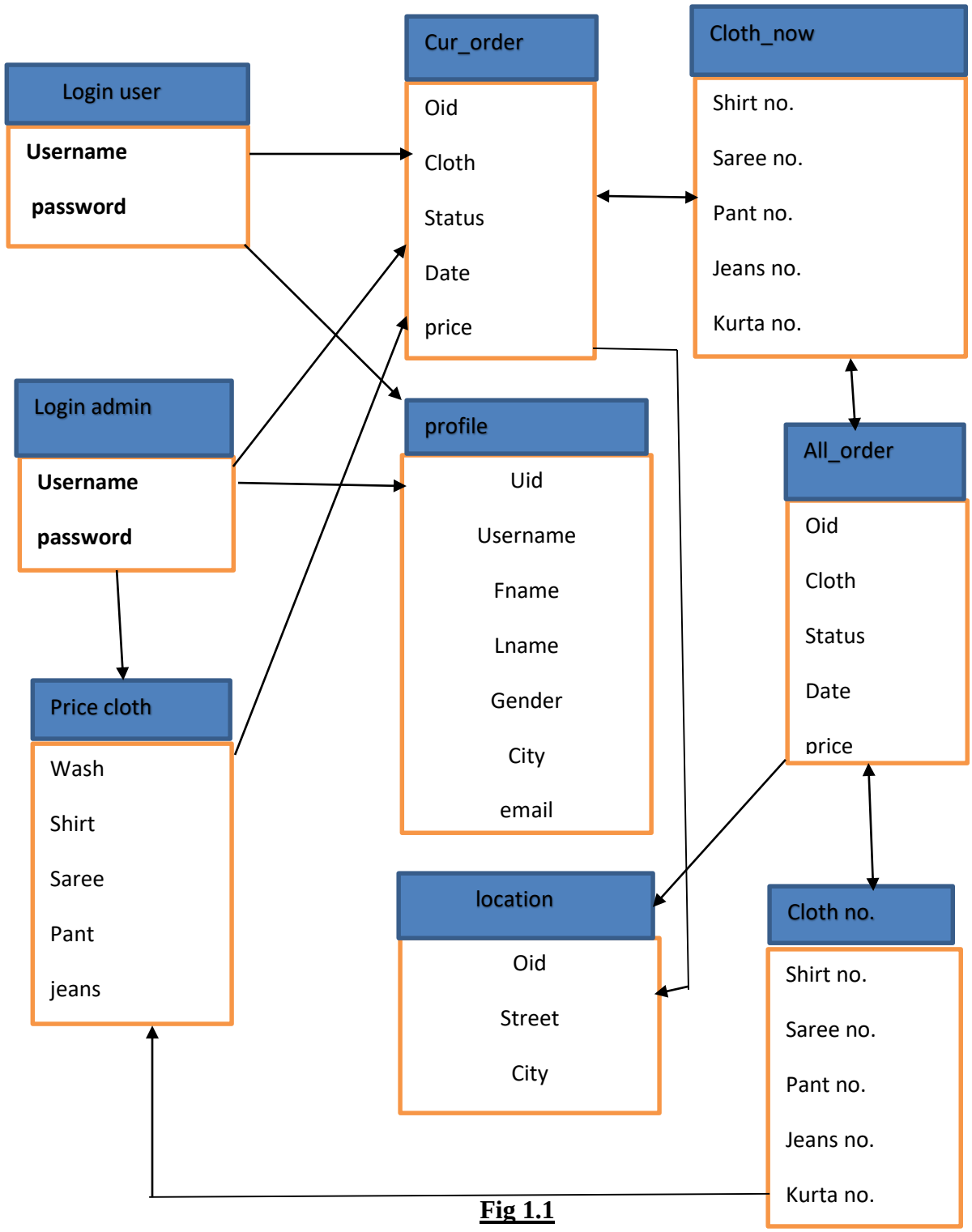

Fig 1.1

DESCRIPTION OF ER-DIAGRAM

An Entity Relationship data model is based on a perception of a real world that consists of a set of basic objects called **entities** and of **relationships** among these entities.

The basic features of an ER diagram are:

1.**ENTITY TYPE:**

An entity type defines a collection of entities that have the same attributes .Each entity type in the database is described by its name and attributes.

The entity types used in our ER diagram are: LOGIN USER, LOGIN ADMIN, PRICE CLOTH, CLOTH NO, CURORDER, ALLORDER, PROFILE and LOCATION.

The attributes of the following entity types are:

1. LOGIN USER- username,password.
2. LOGIN ADMIN-username,password
3. PRICE CLOTH- wash,shirt,pant,kurta.
4. CLOTH NO-oid, shirtno, pantno,sareeno,kurtano.
5. CURORDER-oid,uid,status,date,price,cloth.
6. ALLORDER- oid,uid,status,date,price,cloth.
7. CLOTH NOW-oid, shirtno, pantno,sareeno,kurtano.
8. PROFILE-uid,username,fname,lname,gender,city,landmark.
9. LOCATION-oid,street,city,landmark.

