GE ENG 248
Geographic Information Systems
Fall 2003

In-Class Examination 2 (Time allotted:- 60 minutes)

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Instructions

- Read the questions carefully, the difference in some answers can be subtle.
- You are required to complete the examination on time.
- Do not forget to write your name.
- All the questions carry the same amount of points.
- Circle each answer choice.
- Each question has **ONLY ONE** correct answer.

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1. Given the following data:

Tract#	pop.	# households	cars/household
1	1,000	400	4
2	4,000	1,200	3
3	3,000	1,000	2

and the following series of queries:

New Set -- cars/household > 2
Select From Set -- # of households > 100
Add To Set -- population > 2,000
Select From Set -- # of households < 1,200

Which tracts are selected?

A. tracts 2 and 3.
B. all tracts are selected.
C. tracts 1 and 3.
D. tracts 1 and 2.

2. The values of an attribute for a record:
A. Can be text.
B. Can be coded as missing.
C. Can be classes.
D. All of the above.

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3. What is: The ability of a database management system or GIS to get back from computer memory records that were previously stored there?

A. Data storage
B. Data Display
C. Data Analysis
D. Data Retrieval

4. SQL is:

A. A coordinate system with zones.
B. One of the critical six GIS functions.
C. A standard way to query data bases.
D. A database management system.

5. Pointing to a feature on a map to retrieve its attributes is the same as which operation in a DBMS?

A. Sort
B. Find
C. Erase
D. Buffer

6. The part of the DBMS that allows the user to set up a new data base, to specify how many attributes there will be, what the types and lengths or numerical ranges of each attribute will be, and how much editing the user is allowed to do is called the:

A. SDTS
B. data base manager
C. data definition language
D. data entry module

7. Choose the best definition for "database management system (DBMS)":

A. A catalog of all the attributes for a data set, along with all the constraints placed on the attribute values during the data definition phase.
B. Part of a GIS, the set of tools that allow the manipulation and use of files containing attribute data.
C. The process of entering numbers into a computer, usually attribute data.
D. A logical means of organization of data for use in an information system.

8. Which is the correct definition for "data dictionary"?:

A. Data management command that uses the numerical values of one or more attributes to calculate the value of a new attribute created by the command.
B. The part of the DBMS that allows the user to set up a new database, to specify how many attributes there will be, what the types and lengths or numerical ranges of each attribute will be, and how much editing the user is allowed to do.
C. A logical means of organization of data for use in an information system.
D. A catalog of all the attributes for a data set, along with all the constraints placed on the attribute values during the data definition phase.

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9. Attributes are almost always best classified by:
A. Natural breaks
B. Equal Intervals
C. Quantiles
D. Unique Values

10. Mapping residuals shows:
A. Discrepancies from a data trend spatially
B. What states have missing data
C. The results of a linear regression
D. The answer

11. The spatial equivalent of the attribute standard deviation is the:
A. mean distance
B. normalized variance
C. median
D. standard distance

12. The MEAN is
A. A measure of central tendency
B. A number which diverges from a true measurement with normally distributed errors
C. The sum of attribute values divided by the number of records minus one
D. Always one less than the median

13. What is: "The amount left when the observed value of the dependent variable has subtracted from it that predicted by a model, in the units of the dependent variable"?:
A. residual
B. data model
C. linear regression
D. R-squared

14. Which statement is FALSE?
A. A mathematical version of the normal distribution can be used to compute probabilities associated with measurements with known means and standard deviations.
B. Descriptions of geographic properties like shape, pattern, and distribution are often verbal, but quantitative measures are incorporated into most GIS software.
C. A histogram is a two dimensional plot of attribute values grouped by magnitude and the frequency of records in that group, shown as a variable length bar.
D. Accuracy is determined by testing measurements against an independent source of higher fidelity and reliability.

15. For a large number of records distributed with random errors in their measurement, the histogram resembles a _____, and is symmetrical about the _____.

