

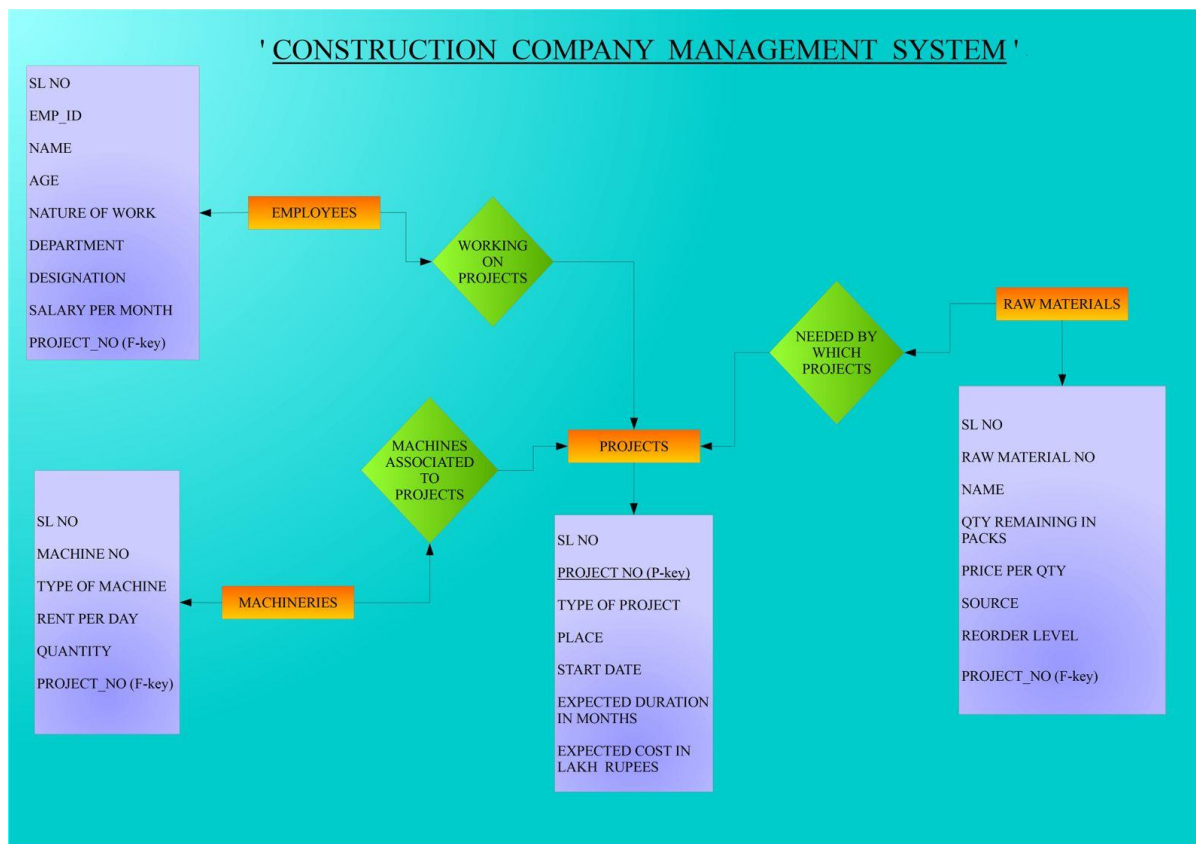
CONSTRUCTION COMPANY MANAGEMENT SYSTEM

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, machineries and raw materials. A good management system will reduce the tedious work of managing various factors in a Construction company.

OBJECTIVE:

1. The company will be able to easily track the details of projects, employees, machineries 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 machineries linked to each project.

