Lab 4:

DATA-TYPES :

A **data type** is a classification of the type of data that a variable or object can hold in computer programming. Data type is an important factor in virtually all computer programming languages, including visual basic, C#, C++, and JavaScript. When programmers create computer applications, both desktop and web-based, data types must be referenced and used correctly, to ensure the result of the application's functions is correct and error-free. Same case is true in DBMS we should use the correct data-types for correct information, further the their quantity must be appropriate for memory management.
Some important data-types used in the DBMS are :

CHAR(SIZE):
A fixed-length string between 1 and 255 characters in length (for example CHAR(5)), right-padded with spaces to the specified length when stored. Defining a length is not required, but the default is 1.

VARCHAR(SIZE):
A variable-length string between 1 and 255 characters in length; for example VARCHAR(25). We must define a length when creating a VARCHAR field.

TINYTEXT:
A TEXT column with a maximum length of 255 characters. We do not specify a length with TINYTEXT.

TEXT:
A field with a maximum length of 65535 characters. Fields defined as TEXT hold the large amounts of data.

MEDIUMTEXT:
A TEXT column with a maximum length of 16777215 characters. We do not specify a length with MEDIUMTEXT.

LONGTEXT:
A TEXT column with a maximum length of 4294967295 characters. We do not specify a length with LONGTEXT.

ENUM:
An enumeration, which is a fancy term for list. When defining an ENUM, we are creating a list of items from which the value must be selected (or it can be NULL). For example, if we wanted our field to contain "A" or "B" or "C", we would define our ENUM as ENUM ('A', 'B', 'C') and only those values (or NULL) could ever populate that field.

TINYINT:
A very small integer that can be signed or unsigned. If signed, the allowable range is from -128 to 127. If unsigned, the allowable range is from 0 to 255. We can specify a width of up to 4 digits.

MEDIUMINT:
A medium-sized integer that can be signed or unsigned. If signed, the allowable range is from -8388608 to 8388607. If unsigned, the allowable range is from 0 to 16777215. You can specify a width of up to 9 digits.

BIGINT:
A large integer that can be signed or unsigned. If signed, the allowable range is from -9223372036854775808 to 9223372036854775807. If unsigned, the allowable range is from 0 to 18446744073709551615. You can specify a width of up to 20 digits.

FLOAT:
A floating-point number that cannot be unsigned. You can define the display length (M) and the number of decimals (D). This is not required and will default to 10,2, where 2 is the number of decimals and 10 is the total number of digits (including decimals). Decimal precision can go to 24 places for a FLOAT.

DOUBLE:
A double precision floating-point number that cannot be unsigned. You can define the display length (M) and the number of decimals (D). This is not required and will default to 16,4, where 4 is the number of decimals. Decimal precision can go to 53 places for a DOUBLE. REAL is a synonym for DOUBLE.

DATE:
A date in YYYY-MM-DD format, between 1000-01-01 and 9999-12-31. For example, December 30th, 1973 would be stored as 1973-12-30.

TIME:
Stores the time in HH:MM:SS format.

