

## 2 Creating Vector Layers

2.1 Creation of tables of PostgreSQL with geometry column for PostGIS

2.2 Adding columns to tables of PostgreSQL through PostGIS connection from QGIS

### Premise:

PostgreSQL

user

name='yokoi', password='yokoi'

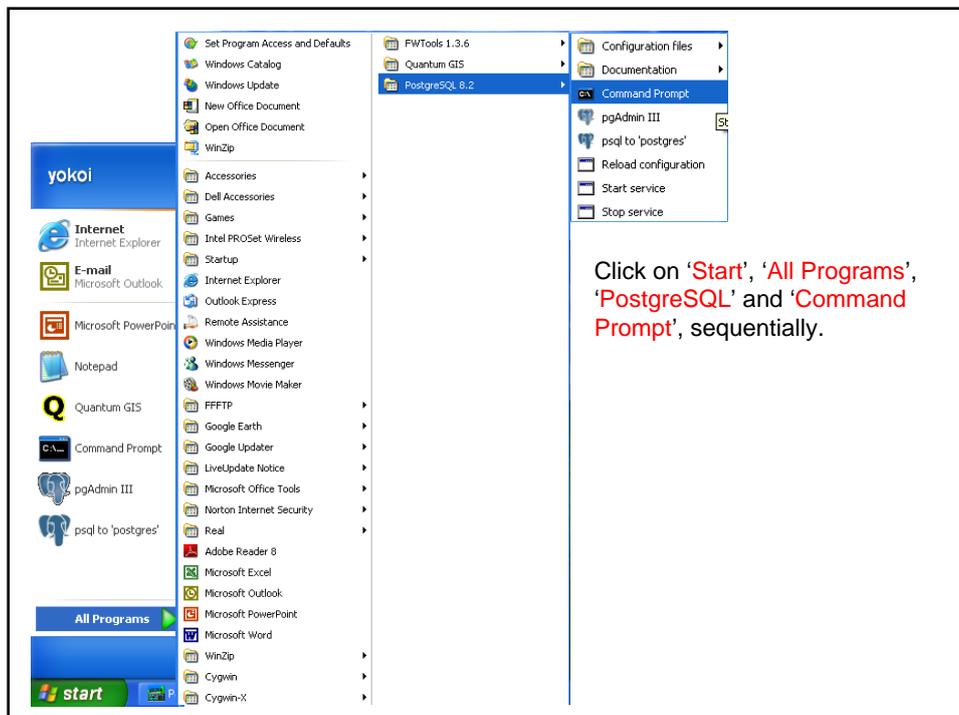
(This can create new database)

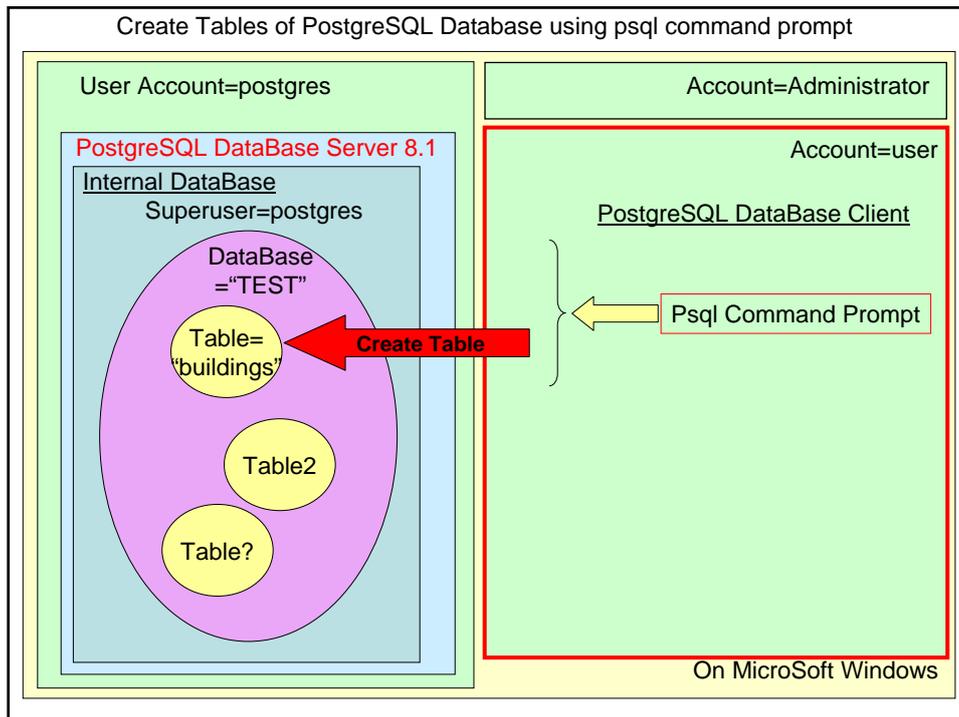
database

name='valley' owned by user 'yokoi'

(This is connected to PostGIS)

