

Workforce Management System

Milestone: Application

Group 20

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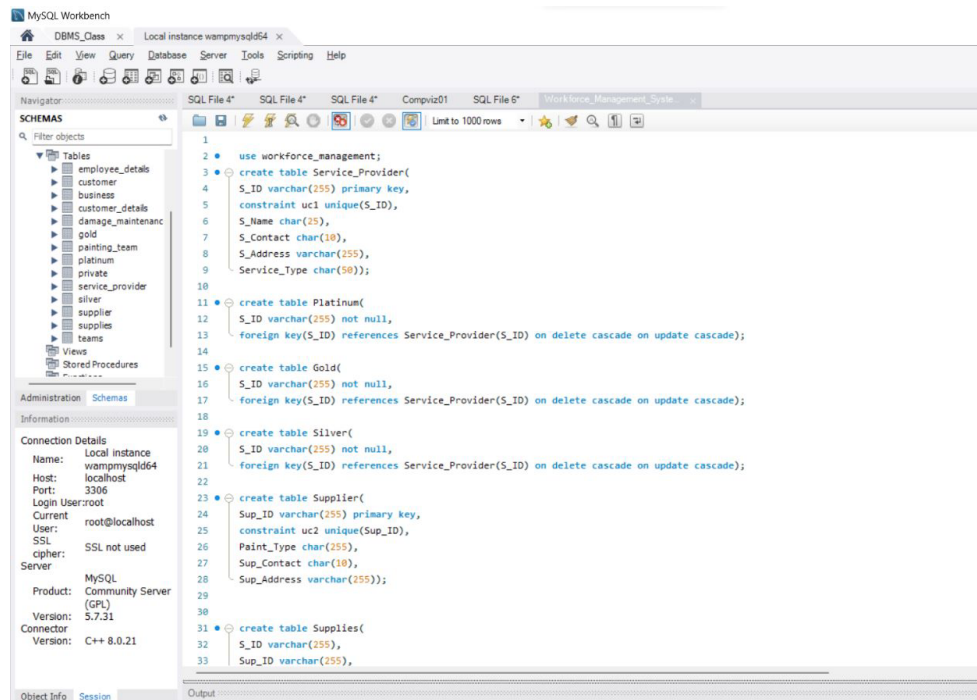
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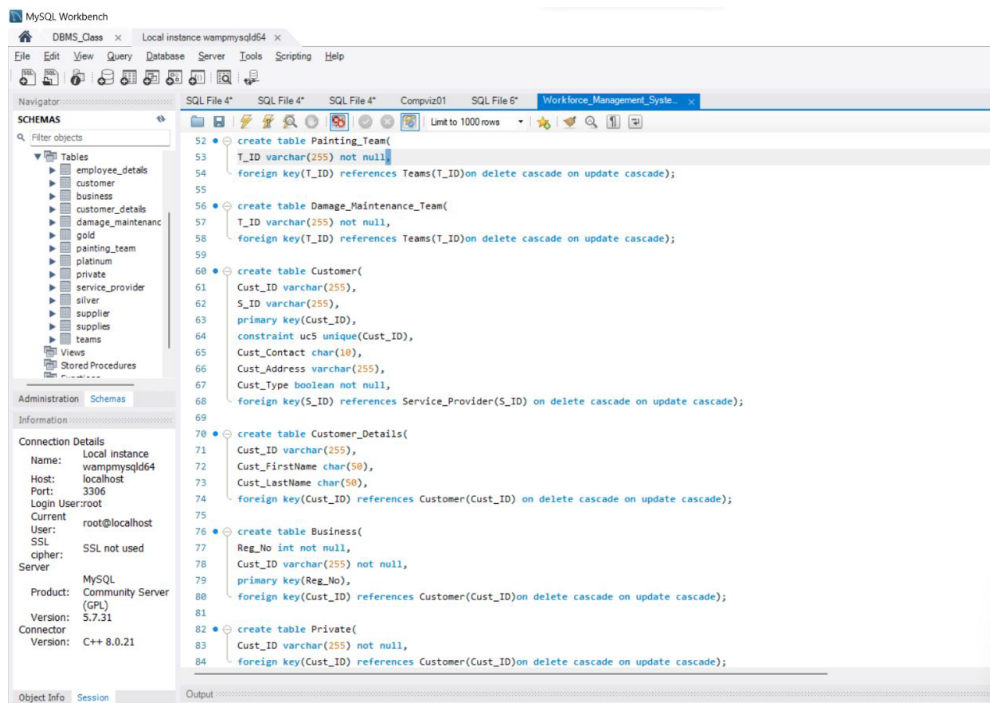
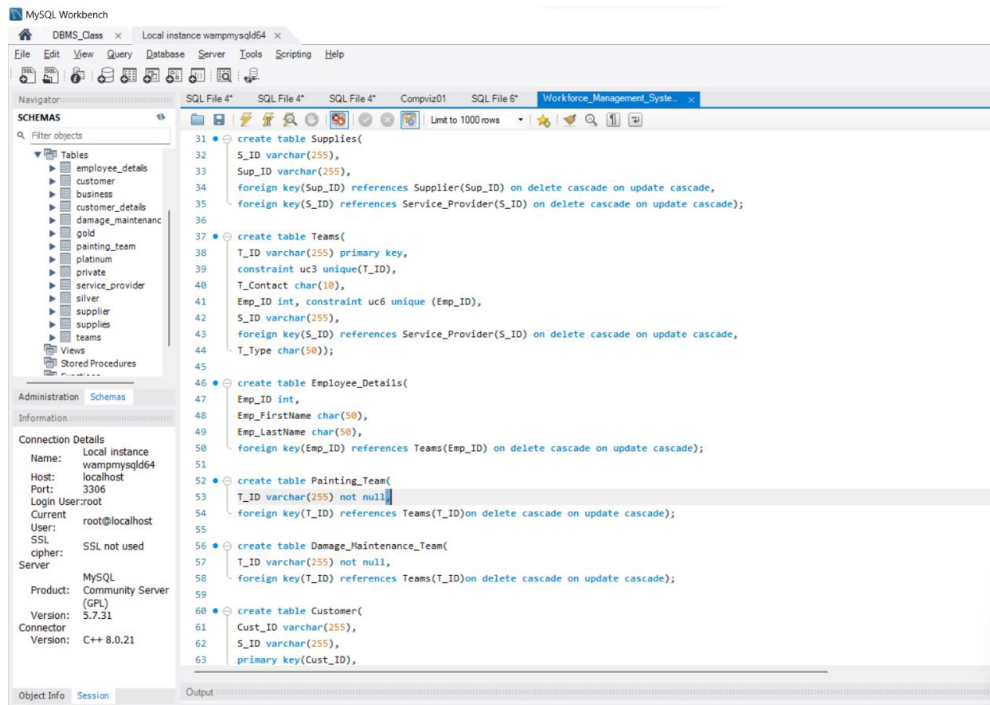
1. Implementation in MySQL
2. Application

