# "CONSTRUCTION COMPANY MANAGEMENT SYSTEM"

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## ➢ AIM OF PROJECT :

The main goal of project of construction industry is to ensure that construction projects are successfully completed within the constraints of best quality, stated period and with minimum cost possible using ***MYSQL***

## ➢ ABSTRACT:

Construction is the process of constructing a building or infrastructure. Construction differs from manufacturing. Manufacturing typically involves mass production of similar items without a designated purchaser, while construction typically takes place on location for a known client. Construction is directly tied to the fields of civil engineering and architecture. A construction company is responsible for building structures in the commercial and private sectors. In simple words, we can say that a construction company is a type of business, enterprise, or similar organization created and operating to construct a wide variety of buildings, developments, housing, path, pavement, roads, motorways, and other types of construction projects. A construction company involves lot of parameters like details of projects, employees, machinaries and raw materials.

## ➢ INTRODUCTION :

**Construction management** (**CM**) is a professional service that uses specialized, project management techniques and software to oversee the planning, design, and construction of a project, from its beginning to its end. The purpose of Construction management is to control a project's time / delivery, cost and quality—sometimes referred to as a project management triangle or "triple constraints. CM is compatible with all project delivery systems, including design-bid-build, design-build, CM At-Risk and Public Private Partnerships. Professional construction managers may be reserved for lengthy, large-scale, high budget undertakings (commercial real estate, transportation infrastructure, industrial facilities, and military infrastructure), called capital projects.

## ➢ OBJECTIVE OF PROJECT :

1.The company will be able to easily track the details of **projects, employees, machinaries and raw materials.**
2. It will give a proper relation regarding which employees are working in which projects.
3. It will give details regarding how many raw materials are being allocated to each project.
4. It will help in tracking the machinaries linked to each project.

## STRUCTURE OF TABLE

### ❖ PROJECTS :

```
MariaDB [mysql]> desc projects;
+-----------------------------+-------------+------+-----+---------+-------+
| Field                       | Type        | Null | Key | Default | Extra |
+-----------------------------+-------------+------+-----+---------+-------+
| S1No                        | int(11)     | YES  |     | NULL    |       |
| project_No                  | int(11)     | NO   | PRI | NULL    |       |
| Type_of_project             | varchar(40) | YES  |     | NULL    |       |
| Place                       | varchar(40) | YES  |     | NULL    |       |
| start_Date                  | varchar(20) | YES  |     | NULL    |       |
| Expected_Duration_in_Months | int(11)     | YES  |     | NULL    |       |
| Expected_cost_in_Lakh_Rupees | int(11)    | YES  |     | NULL    |       |
+-----------------------------+-------------+------+-----+---------+-------+
7 rows in set (0.025 sec)
```

### ❖ EMPLOYEES :

```
MariaDB [mysql]> desc employees;
+-------------------+-------------+------+-----+---------+-------+
| Field             | Type        | Null | Key | Default | Extra |
+-------------------+-------------+------+-----+---------+-------+
| S1No              | int(11)     | YES  |     | NULL    |       |
| emp_id            | int(11)     | NO   | PRI | NULL    |       |
| Name              | varchar(40) | YES  |     | NULL    |       |
| Age               | int(11)     | YES  |     | NULL    |       |
| Nature_of_work    | varchar(20) | YES  |     | NULL    |       |
| Department        | varchar(20) | YES  |     | NULL    |       |
| designation       | varchar(20) | YES  |     | NULL    |       |
| salary_per_month  | int(11)     | YES  |     | NULL    |       |
| Project_No        | int(11)     | YES  | MUL | NULL    |       |
+-------------------+-------------+------+-----+---------+-------+
9 rows in set (0.029 sec)
```

❖ **MACHINERIES :**

```
MariaDB [mysql]> desc employees;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| S1No             | int(11)     | YES  |     | NULL    |       |
| emp_id           | int(11)     | NO   | PRI | NULL    |       |
| Name             | varchar(40) | YES  |     | NULL    |       |
| Age              | int(11)     | YES  |     | NULL    |       |
| Nature_of_work   | varchar(20) | YES  |     | NULL    |       |
| Department       | varchar(20) | YES  |     | NULL    |       |
| designation      | varchar(20) | YES  |     | NULL    |       |
| salary_per_month | int(11)     | YES  |     | NULL    |       |
| Project_No       | int(11)     | YES  | MUL | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
9 rows in set (0.029 sec)
```