## 2.1 Creation of tables of PostgreSQL with geometry column for PostGIS





```

Command Prompt - psql valley -U yokoi
Active code page: 1252
C:\Program Files\PostgreSQL\8.2\bin>psql valley -U yokoi
Password for user yokoi:
Welcome to psql 8.2.6, the PostgreSQL interactive terminal.
Type: \copyright for distribution terms
      \h for help with SQL commands
      \? for help with psql commands
      \q or terminate with semicolon to execute query
      \q to quit
valley=>

```

Login to Database 'valley' as user 'yokoi'.  
psql valley -U yokoi  
and the password 'yokoi'.

```

Command Prompt - psql valley -U yokoi
valley-> \q
C:\Program Files\PostgreSQL\8.2\bin>psql valley -U yokoi
Password for user yokoi:
Welcome to psql 8.2.6, the PostgreSQL interactive terminal.
Type:  \copyright for distribution terms
       \h for help with SQL commands
       \? for help with psql commands
       \q or terminate with semicolon to execute query
       \q to quit
valley-> \i D:/batch_sql/mkpoint.sql
psql: D:/batch_sql/mkpoint.sql:1: NOTICE: CREATE TABLE / PRIMARY KEY will create
implicit index "buildings_pkey" for table "buildings"
CREATE TABLE
ALTER TABLE
      addgeometrycolumn
-----
public.buildings.the_geom SRID:4326 TYPE:POINT DIMS:2
<1 row>
valley=>

```

Create a new table for POINT data type connected to PostGIS.

**D:/batch\_sql/mkpoint.sql**

'D:/batch\_sql/mkpoint.sql' is the name of a sql batch file of which contents are:

```

CREATE TABLE buildings (id1 integer NOT NULL, CONSTRAINT buildings_pkey PRIMARY KEY (id1))
WITHOUT OIDS;
ALTER TABLE buildings OWNER TO yokoi;
select AddGeometryColumn('buildings', 'the_geom', 4326, 'POINT', 2);

```

where blue letters show the name of the created table. '4326' denotes SRID for the wgs84. This file is located in the directory 'batch\_sql' on 'D:' drive (Install CD).

Note: If you want to make a Table of 'POINT' type with different name:

Copy 'D:/batch\_sql/mkpoint.sql' into 'C:/Your\_Directory',  
 Edit the copied file using Notepad or other editor, namely replace the blue lettered parts shown below with the new table name.

```

CREATE TABLE buildings (id1 integer NOT NULL, CONSTRAINT buildings_pkey PRIMARY KEY (id1)) WITHOUT OIDS;
ALTER TABLE buildings OWNER TO yokoi;
select AddGeometryColumn('buildings', 'the_geom', 4326, 'POINT', 2);

```

SRID=4326 means wgs84 geodetic system. If you want to use other geodetic and/or projection system, obtain the corresponding SRID. QGIS can provide this information.

Start QGIS and click 'Setting'. Then select 'Project Properties' and 'Projection Tag'. Look for your preferable projection system in the top panel using vertical slide bar. Then, check 'PostGIS SRID:'

```

Command Prompt - psql valley -U yokoi
\nq to quit
valley> \i D:/batch_sql/mkpoint.sql
psql:D:/batch_sql/mkpoint.sql:1: NOTICE: CREATE TABLE / PRIMARY KEY will create
implicit index "buildings_pkey" for table "buildings"
CREATE TABLE
ALTER TABLE
      addgeometrycolumn
-----
public.buildings.the_geom SRID:4326 TYPE:POINT DIMS:2
<1 row>
valley> \i D:/batch_sql/mkline.sql
psql:D:/batch_sql/mkline.sql:1: NOTICE: CREATE TABLE / PRIMARY KEY will create
implicit index "roads_pkey" for table "roads"
CREATE TABLE
ALTER TABLE
      addgeometrycolumn
-----
public.roads.the_geom SRID:4326 TYPE:LINESTRING DIMS:2
<1 row>
valley>

```

Create a new table for LINESTRING data type connected to PostGIS.

❏ D:/batch\_sql/mkline.sql

'D:/batch\_sql/mkline.sql' is the name of a sql batch file of which contents are:

```

CREATE TABLE roads (id1 integer NOT NULL, CONSTRAINT roads_pkey PRIMARY KEY (id1))
WITHOUT OIDS;
ALTER TABLE roads OWNER TO yokoi;
select AddGeometryColumn('roads', 'the_geom', 4326, 'LINESTRING', 2);

```

where blue letters show the name of the created table. '4326' denotes SRID for wgs84. This file is located in the directory 'batch\_sql' on 'D:' drive (Install CD).

Note: If you want to make a Table of 'LINESTRING' type with different name:

Copy 'D:/batch\_sql/mkline.sql' into 'C:/Your\_Directory',  
 Edit the copied file using Notepad or other editor, namely replace the blue lettered parts shown below with the new table name.

```

CREATE TABLE roads (id1 integer NOT NULL, CONSTRAINT roads_pkey PRIMARY KEY (id1)) WITHOUT OIDS;
ALTER TABLE roads OWNER TO yokoi;
select AddGeometryColumn('roads', 'the_geom', 4326, 'LINESTRING', 2);

```

SRID=4326 means wgs84 geodetic system. If you want to use other geodetic and/or projection system, obtain the corresponding SRID. QGIS can provide this information.

