Graph theory is the study of graphs which are composed of mathematical structures used to model relations between objects. A graph is a combination of nodes (points or vertices) that are connected to one another creating edges. Graph theory was originated in the Eighteenth century by Leonhard Euler in the German city of Königsberg, when he posed the question if whether or not it was possible to traverse 4 bodies of land connected by seven bridges, where each bridge would be crossed exactly once. From the question he posed in image A, the first representation of a modern graph was generated, consisting of four vertices, and seven edges. As a result, a famous Euler path theorem was born, which states that “A connected multigraph has an Euler path if and only if it has exactly two vertices of odd degrees”.

A close up of a map

Description automatically generated

In the modern day, graph theory is utilized as a tool to quantify and simplify the moving parts of dynamic systems (city layouts, computer systems, etc.).