4. SCHEMA'S

1. **schema for login user**

```
mysql> desc loginuser;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| username | varchar(20) | NO   | PRI | NULL    |       |
| password | varchar(50) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
2 rows in set (0.01 sec)
```

Fig 4.1

2. **schema for login admin**

```
mysql> desc loginadmin;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| username | varchar(40) | YES  |     | NULL    |       |
| password | varchar(40) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
2 rows in set (0.01 sec)
```

Fig 4.2

3. **schema for price cloth**

```
mysql> desc pricecloth;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| wash      | varchar(20) | YES  |     | NULL    |       |
| ctshirt   | int(11)     | YES  |     | NULL    |       |
| cttshirst | int(11)     | YES  |     | NULL    |       |
| ctpant    | int(11)     | YES  |     | NULL    |       |
| ctsaree   | int(11)     | YES  |     | NULL    |       |
| slksaree  | int(11)     | YES  |     | NULL    |       |
| kurta     | int(11)     | YES  |     | NULL    |       |
| woollen   | int(11)     | YES  |     | NULL    |       |
| jeans     | int(11)     | YES  |     | NULL    |       |
| others    | int(11)     | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
10 rows in set (0.01 sec)
```

Fig 4.3

4.schema for cloth number

```
mysql> desc clothno;
+------------+---------+------+-----+---------+-------+
| Field      | Type    | Null | Key | Default | Extra |
+------------+---------+------+-----+---------+-------+
| oid        | int(11) | YES  | MUL | NULL    |       |
| ctshirtno  | int(11) | YES  |     | NULL    |       |
| cttshirtno | int(11) | YES  |     | NULL    |       |
| ctpantno   | int(11) | YES  |     | NULL    |       |
| ctsareeno  | int(11) | YES  |     | NULL    |       |
| slksareeno | int(11) | YES  |     | NULL    |       |
| kurtano    | int(11) | YES  |     | NULL    |       |
| woollenno  | int(11) | YES  |     | NULL    |       |
| jeansno    | int(11) | YES  |     | NULL    |       |
| othersno   | int(11) | YES  |     | NULL    |       |
+------------+---------+------+-----+---------+-------+
10 rows in set (0.00 sec)
```

Fig 4.4

5. schema for cloth now

```
mysql> desc clothnow;
+------------+---------+------+-----+---------+-------+
| Field      | Type    | Null | Key | Default | Extra |
+------------+---------+------+-----+---------+-------+
| oid        | int(11) | YES  | MUL | NULL    |       |
| ctshirtno  | int(11) | YES  |     | NULL    |       |
| cttshirtno | int(11) | YES  |     | NULL    |       |
| ctpantno   | int(11) | YES  |     | NULL    |       |
| ctsareeno  | int(11) | YES  |     | NULL    |       |
| slksareeno | int(11) | YES  |     | NULL    |       |
| kurtano    | int(11) | YES  |     | NULL    |       |
| woollenno  | int(11) | YES  |     | NULL    |       |
| jeansno    | int(11) | YES  |     | NULL    |       |
| othersno   | int(11) | YES  |     | NULL    |       |
+------------+---------+------+-----+---------+-------+
10 rows in set (0.00 sec)
```

Fig 4.5

6. schema for profile

```
mysql> desc profile;
+----------+-------------+------+-----+---------+----------------+
| Field    | Type        | Null | Key | Default | Extra          |
+----------+-------------+------+-----+---------+----------------+
| uid      | int(11)     | NO   | PRI | NULL    | auto_increment |
| username | varchar(20) | YES  | MUL | NULL    |                |
| fname    | varchar(20) | YES  |     | NULL    |                |
| lname    | varchar(20) | YES  |     | NULL    |                |
| gender   | varchar(10) | YES  |     | NULL    |                |
| street   | varchar(40) | YES  |     | NULL    |                |
| city     | varchar(20) | YES  |     | NULL    |                |
| landmark | varchar(30) | YES  |     | NULL    |                |
| email    | varchar(30) | YES  |     | NULL    |                |
| phno     | varchar(20) | YES  |     | NULL    |                |
+----------+-------------+------+-----+---------+----------------+
10 rows in set (0.00 sec)
```

Fig 4.6

7. schema for location

```
mysql> desc location;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| oid      | int(11)     | YES  | MUL | NULL    |       |
| street   | varchar(40) | YES  |     | NULL    |       |
| city     | varchar(40) | YES  |     | NULL    |       |
| landmark | varchar(40) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

Fig 4.7

8. schema for curorder

```
mysql> desc curorder;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| oid        | int(11)     | YES  | MUL | NULL    |       |
| uid        | int(11)     | YES  | MUL | NULL    |       |
| status     | varchar(20) | YES  |     | NULL    |       |
| totalcloth | int(11)     | YES  |     | NULL    |       |
| totalprice | double      | YES  |     | NULL    |       |
| deldate    | date        | YES  |     | NULL    |       |
| orddate    | date        | YES  |     | NULL    |       |
| recdate    | date        | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
8 rows in set (0.00 sec)
```

Fig 4.8

9. schema for allorder