Entity-relations diagrams



projects table

Describe project table

```
MariaDB [final]> desc projects;
```

Field	Type	Null	Key	Default	Extra
SlNo	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_Month	int(11)	YES		NULL	
Expected_Cost_in_Lakh_Rupees	int(11)	YES		NULL	

```
7 rows in set (0.007 sec)
```

List of Projects records

```
MariaDB [final]> select * from projects;
```

SlNo	Project_No	Type_of_Project	Place	Start_Date	Expected_Duration_in_Month	Expected_Cost_in_Lakh_Rupees
1	1001	commercial_building	thane	2020-10-23	48	4000
2	1002	complex	mulund	2021-08-03	36	4400
3	1003	residential_building	dadar	2022-05-12	28	3000
4	1004	hotel	kalyan	2019-12-12	36	200
5	1005	hospital	pune	2016-12-14	0	1500
6	1006	school	ambarnath	2012-06-06	0	1000
7	1007	embassy	pune	2021-09-21	48	2500
8	1008	parliament	new_delhi	2021-12-31	40	5500
9	1009	bus_depot	indore	2023-05-01	24	4000
10	1010	naval_facility	panjim	2019-02-23	60	7500
11	1011	reconst_post_earthquake	jaipur	2021-07-12	20	1000
12	1012	commercial_building	bangalore	2021-08-06	28	2000
13	1013	complex	panjim	2021-02-17	10	1000
14	1014	residential_building	jaipur	2015-11-13	120	8000
15	1015	hostel	banglore	2013-01-12	0	1000
16	1016	hotel	raipur	2018-08-12	21	2100
17	1017	hospital	varanasi	2017-05-12	20	2000
18	1018	school	pune	2023-05-12	24	1500
19	1019	hotel	solapur	2019-06-09	20	1800
20	1020	school	indore	2021-12-03	20	1500
21	1021	college	mulund	2019-04-23	0	1800
22	1022	complex	surat	2023-05-12	20	3000
23	1023	hotel	satara	2020-04-17	24	4500
24	1024	complex	bhopal	2015-01-27	36	4800
25	1025	college	agra	2022-10-20	34	3600

```
25 rows in set (0.000 sec)
```

Employees table

Describe employee table

```
MariaDB [final]> create table employees(Slno int,Emp_id int primary key,Name varchar(40),Age int,Nature_of_work varchar(20),Department varchar(20),Designation varchar(20),Salary_per_monnth int,Project_no int,foreign key(Project_no) references projects(Project_No));
Query OK, 0 rows affected (0.018 sec)
```

```
MariaDB [final]> desc employees;
```

Field	Type	Null	Key	Default	Extra
Slno	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_monnth	int(11)	YES		NULL	
Project_no	int(11)	YES	MUL	NULL	

```
9 rows in set (0.040 sec)
```

List of employees

```
MariaDB [final]> select * from employees;
```

Slno	Emp_id	Name	Age	Nature_of_work	Department	Designation	Salary_per_monnth	Project_no
1	701	raju	25	on_site	labour	cement_work	10000	1002
2	702	ramesh	28	on_site	labour	cement_work	12000	NULL
3	703	shyam	22	on_site	labour	cement_work	9500	NULL
4	704	anuj	27	on_site	labour	brick_work	11500	NULL
5	705	chotu	19	on_site	labour	brick_work	8500	NULL
6	706	rani	24	on_site	labour	brick_work	11500	1014
7	707	dany	31	on_site	labour	water_work	10000	1001
8	708	sheetal	38	on_site	labour	water_work	14500	NULL
9	709	farhan	24	on_site	labour	water_work	11200	1010
10	710	sajan	40	on_site	labour	paint_work	20000	NULL
11	711	lala	24	on_site	labour	paint_work	14500	NULL
12	712	pakya	22	on_site	labour	paint_work	11200	1008
13	713	kanak	24	on_site	tech	surveyor	20000	1009
14	714	chetan	25	on_site	tech	surveyor	14500	1022
15	715	ejaz	26	on_site	tech	surveyor	20000	1018
16	716	ganga	26	on_site	tech	supervisor	25000	NULL
17	717	harsh	22	on_site	tech	supervisor	22500	1012
18	718	inam	30	on_site	tech	supervisor	40000	1017
19	719	jaffer	24	on_site	tech	engineer	30000	NULL
20	720	kashyap	27	on_site	tech	engineer	35500	1007
21	721	lavanya	30	on_site	tech	engineer	50000	1020
22	722	manish	24	off_site	engineering	jr_engr	30000	NULL
23	723	naseeba	27	off_site	engineering	jr_engr	35500	1013
24	724	owasi	34	off_site	engineering	sr_engr	50000	1003
25	725	pallavi	32	off_site	engineering	jr_manager	55000	1025
26	726	qutub	35	off_site	engineering	manager	75000	1021
27	727	rajesh	44	off_site	engineering	sr_manager	85000	1016
28	728	sachin	24	off_site	hr	jr_hr	25000	NULL
29	729	tarun	25	off_site	hr	jr_hr	28000	NULL
30	730	uma	37	off_site	hr	sr_hr	55000	NULL
31	731	varsha	24	off_site	finance	jr_accountant	22000	NULL
32	732	wasim	27	off_site	finance	accountant	28000	NULL
33	733	yamuna	37	off_site	finance	sr_analyst	38000	NULL
38	738	barry	41	off_site	board	md	18000	1015
39	739	partiban	48	off_site	board	ceo	13000	1006
40	740	bharat	38	off_site	board	president	200000	1005

```
36 rows in set (0.001 sec)
```