❖ **RAW MATERIALS :**

```
MariaDB [mysql]> desc raw_materials;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| S1No          | int(11)     | YES  |     | NULL    |       |
| rm_no         | int(11)     | NO   | PRI | NULL    |       |
| Name          | varchar(30) | YES  |     | NULL    |       |
| qty_avlb      | int(11)     | YES  |     | NULL    |       |
| price_per_qty | int(11)     | YES  |     | NULL    |       |
| source        | varchar(20) | YES  |     | NULL    |       |
| ROL           | int(11)     | YES  |     | NULL    |       |
| Project_No    | int(11)     | YES  | MUL | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
8 rows in set (0.024 sec)
```

# CONTENTS OF TABLES

## 1.PROJECTS :

```
MariaDB [projects]> select * from project;
+------+-----------+--------------------+------------+------------+---------------------------+-----------------------------+
| SINO | Project_No | Type_of_Project    | Place      | Start_Date | Expected_Duration_in_Months | Expected_Cost_in_Lakh_Rupees |
+------+-----------+--------------------+------------+------------+---------------------------+-----------------------------+
|    1 |       101 | commercial_building | thane      | 1987       |                        48 |                        5000 |
|    2 |       102 | station            | mumbai     | 1978       |                        30 |                        6600 |
|    3 |       103 | school             | pune       | 1993       |                        35 |                        7000 |
|    4 |       104 | hostel             | indore     | 1996       |                        36 |                        1000 |
|    5 |       105 | hotel              | Navi_mumbai | 1983       |                        40 |                        1500 |
|    6 |       106 | bus_depot          | mulund     | 2004       |                        24 |                        2500 |
|    7 |       107 | college            | jaipur     | 1995       |                        30 |                        5500 |
|    8 |       108 | complex            | surat      | 1990       |                        25 |                        1800 |
|    9 |       109 | hospital           | solapur    | 1996       |                        10 |                        8000 |
|   10 |       110 | embassy            | bangalore  | 1985       |                        35 |                        2800 |
+------+-----------+--------------------+------------+------------+---------------------------+-----------------------------+
10 rows in set (0.020 sec)
```

## 2.EMPLOYEES :

```
MariaDB [projects]> select * from employee;
+------+--------+---------+------+---------------+-------------+-------------+-----------------+------------+
| SINO | emp_id | Name    | Age  | Nature_of_work | Department  | designation | salary_per_month | project_No |
+------+--------+---------+------+---------------+-------------+-------------+-----------------+------------+
|    1 |    101 | Raju    |   35 | on_site       | labour      | cement_work |            9500 |        101 |
|    2 |    102 | chetan  |   29 | on_site       | labour      | water_work  |           11200 |        109 |
|    3 |    103 | mayur   |   25 | off_site      | engineering | manager     |           75000 |        108 |
|    4 |    104 | harshit |   30 | off_site      | engineering | sr_manager  |           85000 |        102 |
|    5 |    105 | rajesh  |   26 | on_site       | tech        | supervisor  |           50000 |        106 |
|    6 |    106 | manish  |   29 | on_site       | tech        | surveyor    |           20000 |        110 |
|    7 |    107 | pakya   |   34 | on_site       | labour      | paint_work  |           10000 |        107 |
|    8 |    108 | raj     |   32 | on_site       | labour      | brick_work  |            8500 |        105 |
|    9 |    109 | bharat  |   27 | on_site       | tech        | engineer    |           25000 |        103 |
|   10 |    110 | karan   |   36 | off_site      | finance     | jr_account  |           22000 |        104 |
+------+--------+---------+------+---------------+-------------+-------------+-----------------+------------+
10 rows in set (0.004 sec)
```