Start QGIS and click 'Setting'. Then select 'Project Properties' and 'Projection Tag'. Look for your preferable projection system in the top panel using vertical slide bar. Then, check 'PostGIS SRID:'

```

C:\Command Prompt - psql valley -U yokoi
valley> \i D:/batch_sql/mkline.sql
psql:D:/batch_sql/mkline.sql:1: NOTICE: CREATE TABLE / PRIMARY KEY will create
implicit index "roads_pkey" for table "roads"
CREATE TABLE
ALTER TABLE
      addgeometrycolumn
-----
public.roads.the_geom SRID:4326 TYPE:LINESTRING DIMS:2
valley>
valley> \i D:/batch_sql/mkpolygon.sql
psql:D:/batch_sql/mkpolygon.sql:1: NOTICE: CREATE TABLE / PRIMARY KEY will crea
te implicit index "open_spaces_pkey" for table "open_spaces"
CREATE TABLE
ALTER TABLE
      addgeometrycolumn
-----
public.open_spaces.the_geom SRID:4326 TYPE:POLYGON DIMS:2
valley>

```

Create a new table for POLYGON data type connected to PostGIS.

`D:/batch_sql/mkpolygon.sql`

'D:/batch\_sql/mkpolygon.sql' is the name of a sql batch file of which contents are:

```

CREATE TABLE open_spaces (id1 integer NOT NULL, CONSTRAINT open_spaces_pkey PRIMARY KEY
(id1)) WITHOUT OIDS;
ALTER TABLE open_spaces OWNER TO yokoi;
select AddGeometryColumn('open_spaces', 'the_geom', 4326, 'POLYGON', 2);

```

where blue letters show the name of the created table. '4326' denotes SRID for wgs84. This file is located in the directory 'batch\_sql' on 'D:' drive (Install CD).

Note: If you want to make a Table of 'POLYGON' type with different name:

Copy 'D:/batch\_sql/mkpolygon.sql' into 'C:/Your\_Directory',  
 Edit the copied file using Notepad or other editor, namely replace the blue lettered parts shown below with the new table name.

```

CREATE TABLE open_spaces (id1 integer NOT NULL, CONSTRAINT open_spaces_pkey PRIMARY KEY (id1)) WITHOUT
OIDS;
ALTER TABLE open_spaces OWNER TO yokoi;
select AddGeometryColumn('open_spaces', 'the_geom', 4326, 'POLYGON', 2);

```

SRID=4326 means wgs84 geodetic system. If you want to use other geodetic and/or projection system, obtain the corresponding SRID. QGIS can provide this information.

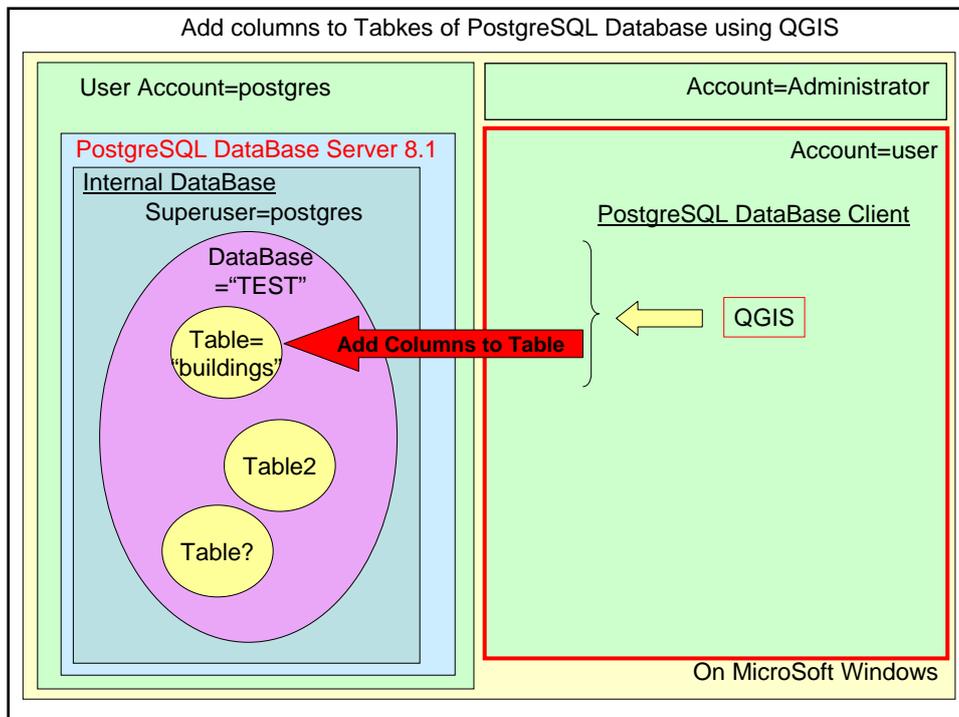
Start QGIS and click 'Setting'. Then select 'Project Properties' and 'Projection Tag'. Look for your preferable projection system in the top panel using vertical slide bar. Then, check 'PostGIS SRID:'

```

Command Prompt - psql valley -U yokoi
Active code page: 1252
C:\Program Files\PostgreSQL\8.2\bin>psql valley -U yokoi
Password for user yokoi:
Welcome to psql 8.2.6, the PostgreSQL interactive terminal.
Type: \copyright for distribution terms
      \h for help with SQL commands
      \? for help with psql commands
      \g or terminate with semicolon to execute query
      \q to quit
valley=> \d
          List of relations
Schema | Name          | Type  | Owner
-----|-----|-----|-----
public | buildings     | table | yokoi
public | geometry_columns | table | yokoi
public | open_spaces   | table | yokoi
public | roads         | table | yokoi
public | spatial_ref_sys | table | yokoi
(5 rows)
valley=>

```

Confirm the creation of these three tables using '`\d`' command.