```
mysql> desc allorder;
+------------+---------+------+-----+---------+----------------+
| Field      | Type    | Null | Key | Default | Extra          |
+------------+---------+------+-----+---------+----------------+
| oid        | int(11) | NO   | PRI | NULL    | auto_increment |
| uid        | int(11) | YES  | MUL | NULL    |                |
| totalcloth | int(11) | YES  |     | NULL    |                |
| totalprice | double  | YES  |     | NULL    |                |
| deldate    | date    | YES  |     | NULL    |                |
| orddate    | date    | YES  |     | NULL    |                |
+------------+---------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

Fig 4.9

5. IMPLEMENTATION CODE

5.1)ADMIN:

```php
<?php
include 'conn.php';
session_start ();
$uname = $_SESSION ['un'];
$j = $_SESSION ['j'];
$arr = array ();
if (isset ( $_POST ['adsubmit'] )) {
    for($i = 0; $i < $j; $i ++) {
        $nsta = "s" . $i;
        $nrec = "r" . $i;
        $ndel = "d" . $i;
        $noid = "o" . $i;
        $status = $_POST [$nsta];
        $rec = $_POST [$nrec];
        $del = $_POST [$ndel];
        $oid = $_SESSION [$noid];

        if ($status == 'Ordered' || $status == 'Collection'
            || $status == 'Processing' || $status == 'Dispatched'
            || $status == 'Delivered') {
            if (($rec != NULL && $rec < date ( "Y-m-d" ))
                || ($del != NULL && $del < date ( "Y-m-d" )) || ($rec == NULL && $del != NULL)) {
                array_push ( $arr, $i );
            } else {
                $qry16 = "update allorder set deldate='"
                        . $del . "' where oid=" . $oid . ";";
                $qry17 = "update curorder set status='" . $status
                        . "',recdate='" . $rec . "',deldate='" . $del . "' where oid=" . $oid . ";";
                $qry18 = "update curorder set status='" . $status
                        . "',recdate='" . $rec . "' where oid=" . $oid . ";";
                $qry19 = "update curorder set status='" . $status . "' where oid=" . $oid . ";";
                if ($del != NULL && $rec != NULL) {
                    if ($rec > $del) {
                        array_push ( $arr, $i );
                    } else {
                        $res16 = $conn->query ( $qry16 );
                        $res17 = $conn->query ( $qry17 );
                    }
                } else if ($del == NULL && $rec != NULL) {
                    $res18 = $conn->query ( $qry18 );
                } else {
                    $res19 = $conn->query ( $qry19 );
                }
                if ($status == 'Delivered') {
                    $qry20 = "delete from curorder where oid=" . $oid . ";";
                    $res20 = $conn->query ( $qry20 );
                }
            }
        } else {
            array_push ( $arr, $i );
        }
    }
}
if($arr != NULL)
    for($i=0 ; $i<sizeof($arr) ; $i++)
        echo ("<script>alert('Error at order '.$arr[$i]);</script>'");
?>
```

Fig:5.1.1

5.2)BILLING:

```
12
13 $paddress = $_SESSION ['paddress'];
14 $dry = $_SESSION ['dry'];
15 $wet = $_SESSION ['wet'];
16 $count = $_SESSION ['count'];
17 $sum = $_SESSION ['sum'];
18
19 for($i = 0; $i < 9; $i ++) {
20     if ($dry [$i] == NULL) {
21         $dry [$i] = 0;
22     }
23 }
24 for($i = 0; $i < 9; $i ++) {
25     if ($wet [$i] == NULL) {
26         $wet [$i] = 0;
27     }
28 }
29
30 if (isset ( $_POST ['r'] )) {
31     if ($_POST ['r'] == "padd") {
32         if ($paddress != NULL) {
33             $qry5 = "insert into allorder values (DEFAULT," . $uid . ","
34                     . $count . "," . $sum . ",NULL,curdate());";
35             $res5 = $conn->query ( $qry5 );
36             if ($res5 === TRUE) {
37                 $qry6 = "select max(oid) from allorder where uid = " . $uid . ";";
38                 $res6 = $conn->query ( $qry6 );
39                 $row6 = $res6->fetch_assoc ();
40
41                 $qry7 = "insert into curorder values (" . $row6 ['max(oid)']
42                         . "," . $uid . ",'Ordered'," . $count . "," . $sum .
43                         ",NULL,curdate(),NULL);";
44                 $res7 = $conn->query ( $qry7 );
45
46                 $qry8 = "insert into clothno values (" . $row6 ['max(oid)'] . ","
47                         . $dry [0] . "," . $dry [1] . "," . $dry [2] . ","
48                         . $dry [3] . "," . $dry [4] . "," . $dry [5] . ","
49                         . $dry [6] . "," . $dry [7] . "," . $dry [8] . ");";
50                 $qry9 = "insert into clothnow values (" . $row6 ['max(oid)'] . ","
51                         . $wet [0] . "," . $wet [1] . "," . $wet [2] . ","
52                         . $wet [3] . "," . $wet [4] . "," . $wet [5] . ","
53                         . $wet [6] . "," . $wet [7] . "," . $wet [8] . ");";
54                 $res8 = $conn->query ( $qry8 );
55                 $res9 = $conn->query ( $qry9 );
56
57
58                 $qry10 = "insert into location values (" . $row6 ['max(oid)'] . ",'"
59                         . $paddress ['street'] . "','" . $paddress ['city'] . "','"
60                         . $paddress ['landmark'] . "');";
61                 $res10 = $conn->query ( $qry10 );
62                 header ( "location: User.php" );
63             }
64         } else {
65             header ( "location: User.php" );
66         }
67     } else {
68         $qry5 = "insert into allorder values (DEFAULT," . $uid . "," . $count
69                 . "," . $sum . ",NULL,curdate());";
```