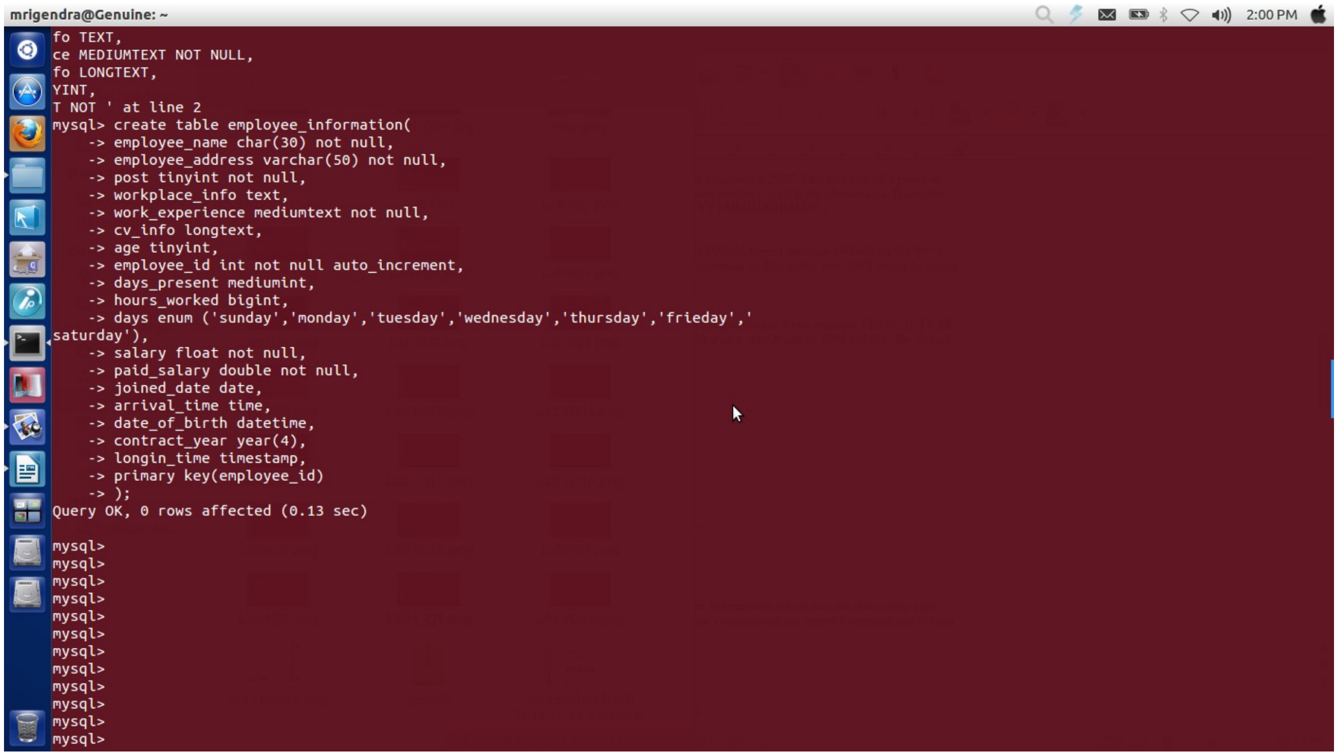
TIMESTAMP(SIZE):
A timestamp between midnight, January 1, 1970 and sometime in 2037. This looks like the previous DATETIME format, only without the hyphens between numbers; 3:30 in the afternoon on December 30th, 1973 would be stored as 19731230153000 (YYYYMMDDHHMMSS).

DATETIME:
A date and time combination in YYYY-MM-DD HH:MM:SS format, between 1000-01-01 00:00:00 and 9999-12-31 23:59:59. For example, 3:30 in the afternoon on December 30th, 1973 would be stored as 1973-12-30 15:30:00.

YEAR(SIZE):
Stores a year in 2-digit or 4-digit format. If the length is specified as 2 (for example YEAR(2)), YEAR can be 1970 to 2069 (70 to 69). If the length is specified as 4, YEAR can be 1901 to 2155. The default length is 4.

1. Design a database that contains a table ‘Employee_Information’ which uses the above data types. Your column name should be relevant to the data-type you used and use proper Constraint rule to limit or restrict the value entered into column.

