TIMETABLE SCHEDULING USING COLORING GRAPHS

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Graph theory has evolved into an important mathematical tool in the solution of a wide variety of problems in many areas of study such as Social sciences, Economics, Geography, and Architecture etc.

A graph is basically a collection of dots with some pairs of dots connected by lines. The dots are called *vertices* and the lines are called *edges*. Moreover, the number of edges adjacent to a particular vertex is called *the degree of the vertex*. Graphs can be stored in a computer using its *matrix* forms. Here we discuss only *adjacency matrix*.

One of the most interesting areas of graph theory is *graph coloring*. Three types of coloring are *vertex coloring*, *edge coloring* and *face coloring*. Most of these applications are vertex coloring. Here we find minimum number of colors required to color the vertices of a graph so that adjacent vertices have different colors. Scheduling of examinations and timetables and assigning of channels to television stations are few other applications.

In this paper the timetable is represented by a graph. To set up this correspondence, each subject of the timetable is represented by a vertex. Edges connect two vertices if any student does that both subjects represented by these vertices. We introduce an algorithm to color this graph, considering the definition of the *Chromatic number* of the graph. Using this algorithm we can find the minimum number of time slots required to schedule the timetable. Here we use *Visual Basic* to write a computer program for vertex coloring and apply the same to schedule exam timetable at the faculty of Science.