Implementation in MySQL

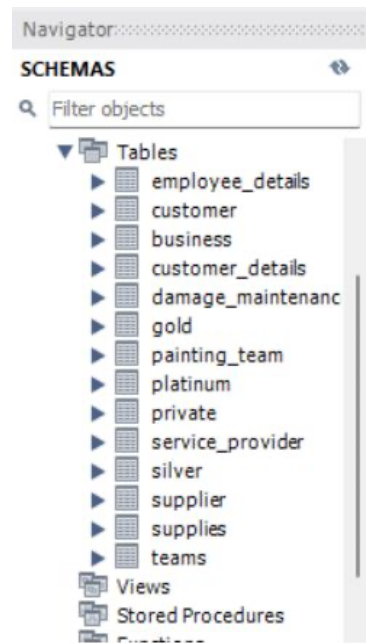
Database for **Workforce Management System** has been created on MySQL workbench using **create database** query. The following tables has been created using **create table** query as shown in the attached screenshots.

- Service_Provider
- Platinum
- Gold
- Silver
- Supplier
- Supplies
- Teams
- Employee_Details
- Painting_Team
- Damage_Maintenance_Team
- Customer
- Customer_Details
- Business
- Private





The following schema screenshot shows that the tables have been successfully created in the database.



The data has been populated in the created tables and primary, foreign keys have been handled using the **on delete cascade** and **unique constraints**.

select * from Service_Provider results in the following output.