Fig:5.2.1

5.3)CONNECTION:

```php
<?php
$conn = new mysqli ( "localhost:3306", "root", "root", "Project" );
if ($conn->connect_error) {
    echo ('<script>alert("Failed..!!");</script>');
}
?>
```

Fig:5.3.1

5.4)USER CONTROL:

```php
<?php
include 'conn.php';
session_start ();
if (isset ( $_POST ['s1'] )) {
    $fname = $_POST ['firstname'];
    $lname = $_POST ['lastname'];
    $uname = $_POST ['uname'];
    $email = $_POST ['email'];
    $passw = md5 ( $_POST ['passw'] );
    $phno = $_POST ['phno'];

    $qry1 = "insert into loginuser values ('" . $uname . "','" . $passw . "');";
    $qry2 = "insert into profile values (DEFAULT,'" . $uname . "','" . $fname . "','"
            . $lname . "',NULL,NULL,NULL,NULL,'" . $email . "','" . $phno . "');";

    if ($conn->query ( $qry1 ) === TRUE) {
        $conn->query ( $qry2 );
    } else {
        echo ("<script>alert('Username already taken..!!');</script>'");
    }
} elseif (isset ( $_POST ['s2'] )) {
    $uname = $_POST ['uname'];
    $passw = $_POST ['passw'];

    $qry3 = "select * from  loginuser where username = '"
            . $uname . "' and password = '". md5 ( $passw ) . "';";
    $res = $conn->query ( $qry3 );
    if ($res->num_rows == 1) {
        $row = $res->fetch_assoc ();
        $_SESSION ['un'] = $row ['username'];
        header ( "location: User.php" );
    } else {
        echo '<script>alert("Invalid Username or Password..!!");</script>';
    }
} elseif (isset ( $_POST ['s3'] )) {
    $uname = $_POST ['uname'];
    $passw = $_POST ['passw'];

    $qry3 = "select * from  loginadmin where username = '"
            . $uname . "' and password = '" . $passw . "';";
    $res = $conn->query ( $qry3 );
    if ($res->num_rows == 1) {
        $row = $res->fetch_assoc ();
        $_SESSION ['un'] = $row ['username'];
        header ( "location: Admin.php" );
    } else {
        echo '<script>alert("Admin not found..!!");</script>';
    }
}
$conn->close ();
?>
```

Fig:5.4.1

5.5)LOGOUT:

```php
<?php
session_start ();
if (session_destroy ()) {
     header ( "Location: Home.php" );
}
?>
```

Fig:5.5.1

5.6)USER:

```php
<?php
include 'conn.php';
session_start ();
$uname = $_SESSION ['un'];

$qry = "select uid from profile where username = '" . $uname . "'";
$res = $conn->query ( $qry );
if ($res->num_rows == 1) {
    $row = $res->fetch_assoc ();
    $uid = $row ['uid'];
}

if (isset ( $_POST ['ps'] )) {
    $fname = $_POST ['firstname'];
    $lname = $_POST ['lastname'];
    $gender = $_POST ['gender'];
    $street = $_POST ['street'];
    $city = $_POST ['city'];
    $landmark = $_POST ['landmark'];
    $email = $_POST ['email'];
    $phno = $_POST ['phno'];
    $passw = $_POST ['passw'];

    if ($fname != NULL && $lname != NULL && $email != NULL) {
        $qry13 = "update profile set fname = '" . $fname . "', lname = '"
                . $lname . "', gender = '" . $gender . "', street = '"
                . $street . "', city = '" . $city . "', landmark = '"
                . $landmark . "', email = '" . $email . "', phno = '"
                . $phno . "' where uid = " . $uid . ";";
        $res13 = $conn->query ( $qry13 );
    } else {
        echo ("<script>alert('Invalid Entry');</script>'");
    }
    if ($passw != NULL) {
        $passw = md5 ( $_POST ['passw'] );
        $qry14 = "update loginuser set passw = '" . $passw . "' where uid = " . $uid . ";";
        $res14 = $conn->query ( $qry14 );
        if(!$res14) echo ("<script>alert('Error...Password not Changed..!!');</script>'");
    }
}

?>
```

