

1 From HTML to PostGIS - theoretical topics for second test

1. Legal aspects. What forms of GIS services should be provided by national agencies according to INSPIRE Directive? Which standards should be used to provide those services? Please refer to the directive and its technical guidelines.
2. Legal aspects. What data topics are covered by the infrastructure for geospatial information? (HINT: those topics are divided into 3 groups). Please refer to the INSPIRE directive and its annexes.
3. Cartography. What are EPSG codes used for? Why there is no universal one-size-fits-all EPSG code?
4. Cartography. How is measured height above sea level (how is the reference height computed)?
5. Data types. What type of information is stored in the formats of (Extended) Well Known Binary data and (Extended) Well Known Text? Please refer to code examples and database documentation.
6. Data types. What are the key differences between KML and GML/GeoJSON formats? Where are those data types typically utilized (APIs, services)? Please refer to code examples and documentation.
7. JS Map APIs. What are the advantages and disadvantages of GoogleMaps API, OpenLayers and Leaflet? Please refer to code examples and documentation.
8. JS Map APIs. How are KML files handled by GoogleMaps API, OpenLayers and Leaflet? Please refer to code examples and documentation.
9. JS Map APIs. How are vector overlay layers handled by GoogleMaps API, OpenLayers and Leaflet? Please refer to code examples and documentation.
10. Open Street Map. How can OSM data be utilized in a project? What is the danger in using them and how it can be mitigated? What responsibility should be taken by the companies utilizing such data?
11. Data bases and indexing. What data structure is utilized to efficiently index spatial data? Please describe its main features.
12. Data bases and indexing. How to suggest to PostGIS to use spatial index in its query execution? Why?

13. Data bases and indexing. What is a standard data type to hold spatial data in database? What are the consequences for computing area and distance? How can the proper area and distance (in sensible units) be obtained?
14. OGC Services. What operations are possible with Web Map Services? What operations are possible with Web Feature Services? Please refer to the lecture slides and OGC services specification.
15. OGC Services. Why there is necessity for geoportals and catalogue services for storing information about particular WMS and WFS services? Please refer to the common sense and general knowledge about Google's indexing.
16. Geostatistics. What tools were used to localize cholera source in the London epidemic of 1854? How was the cholera source detected?
17. Geostatistics. How can semivariograms be utilized and what do they depict? What is their origin?
18. Computational geometry. What is the connection between Voronoi diagrams, Delaunay triangulation and minimum spanning trees?
19. Computational geometry. What are the properties of the minimum spanning tree? What additional properties can be observed when it is constructed upon an euclidean graph?