

# Research Document (MySQL Spatial Data Types, Storing spatial data and using it to create a Restful Web service)

**Aim:** The aim of the document is to successfully research ways to be able to store geo spatial data in MySQL database

**Why:** Currently (24 Feb, 2017) I have been using SAP Hana HCP but the issue is its not free and is very expensive to move from trial to pro version, so the better alternative is MySQL if I am successfully able to implement what I was able to do with HCP. And, the advantages will be free of cost, HCP trial needs restart every 12 hours and auto deletes after 6 days which is a big disadvantage, MySQL will allow 99% uptime for web service.

\*\*\*\*\*

Importance of the external resources used based on Level:

**Level (High) – Very helpful and important**

**Level (Medium) – Important and Some what helpful and related**

**Level (Low) – Helped to see some light, but not very useful resource.**

\*\*\*\*\*

## Table of Contents

Importance of the external resources used based on Level:.....	1
*****Creating a table with geometry***** .....	1
Query to show the columns in the table: .....	1
***Quite close to solving problem of inserting spatial data into MySQL*** .....	2
***Working SQL Statement to insert spatial data in MySQL (Polygon and Point)***** .....	2

\*\*\*\*\*Creating a table with geometry\*\*\*\*\*

create table myspatialdata (id integer(7), bpolygon Geometry, mpoint Geometry);

\*\*\*\*\*

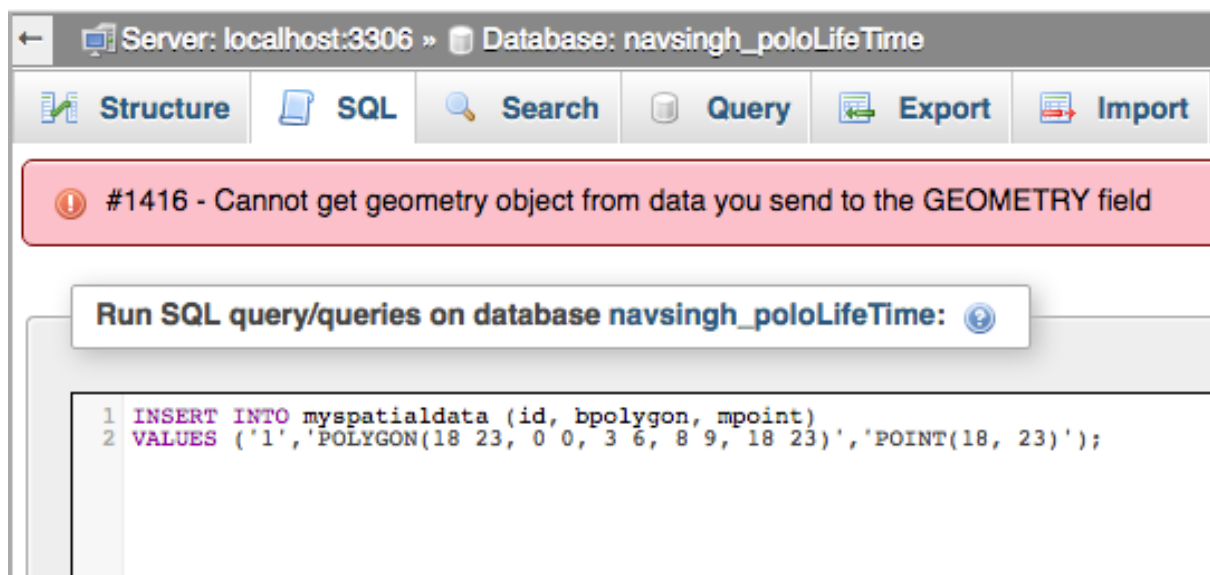
Query to show the columns in the table:

**SHOW COLUMNS FROM** myspatialdata

Field	Type	Null	Key	Default	Extra
id	int(7)	YES		NULL	
bpolygon	geometry	YES		NULL	
mpoint	geometry	YES		NULL	

\*\*\*Quite close to solving problem of inserting spatial data into MySQL\*\*\*

```
INSERT INTO myspatialdata (id, bpolygon, mpoint)
VALUES ('1','POLYGON(18 23, 0 0, 3 6, 8 9, 18 23)','POINT(18, 23)');
```



\*\*\*\*Working SQL Statement to insert spatial data in MySQL (Polygon and Point)\*\*\*\*\*

```
INSERT INTO myspatialdata (id, bpolygon, mpoint)
VALUES (1,GeomFromText('POLYGON(18 23, 0 0, 3 6, 8 9, 18 23)'),GeomFromText('POINT(18, 23)'));
```

✓ 1 row inserted. (Query took 1.4309 sec)

```
INSERT INTO myspatialdata( id, bpolygon, mpoint )
VALUES ( 1, GEOMFROMTEXT( 'POLYGON(18 23, 0 0, 3 6, 8 9, 18 23)' ), GEOMFROMTEXT( 'POINT(18, 23)' ) )
```

