GPS or Google Maps are used to find out the shortest route from one destination to another. The goals are Vertices and their connections are Edges consisting of distance. The optimal route is determined by the software. Schools/ Colleges are also using this proficiency to gather up students from their stop to school. To each one stop is a vertex and the route is an edge. A Hamiltonian path presents the efficiency of including every vertex in the route.

To study the traffic control problem at an arbitrary point of intersection, it has to be modeled mathematically by using a simple graph for the traffic accumulation data problem. The set of edges of the rudimentary graph will represent the communication link between the set of nodes at an intersection. In the graph for the traffic control problem, the traffic streams which may move at the same time at an intersection without any difference will be joined by an edge and the streams which cannot move together will not be connected by an edge. The functioning of traffic lights i.e. turning Green/Red/Yellow lights and timing between them. Here vertex coloring technique is utilized to solve contravenes of time and space by identifying the chromatic number for the number of cycles needed.

We connect with friends via social media or a video gets viral, here user is a Vertex and other connected users produce an edge, therefore videos get viral when reached to certain connections. In sociology, economics, political science, medicine, social biology, psychology, anthropology, history, and related fields, one often wants to study a society by examining the structure of connections within the society. This could befriend networks in a high school or Facebook, support networks in a village or political/business connection networks. For these sorts of networks, some basic questions are: how do things like information flow or wealth flow or shared opinions relate to the structure of the networks, and which players have the most influence? In medicine, one is often interested in physical contact networks and modeling/preventing the spread of diseases. In some sense, even more, basic questions are how do we collect the data to determine these networks, or when infeasible, how to model these networks. The modern semantic search engine, which is called Facebook Graph Search acquaint by Facebook in March 2013. In general, all search engine gives result in list of link, but Facebook Graph Search gives the answer to user in nature language rather than a list of links. In Facebook Graph Search engine graph Search feature combining external data into a search engine allow user particular search results and the big data acquired from its over one billion users. In Facebook Graph Search engine search algorithm is same as Google search engine algorithm so searching will be very faster on Facebook.

When roads of a city are blocked due to ice. Planning is needed to put salt on the roads. Then Euler paths or circuits are used to traverse the streets in the most efficient way.

While using Google to search for Webpages, Pages are linked to each other by hyperlinks. Each page is a vertex and the link between two pages is an edge. In order to assign jobs to employees (servers) there is an analogue in software to maximize the efficiency.

Website designing may be structured as a graph, where the web pages are entitled by vertices and the hyperlinks between them are entitled by edges in the graph. This concept is called a web graph. Who enquires about this interesting information? Other implementation areas of graphs are in the web community. Where the vertices constitute classes of objects, and each vertex symbolizes one type of object, and each vertex is connected to every vertex symbolizing another kind of object. In graph theory such a graph is called a complete bipartite graph. There are many benefits of graph theory in website development like Searching and community discovery, Directed Graph is used in website usefulness evaluation and link structure. Also searching all connected components and providing easy detection.

In the Computer language processing in the tools, corresponding compiler parse trees are applied to identify if the input is having correct syntactic structure or not. This parse tree is made from directed acyclic graphs made on lexical entities. Graphs are here put upon to identify the correct structure of input and to assist the entire processing of language.

In electronic chip design, each one component is well thought out as a vertex of the graph. The machine that makes the connection between these components on a printed circuit board gets input in the form of a graph where edges indicate that there is a connection between the pair of components. The head that makes this connection on the board then gets the optimal to move across the chip to get the in-demand resultant circuit. The computer has a lot of hardware as well as the software component. Of that one of the components is a compiler. It is a computer program that translates one computer language into other languages. One of the compiler optimization techniques for register allotment to improve the performance time is the register allotment method, in which most frequently used values of the compiled programme are kept in fast processor registers. Generally, registers get real value when they are used for operations. In the textbook, the register allocation method is modeled as a graph coloring model. The compiler makes an intervention graph, where vertices are symbolical registers and an edge may be colored with k-colors then the variables may be stored in k-registers.

The structural formulae of covalently bonded compounds are graphs; they are known as constitutional graphs. Graph theory provides the basis for definition, enumeration, systematization, codification, nomenclature, correlation, and computer programming. The chemical information is associated with structural formulae and that structural formulae may be consistently and uniquely exponent and redeemed. One does translate chemical structures into words by nomenclature rules. Graphs are important for the polymer. The grandness of graph theory for chemistry stems mainly from the existence of the phenomenon of isomerism, which is rationalized by chemical structure theory. This theory calculates for all constitutional isomers by using purely graph-theoretical methods.

Graph Theory is a really large subject; it is also extensively used for the analysis of biological networks. In biology analysis, the number of components of the system and their fundamental interactions is differentiated as a network and they are usually represented as graphs where lots of nodes are connected with thousands of vertices. Graphs are widely used in the following biological analysis; Proteinprotein interaction (PPI) networks, Regulatory networks (GRNs), Signal transduction networks, and Metabolic and biochemical networks. If we analyze the above components then it will generate the structure network which is similar to one of the graph components in graph theory. Graph isomorphism method may be used for matching two components in biological analysis. If two graphs are isomorphic to each other then we may conclude that the following biological component like protein interaction, biochemical have the same molecular property in the biological component. Similarly isomorphism there is subgraph may be also applied for the biological analysis method. If among two graphs one of the graphs is sub-graph then in biological analysis the subgraph component formula may be calculated from the main biological graph component. According to the above example, we must have knowledge about graph theory then only we may realize the concept of biological analysis in the real field.

Consider a map, say of India. Let each country be a vertex and connect two vertices with an edge if those countries share a border. A famous problem that went unsolved for over a hundred years was the four color problem. Roughly this states that any map can be colored with at most 4 colors in such a way that no two adjacent countries have the same color. This problem motivated a lot of the development of graph theory and was finally proved with the aid of a computer in 1976.