## 2.2 Adding columns to tables of PostgreSQL through PostGIS connection from QGIS

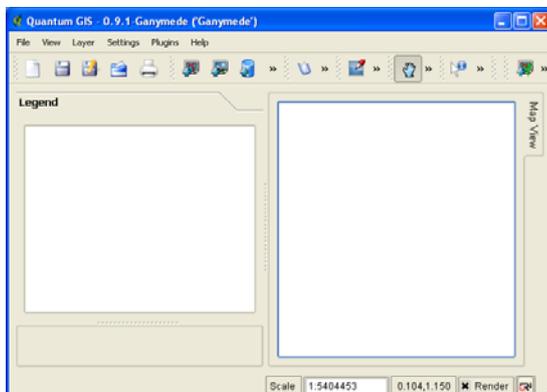
### 1. Connecting vector layers (QGIS) to Tables (PostgreSQL)



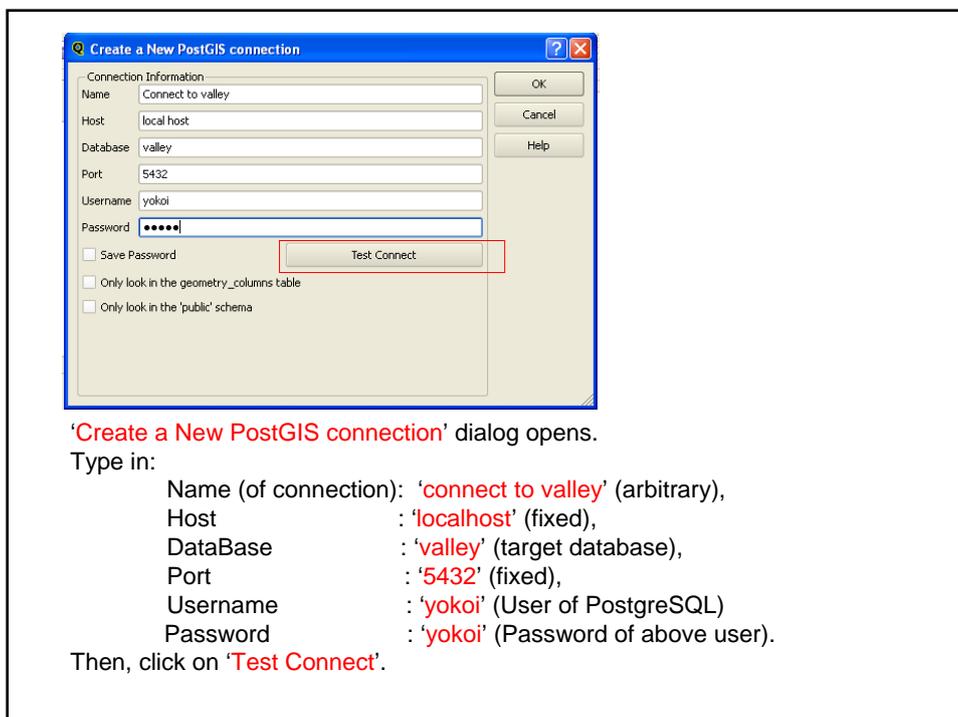
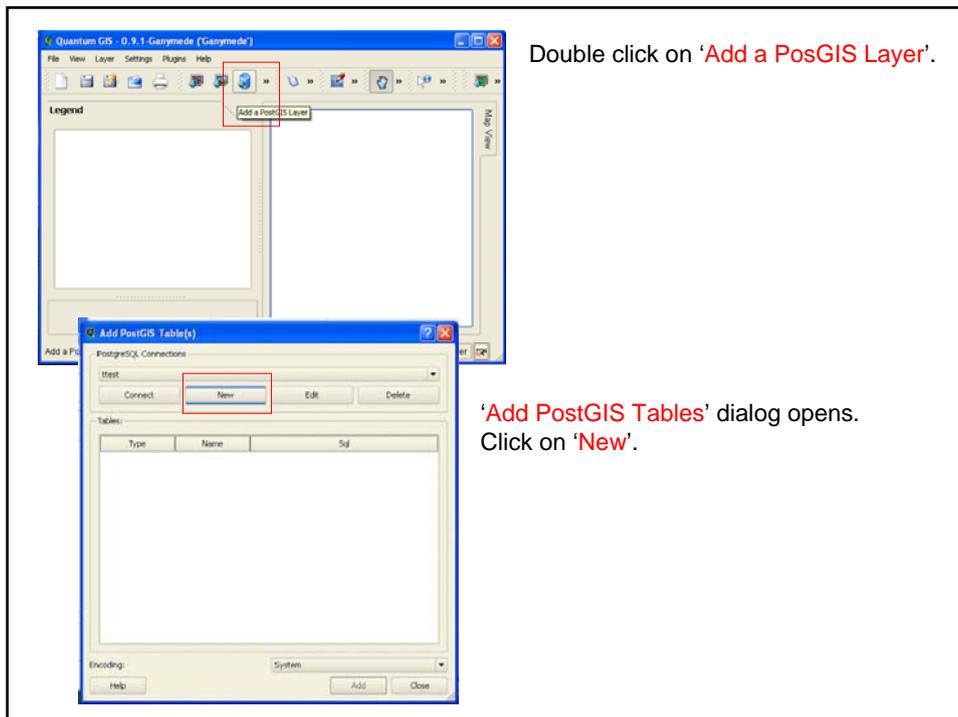
Double click on 'Quantum GIS' icon.