## 3.MACHINERIES :

```
MariaDB [projects]> select * from machineries;
+------+------------+----------------------+--------------------------+------+------------+
| SINO | Machine_no | Type_of_Machine      | Rent_per_day_in_rupees   | qty  | Project_No |
+------+------------+----------------------+--------------------------+------+------------+
|    1 |        101 | concrete_mixer_1_ton |                     5000 |    8 |        101 |
|    2 |        102 | garbage_dumper_1_ton |                     7000 |   20 |        103 |
|    3 |        103 | grinder_200_watt     |                    10000 |   50 |        102 |
|    4 |        104 | leveller_20_cm       |                     1000 |   10 |        105 |
|    5 |        105 | bar_cutting_machine  |                     2000 |   35 |        104 |
|    6 |        106 | tower_crane_40m      |                    30000 |   10 |        106 |
|    7 |        107 | welding_machine      |                     2500 |   25 |        108 |
|    8 |        108 | sand_mesher          |                      500 |   50 |        107 |
|    9 |        109 | shovel               |                      250 |  150 |        109 |
|   10 |        110 | excavator_10_10_kg   |                    15000 |   45 |        110 |
+------+------------+----------------------+--------------------------+------+------------+
10 rows in set (0.001 sec)
```

## 4. RAW MATERIALS :

```
MariaDB [projects]> select * from raw_materials;
+------+-------+----------------------------+---------+--------------+-----------------+------+------------+
| SINO | rm_no | Name                       | qty_avlb | price_per_qty | Source          | ROL  | Project_No |
+------+-------+----------------------------+---------+--------------+-----------------+------+------------+
|    1 |   101 | cement_20_kg_pack          |    1000 |         3000 | ambuja_cement   |  200 |        101 |
|    2 |   102 | white_red_paint_30_lit_pack |     200 |        10000 | asian_paints    |   50 |        110 |
|    3 |   103 | fine_sand_50kg             |     500 |          900 | goa_sand_company |  100 |        109 |
|    4 |   104 | aggregate_light_50kg_pack  |     600 |         4000 | kolar_agg       |  200 |        108 |
|    5 |   105 | bricks_heavy_30nos_pack    |     400 |         5000 | tata bricks     |  200 |        102 |
|    6 |   106 | beige_tile_2x2_20_pack     |     150 |         8500 | kajaria         |   30 |        103 |
|    7 |   107 | structure_steel_10kg_pack  |     800 |        20000 | willy_steels    |  130 |        104 |
|    8 |   108 | pop_48kg_pack              |     200 |        25000 | laxmi_pop       |   50 |        105 |
|    9 |   109 | grill_stylel_10_pack       |     900 |        19000 | sj_works        |  100 |        106 |
|   10 |   110 | limestone_white_50kg_pack  |     100 |        10000 | ilkal_line_works |  200 |        107 |
+------+-------+----------------------------+---------+--------------+-----------------+------+------------+
```

# VIEWS

## 1.Create a table for employee and raw materials associated with hospital project

**Query:**

**MariaDB [projects]**> create view hospital_rm_emp as select employee.emp_id,employee.name, employee.salary_per_month, raw_materials.rm_no, raw_materials.Rol from employee,raw_materials where employee.project_no in (105,107) and raw_materials.project_no in (105,107);

| emp_id | name | salary_per_month | rm_no | Rol |
|---|---|---|---|---|
| 108 | raj | 8500 | 108 | 50 |
| 107 | pakya | 10000 | 108 | 50 |
| 108 | raj | 8500 | 110 | 200 |
| 107 | pakya | 10000 | 110 | 200 |