Run SQL query/queries on database navsingh\_poloLifeTime: 

```
1 INSERT INTO myspatialdata( id, bpolygon, mpoint)
2 VALUES (1,GeomFromText('POLYGON(18 23, 0 0, 3 6, 8 9, 18 23)'),GeomFromText('POINT(18, 23)'));
3
```

```
INSERT INTO myspatialdata( id, bpolygon, mpoint)
VALUES (2,GeomFromText('POLYGON(-74.13591384887695 40.93750722242824,-
74.13522720336914 40.929726129575016,-74.15102005004883 40.9329683629703,-
74.14329528808594 40.94256444133327)'),GeomFromText('POINT(-
74.13591384887695,40.93750722242824)'));
```

```
INSERT INTO myspatialdata( id, bpolygon, mpoint )
VALUES ( 2, GEOMFROMTEXT(
'POLYGON(-74.13591384887695 40.93750722242824,-74.13522720336914 40.929726129575016,-74.15102005004883 40.932968362
), GEOMFROMTEXT( 'POINT(-74.13591384887695,40.93750722242824)' ) )
```

[\[ Edit \]](#) [\[ Create PHP Code \]](#)

Run SQL query/queries on database navsingh\_poloLifeTime: 

```
1 INSERT INTO myspatialdata( id, bpolygon, mpoint)
2 VALUES (2,GeomFromText('POLYGON(-74.13591384887695 40.93750722242824,-74.13522720336914 40.929726129575016,-74.15102005004883
40.9329683629703,-74.14329528808594 40.94256444133327)'),GeomFromText('POINT(-74.13591384887695,40.93750722242824)'));
3
```

Note: Useful documentation on MySQL Spatial Data Types

<http://www.w3resource.com/mysql/mysql-spatial-data-types.php>

(Level: High)

Inserting Coordinates into MySQL (Stack Flow)

<http://stackoverflow.com/questions/15453084/inserting-coordinates-into-mysql-polyfromtext-sql-syntax-error-returning-nul>

(Level: Low)

\*\*\*\*\*The end of the Inserting Spatial data like Polygon and Point in to database table\*\*\*\*\*

\*\*\*\*\*

RESEARCH RESULTS: FAILED

\*\*\*\*\*

## Inserting Geo-spatial Polygon into the MySQL Database

```
INSERT INTO `Buildings` (`Name`, `Shape`) VALUES ('Apt 15',  
PolyFromText('POLYGON((50.866753 5.686455, 50.859819 5.708942, 50.851475 5.722675,  
50.841611 5.720615, 50.834023 5.708427, 50.840744 5.689373, 50.858735 5.673923,  
50.866753 5.686455)))');
```

Reference: <https://gis.stackexchange.com/questions/23900/how-to-add-polygon-in-mysql-database>

Column	Type	Function	Null	Value
Name	varchar(50)			<input type="text" value="Apt 16"/>
Shape	polygon	<input type="text" value="PolyFromText"/>		<input type="text" value="POLYGON((53.37585 -6.31014,53.38348 -6.1844,53.32062 -6.204:"/>

[Edit/Insert](#) [Go](#)

RESEARCH RESULTS: PASSED (Working)

## 1 Resources for Functionanl Requirements

Requirement 7:

Requirement 8: Photo Upload

Image upload example with Swift and PHP - <http://swiftdeveloperblog.com/image-upload-example/>

Requirement 9:

## 2 Final Report Database

1 - Buildings table (mrp\_buildings) to store all the information regarding buildings and also their co-ordinates (using geospatial features of MySQL – here we are using Polygon/Geometry)

Table name:  Add  column(s)

Name	Type	Length/Values	Default	Collation	Attributes	Null	Index
buildingId	INT		None			<input type="checkbox"/>	PRIMARY
name	VARCHAR		None			<input type="checkbox"/>	---
numberOfFloors	INT		None			<input type="checkbox"/>	---
coordinates	GEOMETRY		None			<input type="checkbox"/>	---
city	VARCHAR		None			<input type="checkbox"/>	---
country	VARCHAR		None			<input type="checkbox"/>	---
address	VARCHAR		None			<input type="checkbox"/>	---
phone	VARCHAR		None			<input type="checkbox"/>	---
email	VARCHAR		None			<input type="checkbox"/>	---
	INT		None			<input type="checkbox"/>	---