Ans:



```
fo TEXT,
ce MEDIUMTEXT NOT NULL,
fo LONGTEXT,
YINT,
T NOT ' at line 2
mysql> create table employee_information(
    -> employee_name char(30) not null,
    -> employee_address varchar(50) not null,
    -> post tinyint not null,
    -> workplace_info text,
    -> work_experience mediumtext not null,
    -> cv_info longtext,
    -> age tinyint,
    -> employee_id int not null auto_increment,
    -> days_present mediumint,
    -> hours_worked bigint,
    -> days enum ('sunday','monday','tuesday','wednesday','thursday','frieday','
saturday'),
    -> salary float not null,
    -> paid_salary double not null,
    -> joined_date date,
    -> arrival_time time,
    -> date_of_birth datetime,
    -> contract_year year(4),
    -> longin_time timestamp,
    -> primary key(employee_id)
    -> );
Query OK, 0 rows affected (0.13 sec)

mysql>
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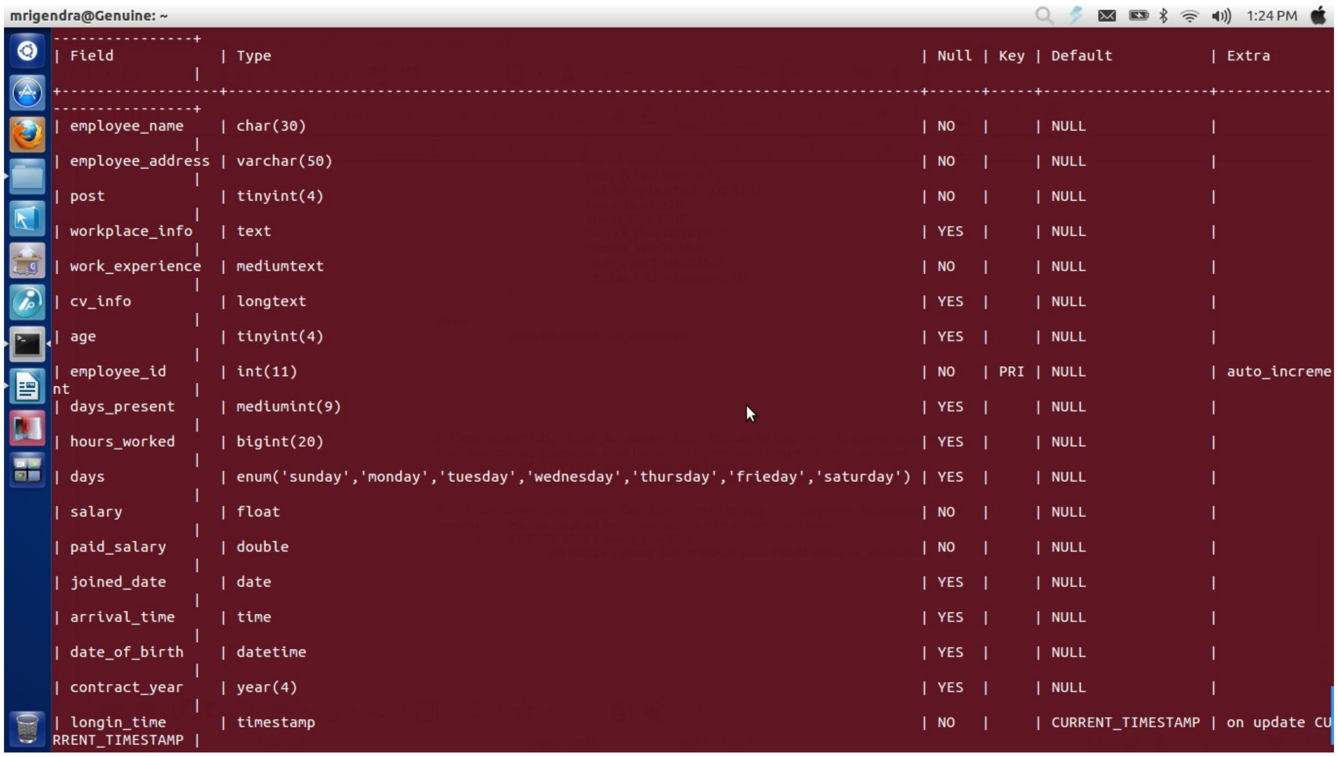

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mrigendra@Genuine: ~                                                                                    1:24 PM
----------------+
| Field            | Type                                                                      | Null | Key | Default           | Extra
                |
+------------------+---------------------------------------------------------------------------+------+-----+-------------------+------------
----------------+
| employee_name    | char(30)                                                                  | NO   |     | NULL              |
                |
| employee_address | varchar(50)                                                               | NO   |     | NULL              |
                |
| post             | tinyint(4)                                                                | NO   |     | NULL              |
                |
| workplace_info   | text                                                                      | YES  |     | NULL              |
                |