Machineries table

Description of machineries

```
MariaDB [final]> create table machineries(SlNo int,Machine_no int primary key,Type_of_Machine varchar(30),Rent_per_day_in_rupees int,qty int,Project_No int,foreign key(Project_no) references projects(Project_no));
Query OK, 0 rows affected (0.017 sec)
```

```
MariaDB [final]> desc machineries;
```

Field	Type	Null	Key	Default	Extra
SlNo	int(11)	YES		NULL	
Machine_no	int(11)	NO	PRI	NULL	
Type_of_Machine	varchar(30)	YES		NULL	
Rent_per_day_in_rupees	int(11)	YES		NULL	
qty	int(11)	YES		NULL	
Project_No	int(11)	YES	MUL	NULL	

```
6 rows in set (0.009 sec)
```

Records of machineries

```
MariaDB [final]> select * from machineries;
```

SlNo	Machine_no	Type_of_Machine	Rent_per_day_in_rupees	qty	Project_No
1	101	concrete_mixer_1_ton	4000	7	1004
2	102	concrete_mixer_2_ton	6000	5	1009
3	103	concrete_mixer_3_ton	8000	3	1025
4	104	concrete_pump_100hp	1400	10	1001
5	105	concrete_pump_150hp	1800	6	1012
6	106	concrete_pump_200hp	2300	3	1017
7	107	bar_bending_machine	1200	30	1014
8	108	bar_cutting_machine	1800	45	1008
9	109	excavator_10_kg	10000	15	1002
10	110	excavator_20_kg	12000	10	1007
11	111	excavator_30_kg	15000	8	1011
12	112	leveller_20_cm	500	50	1016
13	113	leveller_40_cm	650	40	1021
14	114	tower_crane_20m	20000	10	1024
15	115	tower_crane_40m	30000	5	1003
16	116	road_roller_0.5_ton	8000	10	1022
17	117	road_roller_1_ton	12000	8	1023
18	118	grinder_100_watt	450	20	1020
19	119	grinder_200_watt	650	15	1013
20	120	garbage_dumper_1_ton	4000	25	1005
21	121	garbage_dumper_2_ton	6000	15	1006
22	122	welding_machine	1000	35	1010
23	123	tile_cutter	2300	20	1015
24	124	sand_mesher	200	50	1019
25	125	shovel	50	125	1018

```
25 rows in set (0.001 sec)
```

Tables of raw materials

Description of row materials

```
MariaDB [final]> create table raw_materials(SlNo int,rm_no int primary key,Name varchar(30),Qty_avlb int,Price_per_qty int,Source varchar(20),ROL int,Project_no int,foreign key(Project_no) references projects(Project_no));
Query OK, 0 rows affected (0.024 sec)

MariaDB [final]> desc raw_materials;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| SlNo       | 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 (0.007 sec)
```

