PODEPRO: Population, Development, Prospective
MASTER FRANCO-HELLENIQUE

Database and Geographic Information Systems

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The educational process of the specific lesson includes, apart from the lectures in theoretical topics and the hands-on practice, the development of a GIS application concerning the spatial distribution of population characteristics in Greece.

The exercise is an obligation, to all students and includes / requires the followings:

SCOPE

To improve the student's skill by using a specific software (ArcMap) and more specific to handle attributes tables and form thematic maps.

Each student, based on given data, has to calculate a set of new variables (eg. population density, population evolution, ageing ratio, dependency ratio, etc.) and to create a set of relevant maps using different data classifications and visualization methods and techniques.

The study area must be Greece and the unitary reference area (spatial resolution) must be the administrative level of Prefectures.

DATA

In the laboratory are available the following cartographic data structures (layers):

GRLINES1: shape structure, linear topology, contains administrative and other type of lines according to the relevant field.

 Attribute table: FID = identification number, Shape = requirement of ArcView, TYPE = ("sin": national borders, "lim": lakes' coastal lines, "tha": sea's costal line, "nom": administrative boundaries for prefectures).

GRAROUND1: shape structure, polygon topology, only for visualization purposes. The attribute table has no data.

GRLAKES1: shape structure, polygon topology for the lakes' areas.

 The attribute table has non important information (FID = identification number, type = "L").

GRNOMOI1: shape structure, polygon topology for the prefectures' areas. The name and other thematic information are in the relevant fields of annexed attribute table (data-prefectures.xls).

 The main attribute table has the following fields: FID = identification number, Shape = requirement of ArcView, Cnomos = unique code to act as a primary key (the relevant field in the table data-prefectures.xls is "code"), ota = the number of contained municipalities and communities,

aperif = the code of administrative region that the specific prefecture belongs),

GRCITIES1: shape structure, point topology, contains all the major settlements (cities) with population (1991) more than 2000 inhabitants. The attribute table has the following fields: FID = identification number, Shape = requirement of ArcView, NOMOS_91 = the prefectures' code (similar to Cnomos), ENAME = the name of each city, NCAPITAL = 1 if the city is a capital of a prefecture, 2 if it is not, POP91 = the real population 1991.

Additionally is given the thematic spreadsheet: data-prefectures.xls, having three tables: data-index=the description of variables, ypa=the fourteen regions of Greece with some relevant data, and nomoi=the prefectures of Greece with the values of various variables, as described in the table data-index.

Administrative boundaries of Greece. The numbers in the above map are the values of "cnomos" field

METHOD

Each student has to

a) Study carefully the map layers and table,

b) Edit the proper thematic table, calculate a set of new unique variables (different from other students) for prefectures' level and transform it into Access format (mdb),

c) Join the new table (in the mdb file) with the proper map attribute table,

d) Create a new layer data structure in geodatabase format,

e) Apply the *dissolve* technique to create at least one thematic map – using one of the new variables - in the administrative level of region (map: grnomoi, field name: aperif),

f) Apply the *buffer* and *clip* technique to calculate the total area of <u>land</u> (in sqr.Km.) that is within a 20 Km buffer area of cities with population more than 10.000 inhabitants.

g) Create a set of mdx projects (views and layouts),

h) Create a set of thematic maps in jpg format including a detailed legend, scale, etc. (page size A3).

The final map synthesis has to use all the available cartographic data structures.

DELIVERABLES

Until the 11/5/2006 each student has to prepare a CD (no printed materials are required) containing the following:

1) a short text describing the adopted methodology,

2) the new geodatabase map structure (including geometry and all new fields in the attribute table) and all other necessary cartographic data structures.

3) the mdx file with relative file and path names,

4) the set of jpg maps. Each in different file.

During the last day of the course (probably 22/5/2007) each student will present and support his/her work, with the use of computer, to the tutor.

For any question, additional information, etc. please sent e-mail to: **vpappas@upatras.gr**