| work_experience  | mediumtext                                                                | NO   |     | NULL              |
                |
| cv_info          | longtext                                                                  | YES  |     | NULL              |
                |
| age              | tinyint(4)                                                                | YES  |     | NULL              |
                |
| employee_id      | int(11)                                                                   | NO   | PRI | NULL              | auto_increme
nt              |
| days_present     | mediumint(9)                                                              | YES  |     | NULL              |
                |
| hours_worked     | bigint(20)                                                                | YES  |     | NULL              |
                |
| days             | enum('sunday','monday','tuesday','wednesday','thursday','frieday','saturday') | YES  |     | NULL              |
                |
| salary           | float                                                                     | NO   |     | NULL              |
                |
| paid_salary      | double                                                                    | NO   |     | NULL              |
                |
| joined_date      | date                                                                      | YES  |     | NULL              |
                |
| arrival_time     | time                                                                      | YES  |     | NULL              |
                |
| date_of_birth    | datetime                                                                  | YES  |     | NULL              |
                |
| contract_year    | year(4)                                                                   | YES  |     | NULL              |
                |
| longin_time      | timestamp                                                                 | NO   |     | CURRENT_TIMESTAMP | on update CU
RRENT_TIMESTAMP |
```
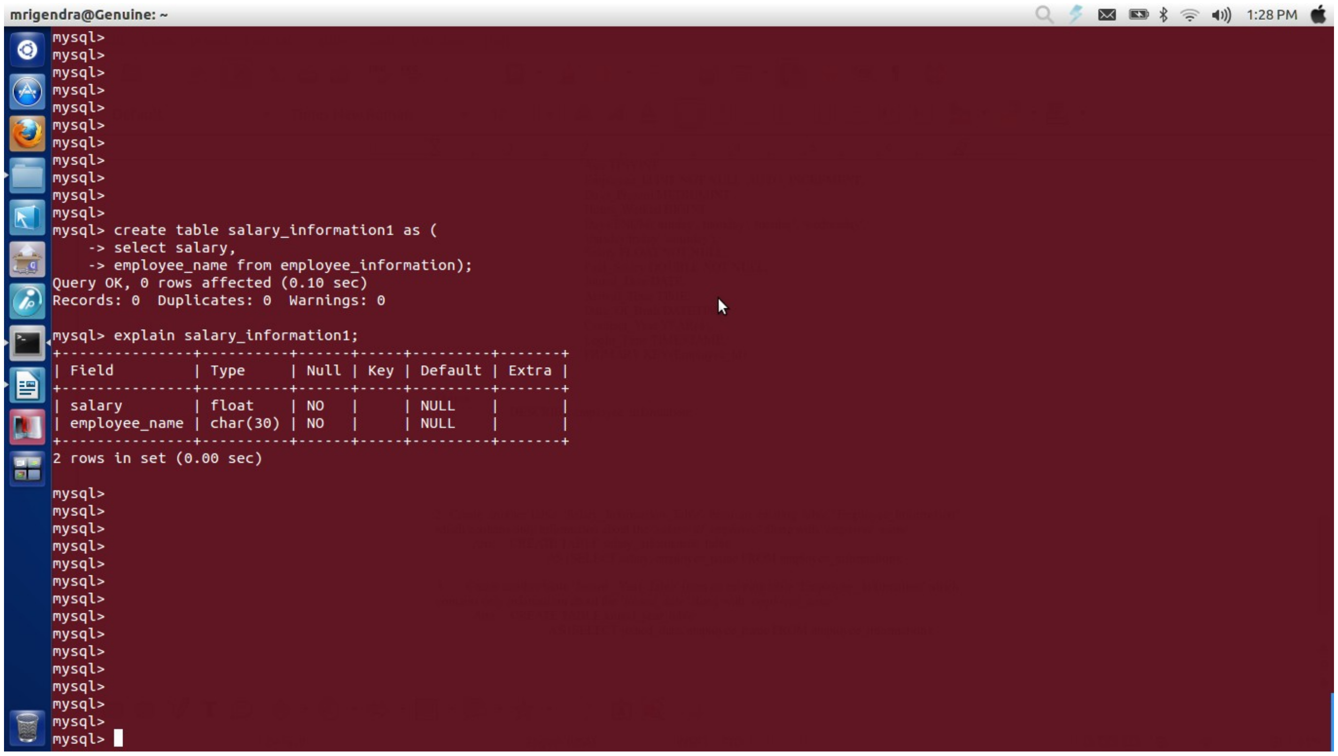