Logo of Quantum GIS appears.

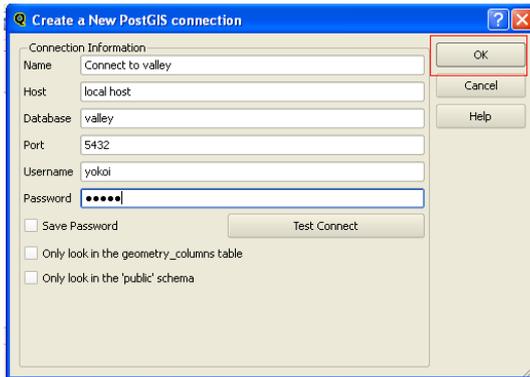


Then, Quantum GIS 0.9.1 starts.

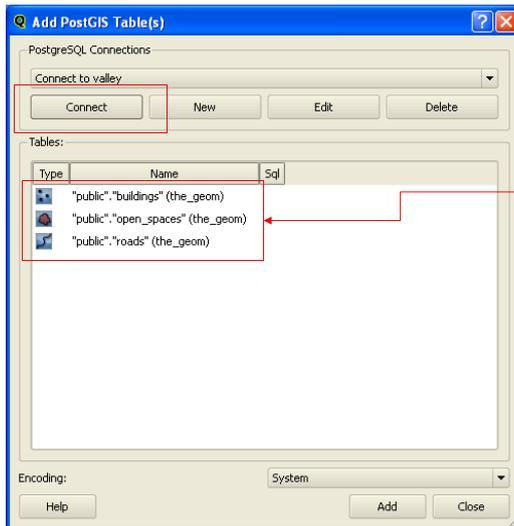




Click 'OK' if successfully connected.

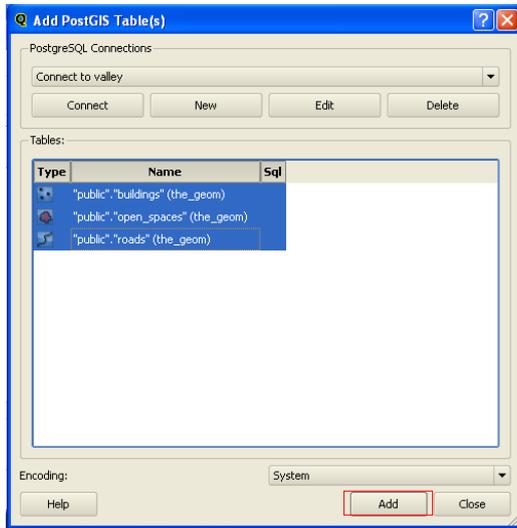


Then, click on 'OK'.

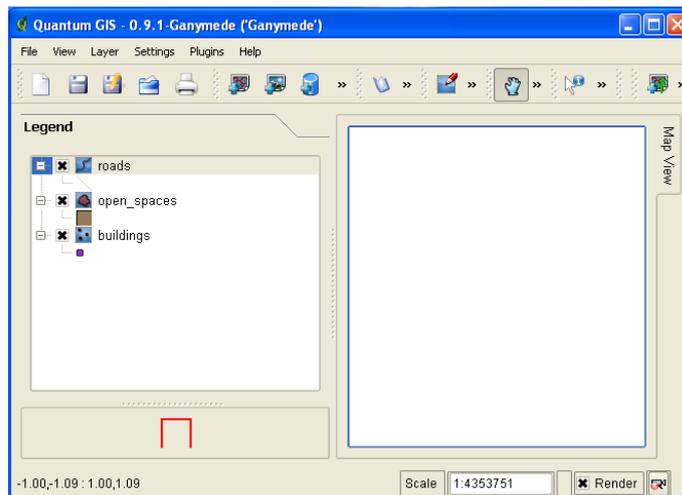


Click 'Connect'.

Then, three tables appear here.