Fig:5.6.1

5.7) ORDER:

```php
<?php
$qry2 = "select * from pricecloth where wash = 'dry';";
$qry3 = "select * from pricecloth where wash = 'wet';";
$rdry = $conn->query ( $qry2 );
$rwet = $conn->query ( $qry3 );
$dryrow = $rdry->fetch_assoc ();
$wetrow = $rwet->fetch_assoc ();
$tr = array (
        "Cotton Shirt",
        "Cotton Tshirt",
        "Cotton Pant",
        "Cotton Saree",
        "Silk Saree",
        "Kurta",
        "Woollen",
        "Jeans",
        "Others"
);
$i = 0;
$sum = 0;
$count = 0;
foreach ( $dryrow as $x => $x_value ) {
    if ($x_value == "dry")
        continue;
    if ($dry [$i]) {
        echo ("<tr>
                        <td>" . $tr [$i] . "</td>
                        <td>Dry</td>
                        <td>" . $dry [$i] . "</td>
                        <td>" . $dry [$i] * $x_value . "</td>
                    </tr>");
        $sum += $dry [$i] * $x_value;
        $count += $dry [$i];
        $i ++;
    } else
        $i ++;
}
$i = 0;
foreach ( $wetrow as $x => $x_value ) {
    if ($x_value == "wet")
        continue;
    if ($wet [$i]) {
        echo ("<tr>
                        <td>" . $tr [$i] . "</td>
                        <td>Wet</td>
                        <td>" . $wet [$i] . "</td>
                        <td>" . $wet [$i] * $x_value . "</td>
                    </tr>");
        $sum += $wet [$i] * $x_value;
        $count += $wet [$i];
        $i ++;
    } else
        $i ++;
}
$_SESSION ['sum'] = $sum;
$_SESSION ['count'] = $count;
?>
```