# Joins

## 1.Left join :

**QUERY:**

MariaDB [projects]> select * from employee left join hospital_rm_emp on employee.emp_id=hospital_rm_emp.emp_id;

```
MariaDB [projects]>  select * from employee left join hospital_rm_emp on employee.emp_id=hospital_rm_emp.emp_id;
+------+--------+---------+------+---------------+------------+-------------+-----------------+------------+--------+------+-----------------+-------+------+
| SINO | emp_id | Name    | Age  | Nature_of_work | Department | designation | salary_per_month | project_No | emp_id | name | salary_per_month | rm_no | Rol  |
+------+--------+---------+------+---------------+------------+-------------+-----------------+------------+--------+------+-----------------+-------+------+
|    1 |    101 | Raju    |   35 | on_site       | labour     | cement_work |            9500 |        101 |   NULL | NULL |            NULL |  NULL | NULL |
|    2 |    102 | chetan  |   29 | on_site       | labour     | water_work  |           11200 |        109 |   NULL | NULL |            NULL |  NULL | NULL |
|    3 |    103 | mayur   |   25 | off_site      | engineering| manager     |           75000 |        108 |   NULL | NULL |            NULL |  NULL | NULL |
|    4 |    104 | harshit |   30 | off_site      | engineering| sr_manager  |           85000 |        102 |   NULL | NULL |            NULL |  NULL | NULL |
|    5 |    105 | rajesh  |   26 | on_site       | tech       | supervisor  |           50000 |        106 |   NULL | NULL |            NULL |  NULL | NULL |
|    6 |    106 | manish  |   29 | on_site       | tech       | surveyor    |           20000 |        110 |   NULL | NULL |            NULL |  NULL | NULL |
|    7 |    107 | pakya   |   34 | on_site       | labour     | paint_work  |           10000 |        107 |    107 | pakya |           10000 |   108 |   50 |
|    7 |    107 | pakya   |   34 | on_site       | labour     | paint_work  |           10000 |        107 |    107 | pakya |           10000 |   110 |  200 |
|    8 |    108 | raj     |   32 | on_site       | labour     | brick_work  |            8500 |        105 |    108 | raj  |            8500 |   108 |   50 |
|    8 |    108 | raj     |   32 | on_site       | labour     | brick_work  |            8500 |        105 |    108 | raj  |            8500 |   110 |  200 |
|    9 |    109 | bharat  |   27 | on_site       | tech       | engineer    |           25000 |        103 |   NULL | NULL |            NULL |  NULL | NULL |
|   10 |    110 | karan   |   36 | off_site      | finance    | jr_account  |           22000 |        104 |   NULL | NULL |            NULL |  NULL | NULL |
+------+--------+---------+------+---------------+------------+-------------+-----------------+------------+--------+------+-----------------+-------+------+
12 rows in set (0.025 sec)
```

## ➢ 2.Right Join :

**QUERY:**

MariaDB [projects]> select * from hospital_rm_emp right join employee on hospital_rm_emp.emp_id=employee.emp_id;

```
MariaDB [projects]> select * from hospital_rm_emp right join employee on hospital_rm_emp.emp_id=employee.emp_id;
+--------+------+-----------------+-------+------+------+--------+---------+------+----------------+------------+-------------+-----------------+------------+
| emp_id | name | salary_per_month | rm_no | Rol  | SINO | emp_id | Name    | Age  | Nature_of_work | Department | designation | salary_per_month | project_No |
+--------+------+-----------------+-------+------+------+--------+---------+------+----------------+------------+-------------+-----------------+------------+
|   NULL | NULL |            NULL |  NULL | NULL |    1 |    101 | Raju    |   35 | on_site        | labour     | cement_work |            9500 |        101 |
|   NULL | NULL |            NULL |  NULL | NULL |    2 |    102 | chetan  |   29 | on_site        | labour     | water_work  |           11200 |        109 |
|   NULL | NULL |            NULL |  NULL | NULL |    3 |    103 | mayur   |   25 | off_site       | engineering| manager     |           75000 |        108 |
|   NULL | NULL |            NULL |  NULL | NULL |    4 |    104 | harshit |   30 | off_site       | engineering| sr_manager  |           85000 |        102 |
|   NULL | NULL |            NULL |  NULL | NULL |    5 |    105 | rajesh  |   26 | on_site        | tech       | supervisor  |           50000 |        106 |
|   NULL | NULL |            NULL |  NULL | NULL |    6 |    106 | manish  |   29 | on_site        | tech       | surveyor    |           20000 |        110 |
|    107 | pakya |           10000 |   108 |   50 |    7 |    107 | pakya   |   34 | on_site        | labour     | paint_work  |           10000 |        107 |
|    107 | pakya |           10000 |   110 |  200 |    7 |    107 | pakya   |   34 | on_site        | labour     | paint_work  |           10000 |        107 |
|    108 | raj  |            8500 |   108 |   50 |    8 |    108 | raj     |   32 | on_site        | labour     | brick_work  |            8500 |        105 |
|    108 | raj  |            8500 |   110 |  200 |    8 |    108 | raj     |   32 | on_site        | labour     | brick_work  |            8500 |        105 |
|   NULL | NULL |            NULL |  NULL | NULL |    9 |    109 | bharat  |   27 | on_site        | tech       | engineer    |           25000 |        103 |
|   NULL | NULL |            NULL |  NULL | NULL |   10 |    110 | karan   |   36 | off_site       | finance    | jr_account  |           22000 |        104 |
+--------+------+-----------------+-------+------+------+--------+---------+------+----------------+------------+-------------+-----------------+------------+
```