2. Create another table ‘Salary_Information_Table’ from an existing table ‘Employee_Information’ which contains only information about the ‘*salary_of_employee’* along with ‘*employee_name’*.

Ans:



```
mrigendra@Genuine: ~                                                    1:28 PM
mysql>
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mysql>
mysql> create table salary_information1 as (
    -> select salary,
    -> employee_name from employee_information);
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> explain salary_information1;
+---------------+----------+------+-----+---------+-------+
| Field         | Type     | Null | Key | Default | Extra |
+---------------+----------+------+-----+---------+-------+
| salary        | float    | NO   |     | NULL    |       |
| employee_name | char(30) | NO   |     | NULL    |       |
+---------------+----------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql>
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```
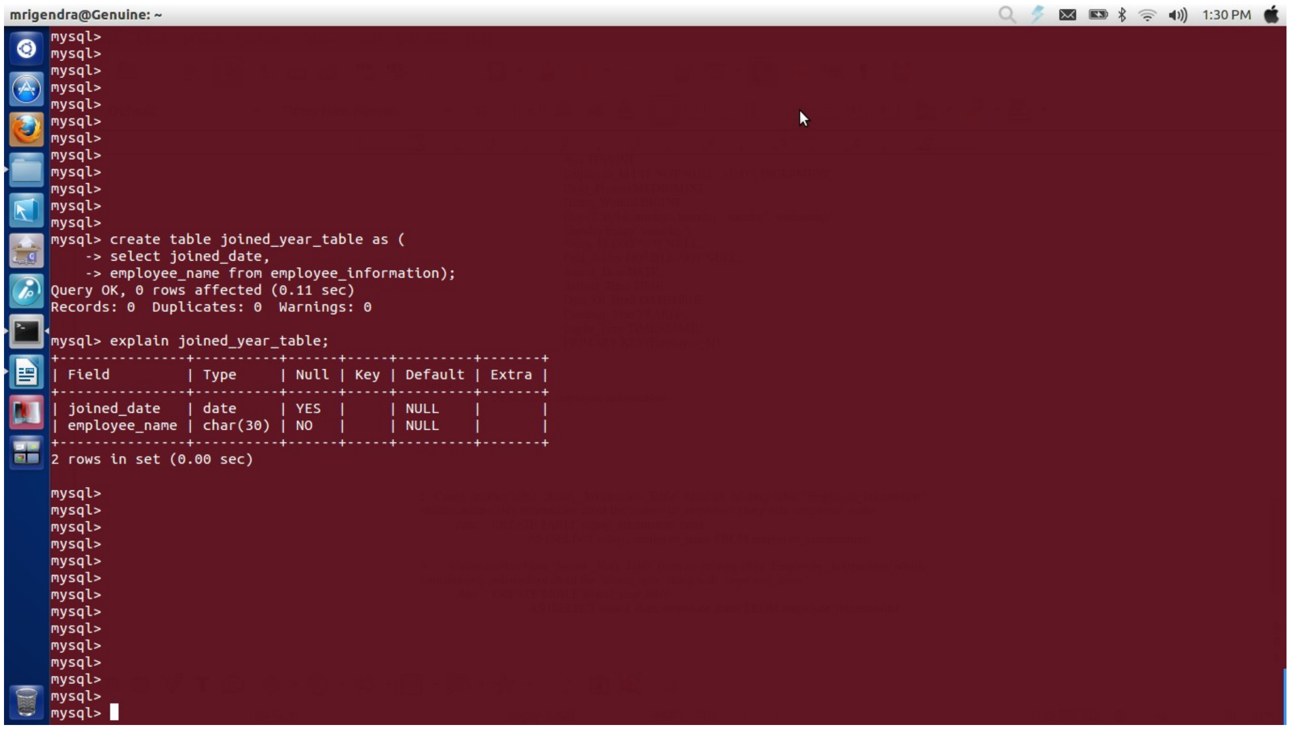

3. Create another table ‘Joined _Year_Table’ from an existing table ‘Employee _Information’ which contains only information about the ‘*joined_date*’ along with ‘*employee_name*’.

Ans:



```
mrigendra@Genuine: ~                                                    1:30 PM
mysql>
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mysql>
mysql>
mysql>
mysql> create table joined_year_table as (
    -> select joined_date,
    -> employee_name from employee_information);
Query OK, 0 rows affected (0.11 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> explain joined_year_table;
+---------------+----------+------+-----+---------+-------+
| Field         | Type     | Null | Key | Default | Extra |
+---------------+----------+------+-----+---------+-------+
| joined_date   | date     | YES  |     | NULL    |       |
| employee_name | char(30) | NO   |     | NULL    |       |
+---------------+----------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql>
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```