Records of raw materials

```
MariaDB [final]> select * from raw_materials;
+-----+-----+-----+-----+-----+-----+-----+-----+
| SlNo | rm_no | Name                                | Qty_avlb | Price_per_qty | Source                | ROL | Project_no |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1    | 301   | cement_10kg_pack                   | 800      | 600           | acc_cement            | 100 | 1004       |
| 2    | 302   | cement_20kg_pack                   | 650      | 1000          | acc_cement            | 180 | 1009       |
| 3    | 303   | cement_10kg_pack                   | 450      | 450           | ambuja_cement         | 80  | 1025       |
| 4    | 304   | fine_sand_30kg_pack                | 438      | 478           | goa_sand_company      | 50  | 1001       |
| 5    | 305   | coarse_sand_40kg_pack              | 761      | 800           | andaman_sand          | 100 | 1012       |
| 6    | 306   | aggregate_lite_50kg_pack           | 550      | 3500          | kolar_agg             | 100 | 1017       |
| 7    | 307   | aggregate_heavy_80kg_pack          | 85       | 7000          | apshah_agg            | 120 | 1014       |
| 8    | 308   | bricks_light_50kg_pack             | 100      | 3000          | bb_bricks_ltd         | 230 | 1008       |
| 9    | 309   | bricks_heavy_30kg_pack             | 298      | 4000          | tata_bricks           | 140 | 1002       |
| 10   | 310   | limestone_white_50kg_pack          | 100      | 10000         | ilkal_lime_works      | 150 | 1007       |
| 11   | 311   | limestone_yellow_80kg_pack         | 421      | 15000         | gj_limes              | 30  | 1011       |
| 12   | 312   | white_tile_4x4_10_pack             | 81       | 8000          | kajaria               | 31  | 1016       |
| 13   | 313   | beige_tile_2x2_20_pack             | 130      | 5000          | kajaria               | 30  | 1021       |
| 14   | 314   | white_tile_8x8_30_pack             | 400      | 20000         | j&j                   | 50  | 1024       |
| 15   | 315   | white_paint_10_liter_pack          | 70       | 3800          | nerolac_paints       | 130 | 1003       |
| 16   | 316   | yellow_ochre_paint_20_lit_pack     | 145      | 5000          | asian_paints          | 25  | 1022       |
| 17   | 317   | teak_wood_10_pack                 | 28       | 4200          | nainital_woods        | 70  | 1023       |
| 18   | 318   | ply_wood_20_pack                  | 470      | 6000          | sheetal_ply_works     | 65  | 1020       |
| 19   | 319   | rubber_wood_10_pack               | 287      | 2800          | ram_woods             | 100 | 1013       |
| 20   | 320   | structure_steel_10kg_pack          | 800      | 15000         | tnt_steel             | 150 | 1005       |
| 21   | 321   | mild_steel_40kg_pack               | 790      | 20000         | willy_steel           | 125 | 1006       |
| 22   | 322   | pop_40kg_pack                     | 128      | 6000          | laxmi_pop             | 50  | 1010       |
| 23   | 323   | pop_40kg_pack                     | 200      | 24000         | laxmi_pop             | 40  | 1015       |
| 24   | 324   | grill_style1_10_pack               | 800      | 80000         | sj_works              | 100 | 1019       |
| 25   | 325   | grill_style2_20_pack               | 900      | 16000         | modi_steel_works      | 125 | 1018       |
+-----+-----+-----+-----+-----+-----+-----+-----+
25 rows in set (0.000 sec)
```

Sub queries

Show all the details of all the employees associated with hotel projects having salary>25000

```
MariaDB [final]> select * from employees where Project_No in(select Project_No from projects where Type_of_Project="hotel") having Salary_per_monnth>25000;
```

Slno	Emp_id	Name	Age	Nature_of_work	Department	Designation	Salary_per_monnth	Project_no
27	727	rajesh	44	off_site	engineering	sr_manager	85000	1016

1 row in set (0.008 sec)

Show all the raw materials for college projects where qty available is more than 50

```
MariaDB [final]> select * from raw_materials where Project_No in(select Project_No from projects where Type_of_Project="college") having Qty_avlb>50;
```

SlNo	rm_no	Name	Qty_avlb	Price_per_qty	Source	ROL	Project_no
3	303	cement_10kg_pack	450	450	ambuja_cement	80	1025
13	313	beige_tile_2x2_20_pack	130	5000	kajaria	30	1021