Result Grid						
Filter Rows: [] Edit: [] Export/Import: [] Wrap Cell Co						
	S_ID	S_Name	S_Contact	S_Address	Service_Type	
▶	P1	Splash	3183790431	9627 Marsh St. Soddy Daisy, TN 37379	Platinum	
	G1	Splashing	3196790431	9621 Harsh St.Soddy Daisy, TN 37379	Gold	
	G2	gim	4583890431	9527 Sarsh St.Hoddy Daisy, TN 37379	Gold	
	S1	Sim	9983790431	9327 Karsh St.Hoddy Daisy, TN 37379	Silver	
	S2	Gin	8783790431	2627 Marsh St.Soddy Daisy, TN 37379	Silver	
	G3	Light	8883790431	9627 Marsh St.Soddy Daisy, TN 37379	Silver	
	P2	Bright	3184590431	9627 Marsh St.Soddy Daisy, TN 37379	Platinum	
	S3	Glow	3189799431	9627 Marsh St.Soddy Daisy, TN 37379	Silver	
	G4	Hallo	6183790431	9627 Marsh St.Soddy Daisy, TN 37379	Gold	
	G5	Hike	3183790481	9627 Marsh St.Soddy Daisy, TN 37379	Gold	

select * from Supplier results in the following output.

Result Grid	Filter Rows:	Edit:	Export/Import:	Wra
Sup_ID	Paint_Type	Sup_Contact	Sup_Address	
a123	Royal	3183790431	9627 Marsh St. Soddy Daisy ,TN 37379	
b123	Premium	3276222045	688 W. St Louis St.Glastonbury, CT 06033	
b121	Premium	6102170638	9260 SW. Jefferson St.Hoboken, NJ 07030	
c223	Standard	6072201152	9418 North Indian Summer CourtEvansville, IN ...	
c333	Standard	8557989504	75 Thompson Dr.Absecon, NJ 08205	
d153	Standard	2062360859	75 North Kent DriveNorth Canton, OH 44720	
b783	Royal	7834088995	8538 Roberts AvenueHighland Park, IL 60035	
p653	Standard	7484534730	506 Tailwater St.Morton Grove, IL 60053	
f893	Premium	2245392775	580 South Fairfield Ave.Scotch Plains, NJ 07076	
h493	Royal	3612449837	220 East San Juan CourtIrvington, NJ 07111	

select * from Supplies results in the following output.

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
S_ID	Sup_ID		
G1	b123		
P1	b121		
G2	c223		
S1	c333		
S2	d153		
G3	b783		
P2	p653		
S3	f893		
G4	h493		
G5	a123		

select * from Teams results in the following output.

Result Grid

Filter Rows:

Edit:

Export/Import:

	T_ID	T_Contact	Emp_ID	S_ID	T_Type
▶	B1	3183790433	34	P1	Pt
	B2	8409945421	39	G1	Go
	A1	6427211738	45	G2	Go
	A2	3447533497	76	S1	Go
	A3	5673164917	90	S2	Go
	A4	8995319578	65	G2	Go
	B3	3212870047	29	P2	Go
	B4	8517180580	87	G3	Go
	B5	2955802333	97	G4	Go
	B6	2978626576	23	S1	Go

select * from Employee_Details results in the following output.

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
Emp_ID	Emp_FirstName	Emp_LastName	
34	Emanuel	Meyer	
39	Laurence	Carpenter	
45	Nicholas	Garner	
76	Rogelio	Peters	
90	Freda	Ford	
23	Jim	Morgan	
65	Brittany	Love	
29	Cathy	Munoz	
87	Cesar	Hill	
97	Eva	Chavez	

select * from Customer results in the following output.

Result Grid	Filter Rows:	Edit:	Export/Import:	Wrap Cell Co
Cust_ID	S_ID	Cust_Contact	Cust_Address	Cust_Type
P01	P1	3183790431	9627 Marsh St. Soddy Daisy, TN 37379	1
Pr1	P1	7407894209	7433 Cross St. Egg Harbor Township, NJ 08234	1
Bu1	P2	9068921278	7996 Cardinal Ave. Somerset, NJ 08873	0
Pr2	P1	5532564959	815 Roehampton Ave. Lewis Center, OH 43035	1
Pr3	G1	5209818747	570 Boston Drive Malden, MA 02148	1
Bu2	G2	2737794139	8929 Rockledge Ave. Dublin, GA 31021	0
Pr4	S1	8506560556	982 Aspen Street Gwynn Oak, MD 21207	1
Pr5	S2	9068062015	11 Plumb Branch St. Opa Locka, FL 33054	1
Bu3	S2	5304708217	236 Bridgeton St. Chandler, AZ 85224	0
Pr6	G3	8993259471	515 Cherry Hill St. Absecon, NJ 08205	1
Pr7	G4	6324215421	388 North Cambridge Ave. Oakland Gardens, ...	1

select * from Customer_Details results in the following output.