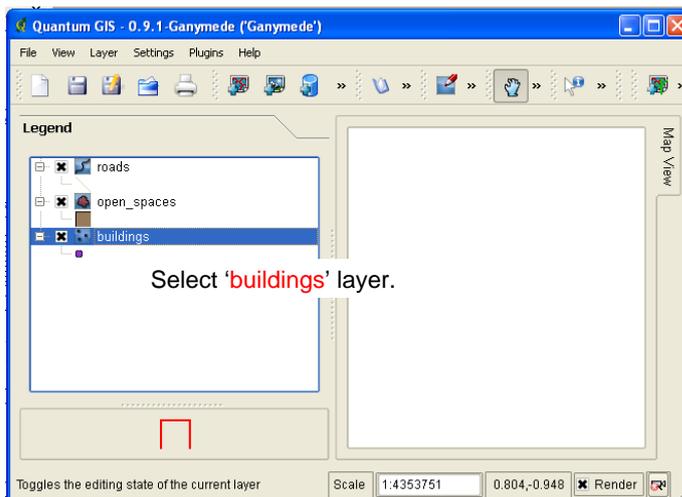


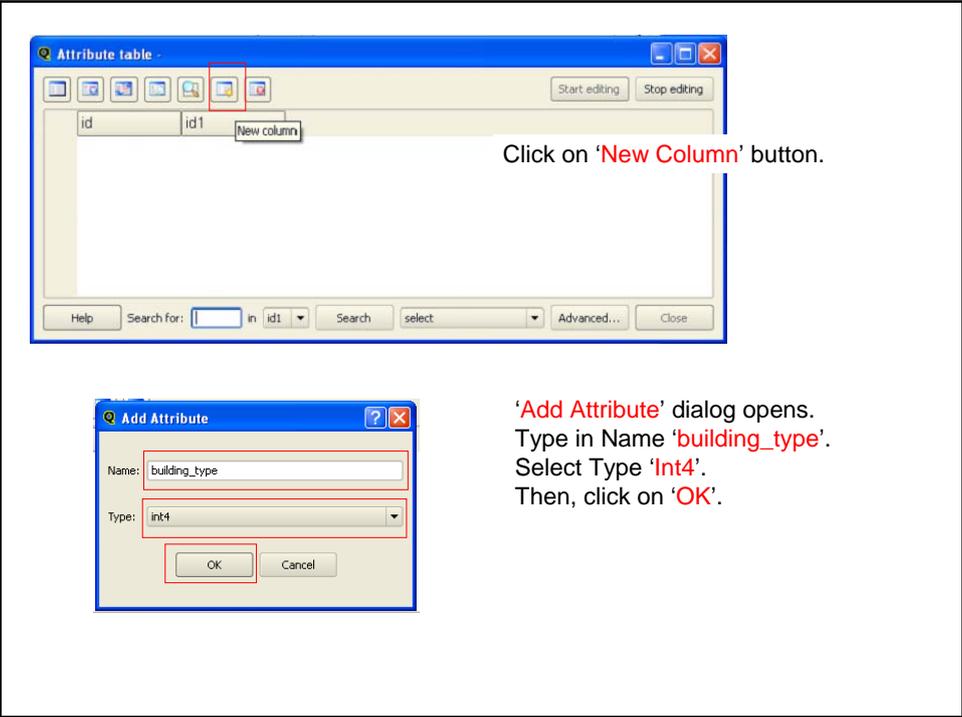
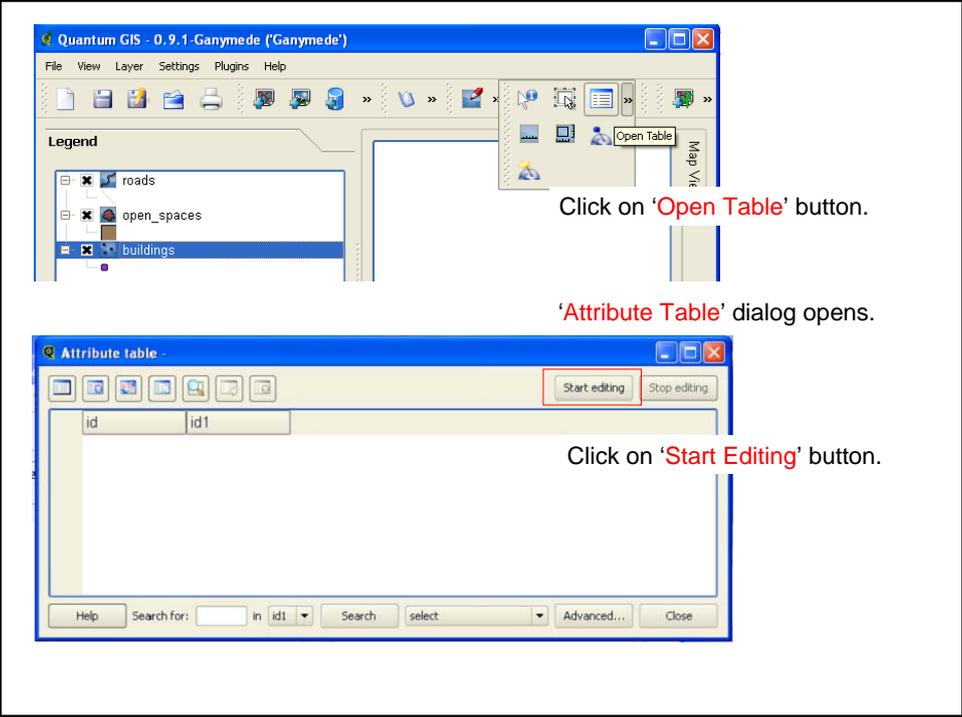
Select all these three tables and click on 'Add'.