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A. variance, binomial
B. variogram, variance
C. bell curve, datum
D. bell curve, mean

16. Geographic properties are:
A. the big eight
B. case studies, methods, analysis, and display
C. size, distribution, pattern, and contiguity
D. the critical six

17. The bounding rectangle is:
A. the rectangle connecting the highest and lowest x and y values of a feature
B. useful in computational tests for GIS, such as point-in-polygon testing
C. the rectangular space that completely contains a feature
D. all of these

18. The center of a region is sometimes called the:
A. Median
B. State Capital
C. Residual
D. Centroid

19. The visual balance of a map design is affected by:
A. The hues, saturations, and intensities used on the map.
B. The layout of map elements within the neat line.
C. The relative "weight" of the symbols.
D. All of these factors and more.

20. A map that shows numerical data (but not simply "counts") for a group of regions by (i) classifying the data into classes and (ii) shading each class on the map is called:
A. isometric
B. raster
C. choroplethic
D. vector

21. Which definition is that of a map?
A. The science of measuring the size and shape of the earth and its gravitational and magnetic fields.
B. A GIS data format used by the software to store the data within the program, and in a manner unsuitable for use by other means.
C. A depiction of all or part of the earth or other geographic phenomenon as a set of symbols and at a scale whose representative fraction is less than 1:1.
D. Location in geographic space given with respect to a known origin and standard measurement system such as a coordinate system.

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22. Which of the following is an example of cartographic convention?
A. Using ArcView's Layout Window.
B. Using green to show forest areas.
C. Using isoline maps.
D. Using a data model.

23. Examples of line maps in GIS include:
A. flow map
B. choropleth
C. proportional symbol
D. dasymetric

24. Color, as used in GIS:
A. Consists of red, magenta, and cyan.
B. Consists of hue, chroma, and color.
C. Is a continuous tonal variation of gray.
D. Consists of hue, saturation, and intensity.

25. A reference map can symbolize:
A. Line features
B. Area features
C. Point features
D. All of the above

26. This type of map shows the existence of a geographic class within areas on the map. Colors, patterns, and shades are usually used. Examples are geology, soils, and land use maps. This is called a:
A. Isoline
B. Contour map
C. Area qualitative map
D. Geological map

27. Which statement is TRUE?
A. Visual balance is unaffected by the "weight" of the symbols, the visual hierarchy of the symbols and elements, and the location of the elements with respect to each other and the visual center of the map.
B. Symbols, especially colors, are never subject to the constraints of cartographic convention.
C. Any cartographic display need can be met entirely within a typical GIS package.
D. Color is a complex visual variable, and in a GIS is specified by RGB or HSI values.

28. The definition of "map design" is:
A. The set of choices relating to how a map's elements are laid out, how symbols such as colors are selected, and how the map is produced as a

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finished tangible product. The process of applying cartographic knowledge and experience to improve the effectiveness of a map.

B. One of the sets of cartographic methods or representation techniques used by cartographers to make maps of particular types of data.

C. A graphic depiction of all or part of a geographic realm where the real-world features have been replaced with symbols in their correct spatial location at a reduced scale.

D. An abstract graphic representation of a geographic feature for representation on a map.

29. Which is the best definition for "hue"?

A. The part of the body of the map that is not featured in the figure.

B. The amount of light emitted or reflected per unit area.

C. A color as defined by the wavelength of the light reflected or emitted from the map surface.

D. The property by which the elements of a map work together to create a balanced aesthetic whole.

30. Which is the correct definition for "picture symbol map"?

A. A map that shows numerical data (but not simply "counts") for a group of regions by (1) grouping the data into classes, and (2) shading each class on the map.