Fig:5.7.1

6)SNAPSHOTS

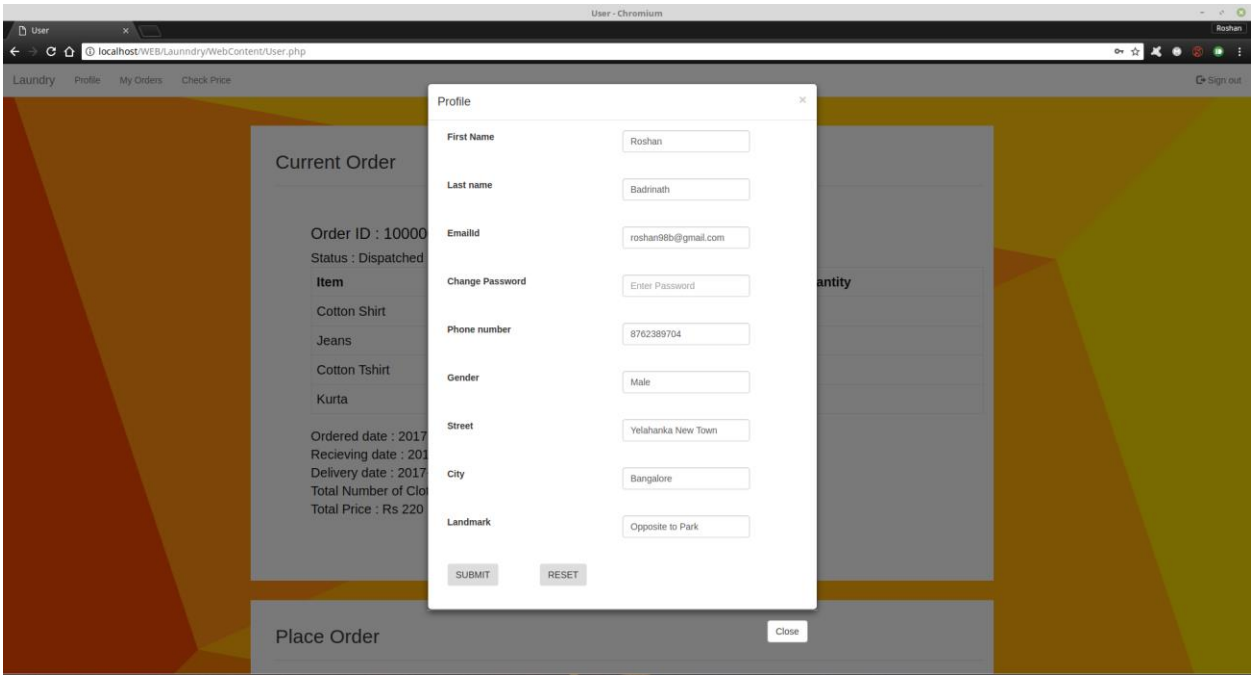

Fig:6.1 USER PROFILE

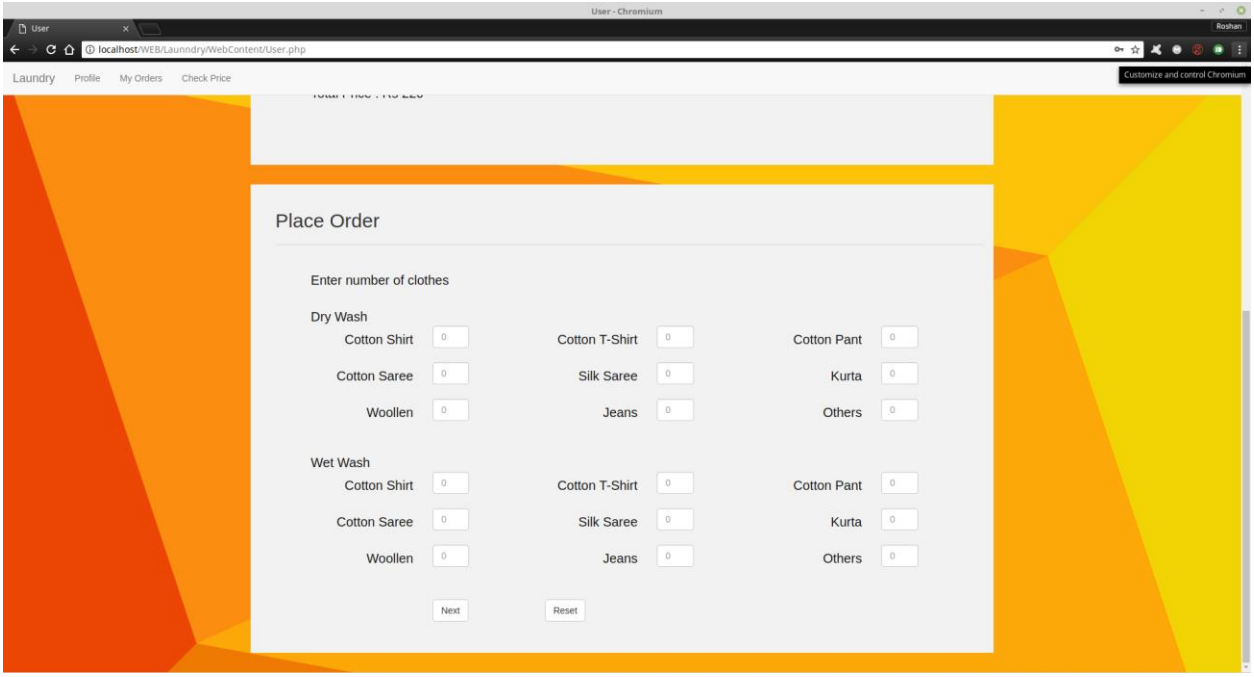

Fig:6.2 USER ORDER

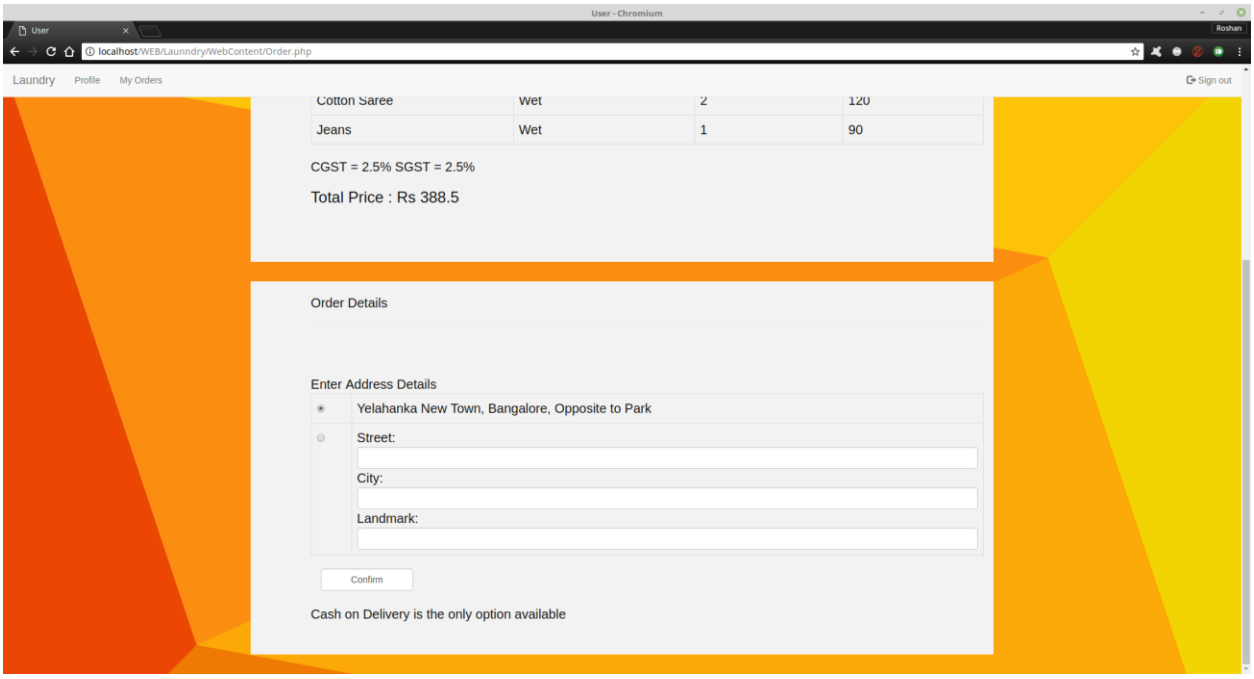

Fig:6.3 USER DETAILS

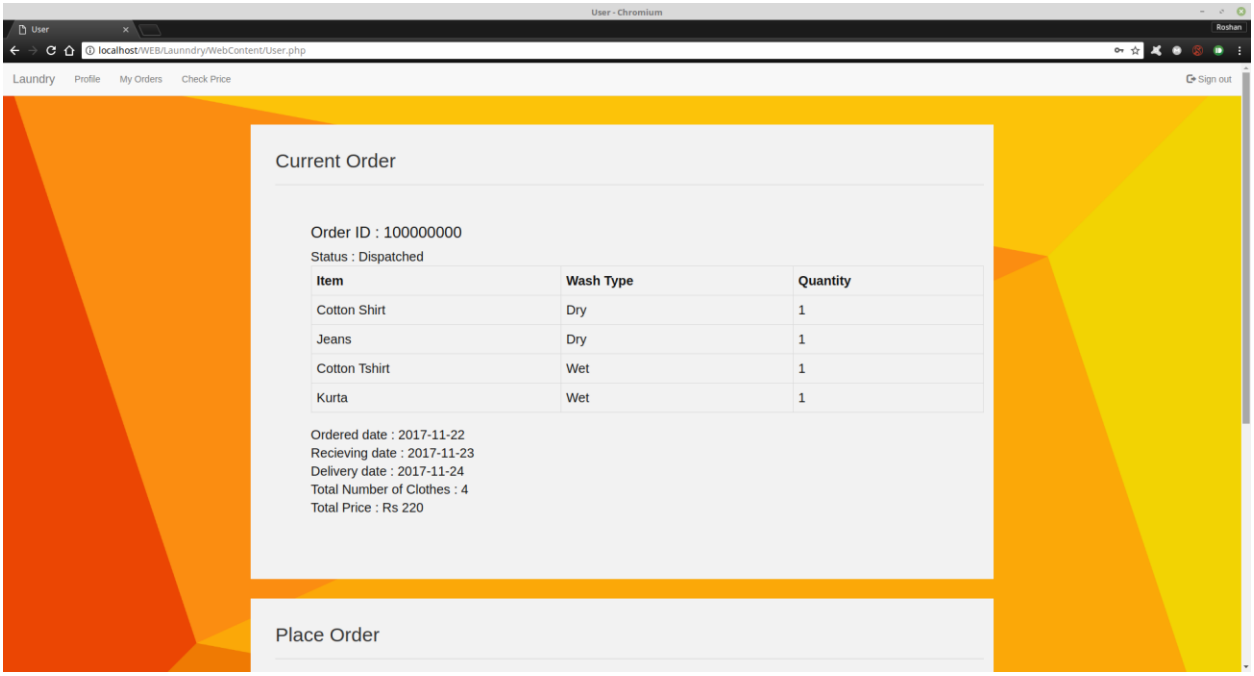

Fig:6.4 USER CURRENT ORDER

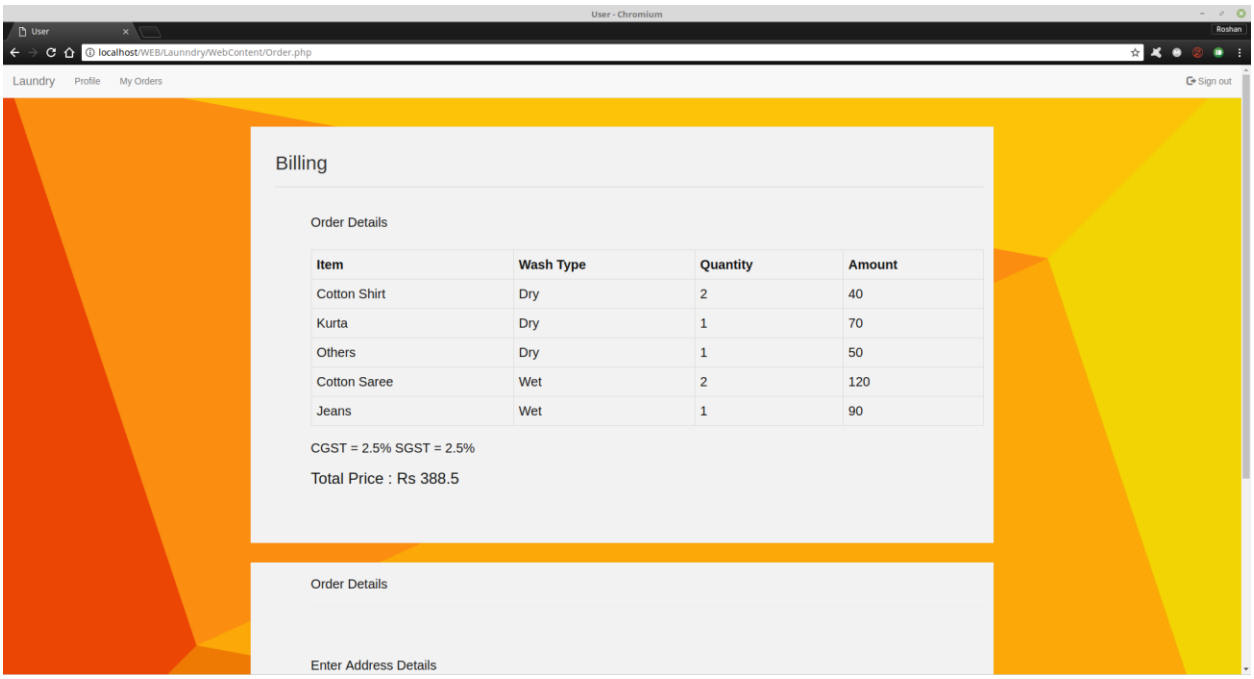

Fig:6.5 USER BILL