2 rows in set (0.001 sec)

Show all the details of machineries and raw materials associated with projects having estimation>5000 lakh crores

```
MariaDB [final]> select * from machineries where Project_No in (select Project_No from projects where Expected_Cost_in_Lakh_Rupees>5000);
```

SlNo	Machine_no	Type_of_Machine	Rent_per_day_in_rupees	qty	Project_No
7	107	bar_bending_machine	1200	30	1014
8	108	bar_cutting_machine	1800	45	1008
22	122	welding_machine	1000	35	1010

3 rows in set (0.004 sec)

```
MariaDB [final]> select * from raw_materials where Project_No in (select Project_No from projects where Expected_Cost_in_Lakh_Rupees>5000);
```

SlNo	rm_no	Name	Qty_avlb	Price_per_qty	Source	ROL	Project_no
7	307	aggregate_heavy_80kg_pack	85	7000	apshah_agg	120	1014
8	308	bricks_light_50kg_pack	100	3000	bb_bricks_ltd	230	1008
22	322	pop_40kg_pack	128	6000	laxmi_pop	50	1010

3 rows in set (0.001 sec)

Views

Create a table for employees and raw materials associated with hospital project

```
MariaDB [final]> create view hospital_emp_rm as select employees.emp_id,  
-> employees.name, employees.salary_per_monnth, raw_materials.rm_no, raw_materials.ROL  
-> from employees,raw_materials where employees.Project_No in (1005,1017) and  
-> raw_materials.Project_No in (1005,1017);  
Query OK, 0 rows affected (0.008 sec)
```

```
MariaDB [final]> show tables;
```

```
+-----+  
| Tables_in_final |  
+-----+  
| employees       |  
| hospital_emp_rm |  
| machineries     |  
| projects        |  
| raw_materials   |  
+-----+
```

5 rows in set (0.001 sec)

```
MariaDB [final]> select * from hospital_emp_rm;
```

```
+-----+-----+-----+-----+-----+  
| emp_id | name   | salary_per_monnth | rm_no | ROL  |  
+-----+-----+-----+-----+-----+  
| 740    | bharat | 200000            | 320   | 150  |  
| 718    | inam   | 40000             | 320   | 150  |  
| 740    | bharat | 200000            | 306   | 100  |  
| 718    | inam   | 40000             | 306   | 100  |  
+-----+-----+-----+-----+-----+
```

4 rows in set (0.001 sec)

Create a table for the raw materials and machineries associated with residential building

```
MariaDB [final]> create view rb_rm_mc as select raw_materials.rm_no,  
-> raw_materials.name, raw_materials.ROL, machineries.Machine_no,  
-> machineries.Type_of_Machine, machineries.qty from raw_materials, machineries where  
-> raw_materials.Project_No in (1003,1014) and machineries.Project_No in (1003,1014);  
Query OK, 0 rows affected (0.007 sec)
```

```
MariaDB [final]> show tables;
```

```
+-----+  
| Tables_in_final |  
+-----+  
| employees       |  
| hospital_emp_rm |  
| machineries     |  
| projects        |  
| raw_materials   |  
| rb_rm_mc        |  
+-----+
```

```
6 rows in set (0.001 sec)
```

```
MariaDB [final]> select * from rb_rm_mc;
```

```
+-----+-----+-----+-----+-----+-----+  
| rm_no | name                               | ROL | Machine_no | Type_of_Machine | qty |  
+-----+-----+-----+-----+-----+-----+  
| 315   | white_paint_10_liter_pack         | 130 | 115         | tower_crane_40m | 5   |  
| 307   | aggregate_heavy_80kg_pack         | 120 | 115         | tower_crane_40m | 5   |  
| 315   | white_paint_10_liter_pack         | 130 | 107         | bar_bending_machine | 30 |  
| 307   | aggregate_heavy_80kg_pack         | 120 | 107         | bar_bending_machine | 30 |  
+-----+-----+-----+-----+-----+-----+
```

```
4 rows in set (0.004 sec)
```