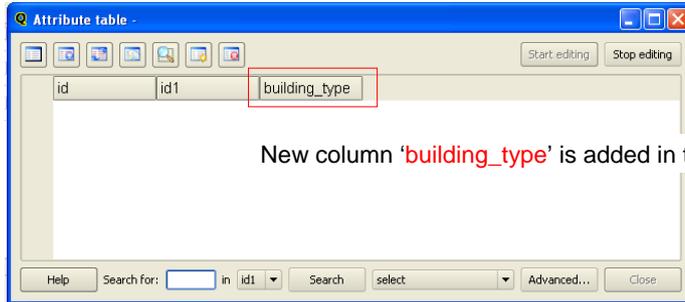


Add Columns to Table 'buildings' ('POINT' type)  
(Example:GESI Method)

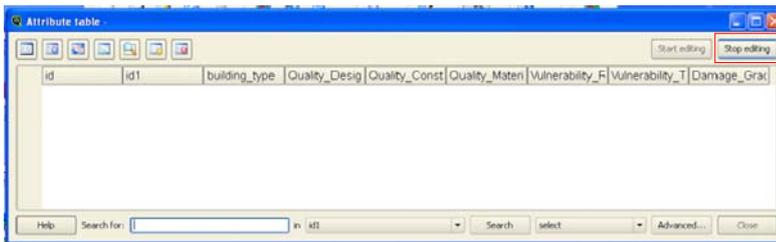
Column Name	Data Type	Primary Key	Remarks
id1	Int4	o	Index of buildings
Bulding_Type	Int4		
Quality_Design	Int4		
Quality_Construction	Int4		
Quality_Materials	Int4		
Vulnerability_Rate	Int4		
Vulnerability_Type	Varchar(30)		
Damage_Grade	Int4		
the_geom	geometry		Geometry column



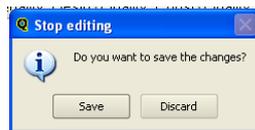




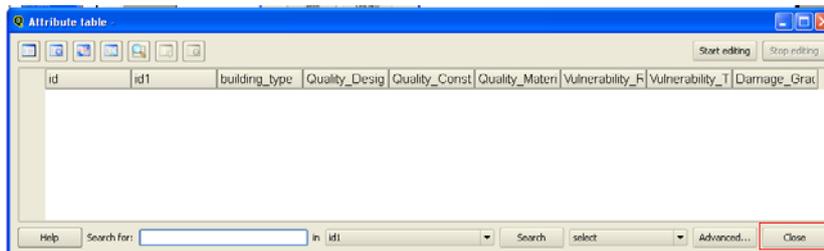
New column 'building\_type' is added in the table.



Repeat the same procedure for all other columns to be added.  
Then, click on 'Stop Editing' button.



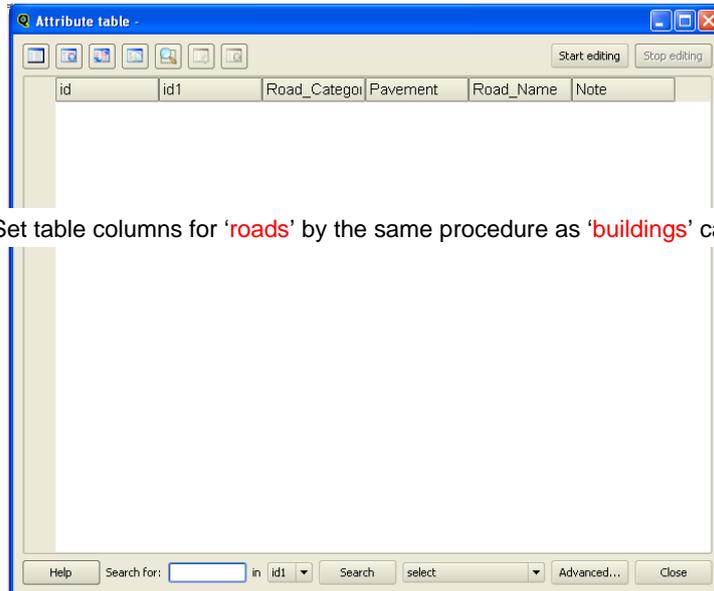
Then, save the changes by clicking on 'Save'.



Then, click 'Close'.