Server: localhost:3306 » Database: navsingh\_MRPro » Table: mrp\_buildings

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
<input type="checkbox"/> 1	<b>buildingId</b>	int(120)			No	None		
<input type="checkbox"/> 2	<b>name</b>	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/> 3	<b>numberOfFloors</b>	int(120)			No	None		
<input type="checkbox"/> 4	<b>coordinates</b>	polygon			No	None		
<input type="checkbox"/> 5	<b>city</b>	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/> 6	<b>country</b>	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/> 7	<b>address</b>	varchar(240)	latin1_swedish_ci		No	None		
<input type="checkbox"/> 8	<b>phone</b>	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/> 9	<b>email</b>	varchar(120)	latin1_swedish_ci		No	None		

```
CREATE TABLE `mrp_buildings` (
  `buildingId` int(120) NOT NULL,
  `name` varchar(120) NOT NULL,
  `numberOfFloors` int(120) NOT NULL,
  `coordinates` geometry NOT NULL,
  `city` varchar(120) NOT NULL,
  `country` varchar(120) NOT NULL,
  `address` varchar(240) NOT NULL,
  `phone` varchar(120) NOT NULL,
  `email` varchar(120) NOT NULL
```

```
) ENGINE=MyISAM DEFAULT CHARSET=latin1;
ALTER TABLE `mrp_buildings`
ADD PRIMARY KEY (`buildingId`);
```

```
CREATE TABLE `mrp_buildings` (
  `buildingId` int(120) NOT NULL,
  `name` varchar(120) NOT NULL,
  `numberOfFloors` int(120) NOT NULL,
  `coordinates` geometry NOT NULL,
  `city` varchar(120) NOT NULL,
  `country` varchar(120) NOT NULL,
  `address` varchar(240) NOT NULL,
  `phone` varchar(120) NOT NULL,
  `email` varchar(120) NOT NULL
) ENGINE=MyISAM DEFAULT CHARSET=latin1;
ALTER TABLE `mrp_buildings`
ADD PRIMARY KEY (`buildingId`);
```

2 – Meeting Rooms Table (mrp\_meeting\_rooms) to store information regarding meeting rooms

Table name:  Add  column(s)

Name	Type	Length/Values	Default	Collation	Attributes	Null	Index
meetingRoomId	INT	120	None			<input type="checkbox"/>	PRIMARY
buildingId	INT	120	None			<input type="checkbox"/>	---
name	VARCHAR	120	None			<input type="checkbox"/>	---
floorNumber	INT	120	None			<input type="checkbox"/>	---
coordinates	POINT		None			<input type="checkbox"/>	---
capacity	INT	120	None			<input type="checkbox"/>	---
type	VARCHAR	120	None			<input type="checkbox"/>	---
phone	VARCHAR	120	None			<input type="checkbox"/>	---
email	VARCHAR	120	None			<input type="checkbox"/>	---

Server: localhost:3306 » Database: navsingh_MRPro » Table: mrp_meeting_rooms									
<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">SQL</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Export</a> <a href="#">Import</a>									
	#	Name	Type	Collation	Attributes	Null	Default	Comments	E
<input type="checkbox"/>	1	meetingRoomId	int(120)			No	None		
<input type="checkbox"/>	2	buildingId	int(120)			No	None		
<input type="checkbox"/>	3	name	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/>	4	floorNumber	int(120)			No	None		
<input type="checkbox"/>	5	coordinates	point			No	None		
<input type="checkbox"/>	6	capacity	int(120)			No	None		
<input type="checkbox"/>	7	type	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/>	8	phone	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/>	9	email	varchar(120)	latin1_swedish_ci		No	None		
<input type="checkbox"/>	10	directions	varchar(480)	latin1_swedish_ci		No	None		

```
CREATE TABLE `navsingh_MRPro`.`mrp_meeting_rooms` (
  `meetingRoomId` INT(120) NOT NULL ,
  `buildingId` INT(120) NOT NULL ,
  `name` VARCHAR(120) NOT NULL ,
  `floorNumber` INT(120) NOT NULL ,
  `coordinates` POINT NOT NULL ,
  `capacity` INT(120) NOT NULL ,
  `type` VARCHAR(120) NOT NULL ,
  `phone` VARCHAR(120) NOT NULL ,
  `email` VARCHAR(120) NOT NULL ,
  `directions` VARCHAR(480) NOT NULL
  , PRIMARY KEY (`meetingRoomId`))ENGINE = MyISAM;
```

```
CREATE TABLE `navsingh_MRPro`.`mrp_meeting_rooms` (
  `meetingRoomId` INT(120) NOT NULL ,
  `buildingId` INT(120) NOT NULL ,
  `name` VARCHAR(120) NOT NULL ,
  `floorNumber` INT(120) NOT NULL ,
  `coordinates` POINT NOT NULL ,
  `capacity` INT(120) NOT NULL ,
  `type` VARCHAR(120) NOT NULL ,
  `phone` VARCHAR(120) NOT NULL ,
  `email` VARCHAR(120) NOT NULL ,
  `directions` VARCHAR(480) NOT NULL , PRIMARY KEY (`meetingRoomId`))ENGINE = MyISAM;
```