 **GIS EXERCISES**

**Exercise 1: Map Overlay Analysis**

**Objective:** Overlay multiple shapefiles to identify spatial relationships and intersections between different features.

**Example Scenario:** You are a city planner tasked with assessing the accessibility of parks by taxi in different suburban areas. By overlaying taxi routes with park boundaries and suburban areas, you can identify areas where taxi services have good access to parks and areas where access is limited. This information can help in urban planning and transportation management efforts to improve park accessibility for residents.

**Steps:**

**Load Shapefiles:**

**Open ArcGIS and load the following shapefiles into your map project**:

Taxi routes

Waterbodies

Parks

Suburbs

Churches

Hospitals

Vegetation

**Organize Layers:**

Arrange the layers in the Table of Contents according to their importance or hierarchy. For example, put essential layers like suburbs and roads at the bottom and more specific layers like churches and hospitals on top.

**Set Layer Transparency:**

Adjust the transparency of layers if needed to better visualize overlapping features.

**Perform Overlay Analysis:**

Utilize the 'Intersect' or 'Union' tool to overlay multiple layers and create a new layer representing the intersections.

For example, you can overlay taxi routes with parks to identify where taxi routes intersect with park boundaries.

**Analyse Results:**

Examine the newly created overlay layer to identify spatial patterns and relationships between different features.

Use symbology and labelling to visually distinguish different types of intersections or overlaps.

**Generate Reports:**

Document your findings and observations.

Describe any significant spatial relationships discovered during the overlay analysis.

**Skills Learned:**

Understanding of overlay analysis techniques.

Interpretation of spatial relationships.

Ability to visualize and analyse complex spatial data.

***Note:*** *Ensure that students understand the concepts of overlay analysis, including the different types of overlay operations (such as intersect, union, difference) and their implications for spatial analysis. Encourage students to experiment with different overlay operations to gain a deeper understanding of how they affect the resulting spatial relationships.*