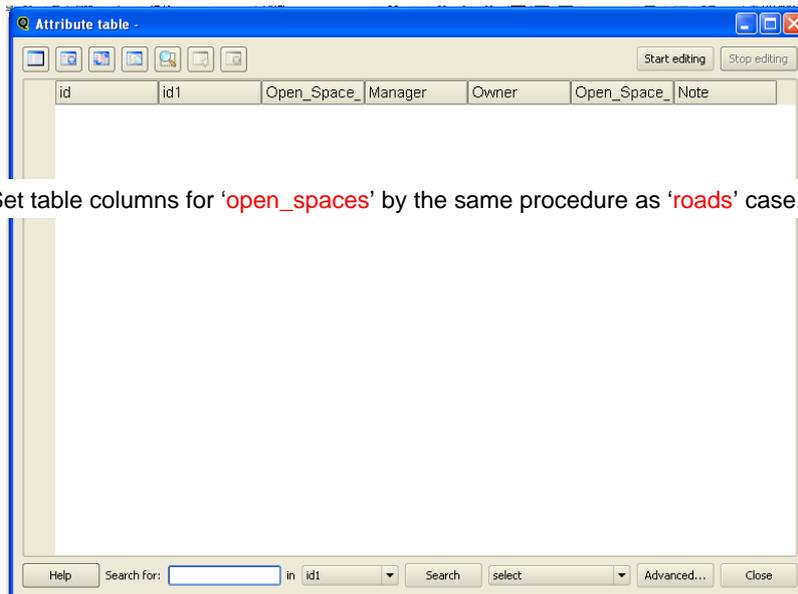
### Add Columns to Table 'roads' ('LINESTRING' type)

Column Name	Data Type	Primary Key	Remarks
Gid	Int4	o	Index of roads
Road_Category	Int4		
Pavement	Int4		
Road_Name	Varchar(30)		
Note	text		
the_geom	geometry		Geometry column



Registering attributes of open space from Basemap or its alternative (Example for polygon data)

Column Name	Data Type	Primary Key	Remarks
Gid	Int4	o	Index of roads
Open_Space_Category	Int4		
Manager	text		
Owner	text		
Open_Space_Name	text		
Note	text		
the_geom	geometry		Geometry column



Set table columns for 'open\_spaces' by the same procedure as 'roads' case.

```

Command Prompt - psql valley -U yokoi
public | spatial_ref_sys | table | yokoi
(5 rows)
valley=> \d buildings
          table "public.buildings"
          Column      | Type          | Modifiers
-----
id1                   | integer       | not null
the_geom              | geometry      |
building_type        | integer       |
damage_grade         | integer       |
quality_construction | integer       |
quality_design       | integer       |
quality_materials    | integer       |
vulnerability_rate   | integer       |
vulnerability_type   | character varying(30) |
Indexes:
    "buildings_pkey" PRIMARY KEY, btree (id1)
Check constraints:
    "enforce_dims_the_geom" CHECK (ndims(the_geom) = 2)
    "enforce_geotype_the_geom" CHECK (geometrytype(the_geom) = 'POINT'::text OR
the_geom IS NULL)
    "enforce_srid_the_geom" CHECK (srid(the_geom) = 4326)

Command Prompt - psql valley -U yokoi
public | geometry_columns | table | yokoi
public | open_spaces      | table | yokoi
public | roads              | table | yokoi
public | spatial_ref_sys    | table | yokoi
(5 rows)
valley=> \d roads
          table "public.roads"
          Column      | Type          | Modifiers
-----
id1_geom             | integer       | not null
the_geom             | geometry      |
note                 | text          |
pavement             | integer       |
road_category        | integer       |
road_name            | character varying(30) |
Indexes:
    "roads_pkey" PRIMARY KEY, btree (id1)
Check constraints:
    "enforce_dims_the_geom" CHECK (ndims(the_geom) = 2)
    "enforce_geotype_the_geom" CHECK (geometrytype(the_geom) = 'LINESTRING'::text
OR the_geom IS NULL)
    "enforce_srid_the_geom" CHECK (srid(the_geom) = 4326)
valley=>

```

Confirm the addition of the columns using '`\d buildings`' command.

Confirm the addition of the columns using '`\d roads`' command.

```

Command Prompt - psql valley -U yokoi
public | open_spaces      | table | yokoi
public | roads              | table | yokoi
public | spatial_ref_sys    | table | yokoi
(5 rows)
valley=> \d open_spaces
          table "public.open_spaces"
          Column      | Type          | Modifiers
-----
id1                   | integer       | not null
the_geom              | geometry      |
manager              | text          |
note                 | text          |
open_space_category  | integer       |
open_space_name      | text          |
owner                | text          |
Indexes:
    "open_spaces_pkey" PRIMARY KEY, btree (id1)
Check constraints:
    "enforce_dims_the_geom" CHECK (ndims(the_geom) = 2)
    "enforce_geotype_the_geom" CHECK (geometrytype(the_geom) = 'POLYGON'::text OR
the_geom IS NULL)
    "enforce_srid_the_geom" CHECK (srid(the_geom) = 4326)
valley=>

```

Confirm the addition of the columns using '`\d open_spaces`' command.

Unfortunately, connections are not stored in 'Project'.  
Exit from QGIS by 'Files' and 'Exit'.  
Exit from 'psql Command Prompt' using '`\q`' and 'exit'.

Note: Addition of columns to tables of PostgreSQL can be performed using PostgreSQL command "`alter table`", also.

`alter table mytable add column mycolumn mytype;`

where `mytable`: Name of the target table,

`mycolumn`: Name of the new column,

`mytype`: Data Type of the new column (char, Int4, float, double\_precision, etc..)