

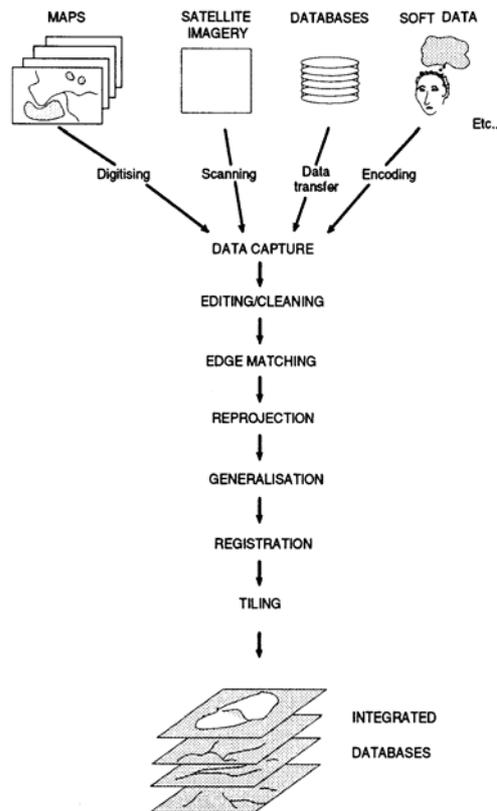
DEPARTMENT OF GEOGRAPHY, GEOINFORMATICS & METEOROLOGY
FACULTY OF SCIENCE
GGY 283 INTRODUCTORY GIS
SECOND SEMESTER TEST

TIME: 50 min

1. ACQUIRING DATA

1.1 Illustrate the data stream by means of a flow chart.

(16)



1.2 You need to capture geology data from two analogue maps for the use in a GIS project. You do not have a digitising tablet. The maps must fit on your existing data set and the edges must align perfectly when you are finished capturing the data set. Circle the path that you will follow on the data stream drawn in the previous answer.

(5)

1.3 Name and discuss the different sources of errors in a GIS

(10)

1. Errors in understanding and modelling the reality

GIS is a model of reality. Because people perceive the world differently there will be differences in the way they model reality.

2. Errors in source data

All sources of GIS data will most likely include errors. Maps can include errors made by the geographer during the design of the map.

3. Errors made during data encoding

Almost all encoding methods are human driven and errors can easily occur. Most errors in GIS data occur during the encoding process.

4. Errors made when editing and converting data

Cleaning and editing is not ranked high as a source for errors in GIS data but are important because this is the final step in correcting errors before the analysis process begins

5. Errors made during data processing and analysis

GIS users must make sure that the data sets are compatible, consistent and complete and that the analysis procedures are appropriate before they start analysing the data.

2. DATA ANALYSIS

2.1 Name and define the classification methods that can be used when classifying data into different categories.

1. Individual values - The different classes are determined according to the attribute values in the data set
2. Natural breaks - based on natural groupings inherent in the attribute values
3. Quantile - each class has an equal number of features in it
4. Equal interval - each class has an equal range of values
5. Standard deviation - mean (or average) of the data set are determined and classes below and above the average is determined

(10)

2.2 A new road is to be built in an area. State the analysis method(s) that you will use to answer the following questions or criteria:

- (i) The new road must be 500m from the river **Buffer**
- (ii) The underlying geology must be shale **Attribute Query, Overlay**
- (iii) Determine the value of the properties through which the new road passes. **Overlay, attribute query**
- (iv) How many houses are within a distance of 400m from the new road? **Buffer, overlay**

(5)

2.3 Name the boolean operator that will be used to answer the following questions:

- (i) In which conservation areas do elephants and cheetahs occur? **AND**
- (ii) In which conservation areas are there either elephants or cheetahs? **XOR**
- (iii) In which conservation areas are there elephants but no cheetahs? **NOT**
- (iv) In which conservation areas are there either elephants or cheetahs? **XOR**

(4)