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
Cust_ID	Cust_FirstName	Cust_LastName	
Pr1	Johnnie	Nichols	
Bu1	Joanna	Horton	
Pr2	Delbert	Nelson	
Pr3	Simon	Mcdaniel	
Bu2	Jackie	Willis	
Pr4	Gilbert	Mendoza	
Pr5	Perry	Adams	
Bu3	Terrell	Bradley	
Pr6	Miguel	Page	
Pr7	Barbara	Ortiz	

select * from Business results in the following output.

Result Grid	Filter Rows:	Edit:	Export/Import:
Reg_No	Cust_ID		
3434	Pr1		
3435	Pr3		
3436	Pr5		
3437	Bu3		
3438	Pr6		
3432	Bu1		
3441	Pr2		
3423	Bu2		
3443	Pr4		
3444	Pr7		

Few examples of SQL queries implemented on the Workforce Management System are as follows:

1. select count(S_ID) from service_provider where Service_Type='Gold';

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
count(S_ID)			
4			

2. select s.S_ID from service_provider s

inner join Customer c

on s.S_ID=c.S_ID

inner join Business b

on c.Cust_ID=b.Cust_ID

where b.Reg_No='3434';

Result Grid			Filter Rows:	<input type="text"/>	Export:		Wrap Cell Content:	
	S_ID							
▶	P1							

Result 2 x

3. select count(Paint_Type),Paint_Type from Supplier group by Paint_Type;

Result Grid			Filter Rows:	<input type="text"/>	Export:		Wrap Cell Content:	
	count(Paint_Type)	Paint_Type						
▶	3	Premium						
	3	Royal						
	4	Standard						

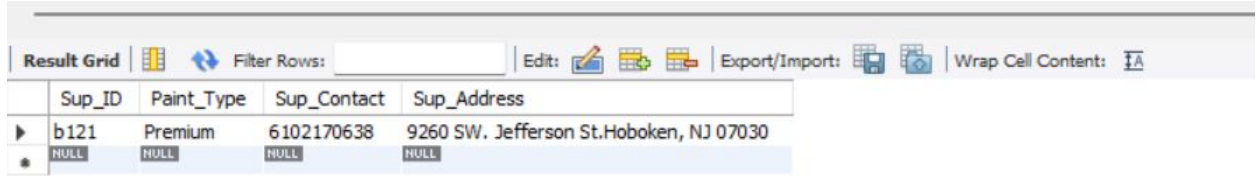
Result 3 x

4. select * from customer_details
where Cust_FirstName like 'J%';

Result Grid			Filter Rows:	<input type="text"/>	Export:		Wrap Cell Content:	
	Cust_ID	Cust_FirstName	Cust_LastName					
▶	Pr1	Johnnie	Nichols					
	Bu1	Joanna	Horton					
	Bu2	Jackie	Willis					

customer_details 5 x

5. **select * from supplier
where Sup_ID = ANY
(select Sup_ID from supplies
where S_ID='P1');**



The screenshot shows a database application window with a toolbar at the top. The toolbar includes buttons for 'Result Grid', 'Filter Rows', 'Edit', 'Export/Import', and 'Wrap Cell Content'. Below the toolbar is a table with the following data:

	Sup_ID	Paint_Type	Sup_Contact	Sup_Address
▶	b121	Premium	6102170638	9260 SW. Jefferson St.Hoboken, NJ 07030
*	NULL	NULL	NULL	NULL

supplier 11 x

Application

The project application to access the MySQL database using **Python** is done as follows where connection with database has been established with db '**workforce_management**' and few example queries have been executed in order to test the connection.

```
In [48]: #example of python connecting to MySQL server and databases
#
import mysql.connector
#
from mysql.connector import Error
#
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='workforce_management',
                                         user='root',
                                         password='',
                                         auth_plugin = 'mysql_native_password')

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
#you should see the following output
#'''Connected to MySQL Server version  8.0.17
#Your connected to database:  ('classicmodels',)
#True
#MySQL connection is closed'''

#
```