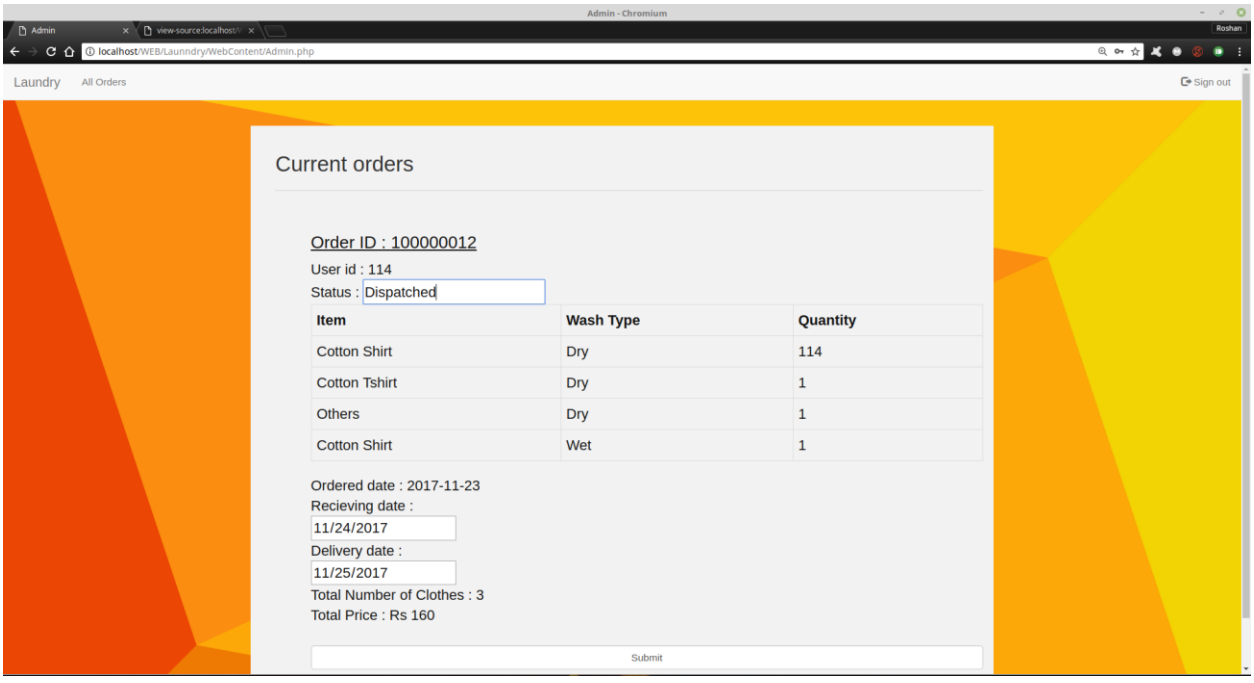

Fig:6.6 ADMIN CURRENT ORDER

7. CONCLUSION

This project has given us an ample opportunity to design, code, test and implements an application. This has helped in putting into practice of various Software Engineering principles and Database Management concepts like maintaining integrity and consistency of data. Further, this has helped us to learn more about MySQL, HTML, PHP and Personal Web Server applications.

8. BIBLIOGRAPHY

- http://smallbusiness.chron.com
- https://www.edx.org/course/introduction-html-javascript-microsoft-dev211-1x-2.
- https://play.google.com/store/apps/details?id=com.ocean.phcomguide.
- https://www.tutorialspoint.com/.
- https://www.w3schools.com