- **3.Cross join :**

**QUERY:**

MariaDB [projects]> select * from employee cross join hospital_rm_emp on employee.emp_id=hospital_rm_emp.emp_id;

```
MariaDB [projects]> select * from employee cross join hospital_rm_emp on employee.emp_id=hospital_rm_emp.emp_id;
+------+--------+-------+------+--------------+------------+-------------+----------------+------------+--------+-------+----------------+-------+------+
| SINO | emp_id | Name  | Age  | Nature_of_work | Department | designation | salary_per_month | project_No | emp_id | name  | salary_per_month | rm_no | Rol  |
+------+--------+-------+------+--------------+------------+-------------+----------------+------------+--------+-------+----------------+-------+------+
|    8 |    108 | raj   |   32 | on_site      | labour     | brick_work  |           8500 |        105 |    108 | raj   |           8500 |   108 |   50 |
|    7 |    107 | pakya |   34 | on_site      | labour     | paint_work  |          10000 |        107 |    107 | pakya |          10000 |   108 |   50 |
|    8 |    108 | raj   |   32 | on_site      | labour     | brick_work  |           8500 |        105 |    108 | raj   |           8500 |   110 |  200 |
|    7 |    107 | pakya |   34 | on_site      | labour     | paint_work  |          10000 |        107 |    107 | pakya |          10000 |   110 |  200 |
+------+--------+-------+------+--------------+------------+-------------+----------------+------------+--------+-------+----------------+-------+------+
```

## SUBQUERIES

- **1. Show the all the details of all the employee associated with hostel project having salary> 2000**

Query :

MariaDB [projects]> select * from employee where project_no in (select project_no from project where type_of_project="hostel") having salary_per_month>2000;

```
MariaDB [projects]> select * from employee where project_no in (select project_no from project where type_of_project="hostel") having salary_per_month>2000;
+------+--------+-------+------+--------------+------------+-------------+----------------+------------+
| SINO | emp_id | Name  | Age  | Nature_of_work | Department | designation | salary_per_month | project_No |
+------+--------+-------+------+--------------+------------+-------------+----------------+------------+
|   10 |    110 | karan |   36 | off_site     | finance    | jr_account  |          22000 |        104 |
+------+--------+-------+------+--------------+------------+-------------+----------------+------------+
```

- **2.Show all the details of machineries and raw materials associated with project having estimation > 5000 lakh crores**

**Query :**

MariaDB [projects]> select * from machineries where project_no in (select project_no from project where Expected_Cost_in_Lakh_Rupees>5000);

```
MariaDB [projects]> select * from machineries where project_no in (select project_no from project where Expected_Cost_in_Lakh_Rupees>5000);
+------+-----------+--------------------+----------------------+------+------------+
| SINO | Machine_no | Type_of_Machine    | Rent_per_day_in_rupees | qty  | Project_No |
+------+-----------+--------------------+----------------------+------+------------+
|    2 |       102 | garbage_dumper_1_ton |                 7000 |   20 |       103 |
|    3 |       103 | grinder_200_watt   |                10000 |   50 |       102 |
|    8 |       108 | sand_mesher        |                  500 |   50 |       107 |
|    9 |       109 | shovel             |                  250 |  150 |       109 |
+------+-----------+--------------------+----------------------+------+------------+
```

- **3. Show all the raw materials for college project where qty available is more than 50.**

**QUERY :**

MariaDB [projects]> select * from raw_materials where project_no in (select project_no from project where type_of_project="college") having qty_avlb>50;

```
MariaDB [projects]> select * from raw_materials where project_no in (select project_no from project where type_of_project="college") having qty_avlb>50;
+------+-------+-------------------------+---------+-------------+----------------+------+------------+
| SINO | rm_no | Name                    | qty_avlb | price_per_qty | Source         | ROL  | Project_No |
+------+-------+-------------------------+---------+-------------+----------------+------+------------+
|   10 |   110 | limestone_white_50kg_pack |     100 |        10000 | ilkal_line_works |  200 |       107 |
+------+-------+-------------------------+---------+-------------+----------------+------+------------+
```

**THANK YOU**