Connected to MySQL Server version 5.7.31
Your connected to database: ('workforce_management',)
MySQL connection is closed

```
In [49]: #example of python connecting to MySQL server and databases
#
import mysql.connector
#
from mysql.connector import Error
#
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='workforce_management',
                                         user='root',
                                         password='',
                                         auth_plugin = 'mysql_native_password')

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)

#
    sql_select_Query = "select * from Service_Provider"
    cursor = connection.cursor()
    cursor.execute(sql_select_Query)
    records = cursor.fetchall()
    print("Get all the details of service provider table:\n")
    for i in range(0,len(records)):
        print(records[i],"\n")

#

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
#you should see the following output
#'''Connected to MySQL Server version  8.0.17
#Your connected to database:  ('classicmodels',)
#True
#MySQL connection is closed'''

#
```

Connected to MySQL Server version 5.7.31
Your connected to database: ('workforce_management',)
Get all the details of service provider table:

('P1', 'Splash', '3183790431', '9627 Marsh St.\nSoddy Daisy, TN 37379', 'Platinum')

('G1', 'Splashing', '3196790431', '9621 Harsh St.Soddy Daisy, TN 37379', 'Gold')

('G2', 'gim', '4583890431', '9527 Sarsh St.Hoddy Daisy, TN 37379', 'Gold')

('S1', 'Sim', '9983790431', '9327 Karsh St.Hoddy Daisy, TN 37379', 'Silver')

('S2', 'Gin', '8783790431', '2627 Marsh St.Soddy Daisy, TN 37379', 'Silver')

('G3', 'Light', '8883790431', '9627 Marsh St.Soddy Daisy, TN 37379', 'Silver')

('P2', 'Bright', '3184590431', '9627 Marsh St.Soddy Daisy, TN 37379', 'Platinum')

('S3', 'Glow', '3189799431', '9627 Marsh St.Soddy Daisy, TN 37379', 'Silver')

('G4', 'Hallo', '6183790431', '9627 Marsh St.Soddy Daisy, TN 37379', 'Gold')

('G5', 'Hike', '3183790481', '9627 Marsh St.Soddy Daisy, TN\xa037379', 'Gold')

MySQL connection is closed

```
In [50]: #example of python connecting to MySQL server and databases
#
import mysql.connector
#
from mysql.connector import Error
#
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='workforce_management',
                                         user='root',
                                         password='',
                                         auth_plugin = 'mysql_native_password')

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)

#

    sql_select_Query = "select * from customer_details where Cust_FirstName like 'J%';"
    cursor = connection.cursor()
    cursor.execute(sql_select_Query)
    records = cursor.fetchall()
    print("Get customer first name starting with J from customer details table:\n")
    for i in range(0,len(records)):
        print(records[i],"\n")
#

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
#you should see the following output
#'''Connected to MySQL Server version  8.0.17
#Your connected to database:  ('classicmodels',)
#True
#MySQL connection is closed'''

#
```

Connected to MySQL Server version 5.7.31
Your connected to database: ('workforce_management',)
Get customer first name starting with J from customer details table:

('Pr1', 'Johnnie', 'Nichols')

('Bu1', 'Joanna', 'Horton')

('Bu2', 'Jackie', 'Willis')

MySQL connection is closed

```
In [53]: #example of python connecting to MySQL server and databases
#
import mysql.connector
#
from mysql.connector import Error
#
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='workforce_management',
                                         user='root',
                                         password='',
                                         auth_plugin = 'mysql_native_password')

    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)

#

    sql_select_Query = "select count(S_ID) from service_provider where Service_Type='Gold';"
    cursor = connection.cursor()
    cursor.execute(sql_select_Query)
    records = cursor.fetchall()
    print("Get Count of service ids from service provider providing service type Gold:\n")
    for i in range(0,len(records)):
        print(records[i])

#

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
#you should see the following output
'''Connected to MySQL Server version  8.0.17
#Your connected to database:  ('classicmodels',)
#True
#MySQL connection is closed'''

#
```

Connected to MySQL Server version 5.7.31
Your connected to database: ('workforce_management',)
Get Count of service ids from service provider providing service type Gold:

(4,)
MySQL connection is closed

```
In [ ]:
```