Simple Overview of Key Concepts of week 2

GIS layers. GIS thematic layers refer to individual data layers within a Geographic Information System that represent specific themes or attributes of a geographical area. These layers contain data related to a particular topic or phenomenon, such as land use, population density, elevation, transportation networks, etc. Each thematic layer provides information about different attributes of spatial data. By overlaying multiple thematic layers, data scientists can conduct spatial analysis, identify patterns, and making decisions based on the relationships and interactions between different geographic features.

Raster and Vector data. Raster data is a type of digital image representation that consists of a grid of pixels, where each pixel contains a specific value or color. It is commonly used to represent continuous phenomena such as satellite imagery or photographs. Raster data is ideal for capturing detailed visual information but can be computationally intensive for storing and analysis and may lose quality when scaled or manipulated.

Vector data is a type of digital representation that uses points, lines, and polygons to describe spatial features. It represents geographic objects as discrete elements with defined boundaries and attributes. Vector data is well-suited for representing discrete features like roads, buildings, or administrative boundaries. Raster objects allow precise measurements, scalability, easy editing and efficient storing.

Slots. In R, slots are the internal components or data structures that make up an object. They are like containers within an object that hold data or other objects. They define the attributes and functionality of an object. One can access the slots of an object using the @ symbol followed by the slot name. For example, object@slot_name.

Coordinate Reference System (CRS). A CRS is a method for defining and representing locations on the Earth's surface. It provides a framework for accurately describing the position of geographic features, such as points, lines, and polygons. A CRS includes a coordinate system, which specifies how coordinates are defined and measured, and a datum, which defines the reference point and orientation of the coordinate system in relation to the Earth.

WGS84 (World Geodetic System 1984) is a commonly used CRS and datum in geographic information systems and global positioning systems, GPS. It is a global standard for representing spatial data and is widely used for mapping, navigation, and location-based services. WGS84 defines a three-dimensional coordinate system that uses latitude, longitude, and elevation to describe positions on the Earth's surface.