B. An image map that is an air photo, corrected for topographic and other effects.

C. An isoline map of topographic elevations.

D. A map type that uses a simplified picture or geometric diagram at a point to show a feature type.

31. A "find" operation in attribute space is equivalent to what sort of spatial retrieval?

A. Zinger

B. Overlay

C. Locate

D. Buffer

32. Which one of the following pairs of GIS packages utilizes a predominantly raster model for data representation?

A. ArcInfo and Maptitude

B. ArcView and AutoCAD® Map

C. GRASS and IDRISI

D. MapInfo and MGE

33. The following are members of the "critical six" GIS functional capabilities **EXCEPT**:

A. Data Analysis

B. The User Interface

C. Data storage

D. Data management

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34. Which of the following is one of the "Big Eight" GIS packages?
A. Microsoft MGEPlus
B. Adobe PhotoShop
C. ATLAS GIS
D. AutoCAD® Map

35. Which of the following is useful to consider when selecting a GIS?
A. system upgradeability
B. ease of software installation
C. software cost
D. All of these and more

36. A buffer operation performed on a point selects an area shaped like a:
A. Circle
B. Hexagon
C. Rectangle
D. Square

37. Physical model support, the DBMS, address matching, masking, and cookie cutting are functions that are part of which of the critical six GIS functions?
A. data management
B. data capture
C. data display
D. data storage

38. Interpolation, optimal path selection, geometric tests, and slope calculation are functions that are part of which of the critical six GIS functions?
A. data retrieval
B. data analysis
C. data management
D. data display

39. Integrated GIS data is not typically used for
A. Real time data modeling.
B. Predicting trends.
C. Akima interpolation.
D. Data animation.

40. Which one is not an example of physiographic data?
A. Topographic maps.
B. Administrative maps.
C. Transportation network data.
D. Socio-economic indicators.

41. Enhancing spatial integrity within polygonal data can be achieved by: -
A. Eliminating minimum sized polygons too small for spatial analysis.

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B. Eliminating spikes and zingers to achieve cleanness in arc topology.
C. Reclassifying polygons using quadtrees to minimize storage.
D. Reclassifying polygons using tessellating TINs for spatial smoothness.

42. What is the mode of the following set of numbers: 30, 31, 32, 30, and 33.
A. 30
B. 31
C. 32
D. 33

43. Which best defines the term 'rubber sheeting'?
A. Enclosing a processed analog map in protective covering.
B. Distorting a figure with known geometry to fit another.
C. Mapping latex trees in South America using Biological Information Systems.
D. Rolling a pile of maps using a rubber band.

44. Sectioning line features up or adding points as new features or introducing layers is referred to as: -
A. Cleaning zingers.
B. Building topology.
C. Dynamic segmentation.
D. Updating table of contents.

45. The programming languages that run in Arc/Info and ArcView are,
A. Visual Basic and Avenue respectively.
B. Arc Macro Language and Avenue respectively.
C. ArcGIS and ArcPlot respectively.
D. Visual Basic and Visual C++.

46. Which word best describes the process of capturing maps from different sheets and placing them over data to exclude some features?
A. Hill-shading.
B. Overlaying.
C. Masking.
D. Skimming.

47. Which one of the following does not represent an appropriate way of representing the scale of a map?
A. Representative fraction or ratio.
B. Verbal statement of representative fraction.
C. Area scale.
D. Picture symbols with ratios on the map.

48. GIS query is usually done by.
A. Command line, batch or macro.
B. Command line, batch or hot linking.

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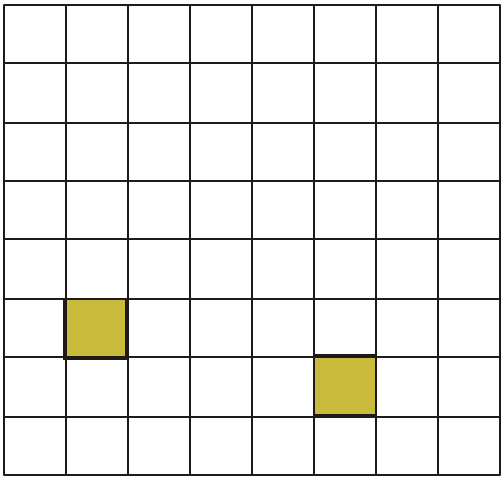
C. Macro, Mark-up commands, SQLs.
D. Macro, Batch and MLs.

49. Most current DBMSs use,
A. relational model.
B. hierarchical model.
C. topological intensified model.
D. topographical model.

50. What are the Morton codes for the shaded cells?



A. 203 and 323
B. 202 and 322
C. 203 and 321
D. 202 and 321

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