Show the employees and machineries associated with commercial buildings

```
MariaDB [final]> create view cb_emp_mc as select employees.Name,employees.Emp_id,employees.Department,employees.Project_no,
-> machineries.Machine_no,machineries.Type_of_Machine,machineries.qty from employees,machineries where
-> employees.Project_No in (1001,1012) and machineries.Project_No in (1001,1012);
Query OK, 0 rows affected (0.006 sec)

MariaDB [final]> show tables;
+-----+
| Tables_in_final |
+-----+
| cb_emp_mc       |
| employees       |
| hospital_emp_rm |
| machineries     |
| projects        |
| raw_materials   |
| rb_rm_mc        |
+-----+
7 rows in set (0.001 sec)

MariaDB [final]> select * from cb_emp_mc;
+-----+-----+-----+-----+-----+-----+-----+
| Name | Emp_id | Department | Project_no | Machine_no | Type_of_Machine | qty |
+-----+-----+-----+-----+-----+-----+-----+
| dany | 707    | labour    | 1001       | 104        | concrete_pump_100hp | 10 |
| harsh | 717   | tech      | 1012       | 104        | concrete_pump_100hp | 10 |
| dany | 707    | labour    | 1001       | 105        | concrete_pump_150hp | 6  |
| harsh | 717   | tech      | 1012       | 105        | concrete_pump_150hp | 6  |
+-----+-----+-----+-----+-----+-----+-----+
4 rows in set (0.001 sec)
```

Joins

Display list of start date, place, qty of project

```
MariaDB [final]> select p.Start_Date,p.Place,m.qty from projects as p inner join machineries as m where p.Project_No=m.Project_No;
+-----+-----+-----+
| Start_Date | Place | qty |
+-----+-----+-----+
| 2019-12-12 | kalyan | 7 |
| 2023-05-01 | indore | 5 |
| 2022-10-20 | agra | 3 |
| 2020-10-23 | thane | 10 |
| 2021-08-06 | bangalore | 6 |
| 2017-05-12 | varanasi | 3 |
| 2015-11-13 | jaipur | 30 |
| 2021-12-31 | new_delhi | 45 |
| 2021-08-03 | mulund | 15 |
| 2021-09-21 | pune | 10 |
| 2021-07-12 | jaipur | 8 |
| 2018-08-12 | raipur | 50 |
| 2019-04-23 | mulund | 40 |
| 2015-01-27 | bhopal | 10 |
| 2022-05-12 | dadar | 5 |
| 2023-05-12 | surat | 10 |
| 2020-04-17 | satara | 8 |
| 2021-12-03 | indore | 20 |
| 2021-02-17 | pangim | 15 |
| 2016-12-14 | pune | 25 |
| 2012-06-06 | ambernath | 15 |
| 2019-02-23 | panjim | 35 |
| 2013-01-12 | banglore | 20 |
| 2019-06-09 | solapur | 50 |
| 2023-05-12 | pune | 125 |
+-----+-----+-----+
25 rows in set (0.006 sec)
```

Show list of names, department, source and ROL form employees and raw material table

```
MariaDB [final]> select e.Name,e.Department,r.Source,r.ROL from employees as e inner join raw_materials as r where e.Project_no=r.Project_no;
```

Name	Department	Source	ROL
kanak	tech	acc_cement	180
pallavi	engineering	ambuja_cement	80
dany	labour	goa_sand_company	50
harsh	tech	andaman_sand	100
inam	tech	kolar_agg	100
rani	labour	apshah_agg	120
pakya	labour	bb_bricks_ltd	230
raju	labour	tata_bricks	140
kashyap	tech	ilkal_lime_works	150
rajesh	engineering	kajaria	31
qutub	engineering	kajaria	30
owasi	engineering	nerolac_paints	130
chetan	tech	asian_paints	25
lavanya	tech	sheetal_ply_works	65
naseeba	engineering	ram_woods	100
bharat	board	tnt_steel	150
partiban	board	willy_steel	125
farhan	labour	laxmi_pop	50
barry	board	laxmi_pop	40
ejaz	tech	modi_steel_works	125