

# A Graph Theory Package for Maple, Part II: Graph Coloring, Graph Drawing, Support Tools, and Networks.

Mohammad Ali Ebrahimi, Mohammad Ghebleh, Mahdi Javadi  
Michael Monagan and Allan Wittkopf  
Department of Mathematics, Simon Fraser University,  
8888 University Drive,  
Burnaby, BC, Canada V5A 1S6.  
{mebrahim,mghebleh,mmonagan,sjavadi,wittkopf}  
@cecm.sfu.ca

## 1 Introduction

This is the second paper detailing a new Maple package for graph theory, called `GraphTheory`. [3], that is being developed at Simon Fraser University as part of our MITACS research project. The package is intended for both research and teaching. It supports directed and undirected graphs, weighted and unweighted graphs, and networks, but not multigraphs.

The package includes procedures for drawing graphs in 2 and 3 dimensions. To make the package easy to use we have added Maple style 'context menus'. This provides access to many of the commands in the package via using menus and the mouse.

In this paper we describe new functionality added to support graph input, storing of arbitrary information about edges and vertices, importing graphs from and exporting graphs to other software, including support for MetaPost for use with L<sup>A</sup>T<sub>E</sub>X.

We describe a graph drawing algorithm that models a graph as a physical system that leads to a system of second order differential equations that needs to be solved. This approach gives very good drawings of graphs. It is limited in that its complexity is inherently  $O(n^2)$  where  $n$  is the number of vertices in the graph. Our implementation is effective for  $n$  up to about 100.

We also describe the facilities for graph coloring and for networks.

There are many texts on graph theory. The primary algorithms reference that we have used was *Introduction to Algorithms* by Cormen, Leiserson, Rivest and Stein. See [1]. Also [8], Gabriel Valiente's *Algorithms on Trees and Graphs* which focusses on the graph isomorphism problem. Another good text devoted

# Studies In Graph Theory Part I Volume Ii

**SA Adler**



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data for this powder all comments greatly appreciated

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web apr 29 2022 i advised them i use gun club and sts hulls clay dot powder and waa12sl wads with 1oz loads here is the rule of thumb when it comes to a primer swap in shotshells this is based upon two independent studies where when just the primer was changed a swing in pressure was noted by as much as 2500 psi

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web in this section you can see and liken powders pre owned for loading reloading shotgun bullet the indicated data is recommended by nobel sport italia based on average valuable and represents and best performances the powdered of each family what listed into decreasing burning rate order

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web jan 9 2010 the mec powder bushing chart covers a range of powders but not n 80 my powder charts show nobel 80 as one of the faster powders but i am not sure it is in current production as to shot load you could throw a measure and count pellets 32g 8 504 approx it beats watching snow the lee powder scales are not fancy but they work

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web nobel sport vectan a0 look at that this is not made for 9mm its made for shotgun i would imagine its similar to something like 800x for example but shotgun powders can all work in 9 mm we show many on the site good thing about this powder is that it can compress easily 6 0 grains about a little under 7 0 grains fills the case

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web sep 15 2011 recently browsing hi everyone this is my first posting and like most newcomers i have been watching the site for some time my question relates to shotshell reloading and is probably aimed at the older members i have just acquired some nobel 60 reloading powder and i have been unable to find any loading data

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web jun 4 2011 your nobel 0 powder is a rifle powder 30 06 etc and there is no shotshell data for it and the nobel 78 is a shotshell powder but the only cases it gives loads for are parallel tube types using fibre wads or eley monowads in 28 or 30 gram and eley primers the pressures vary from 2 35 to 2 65 ton s per square inch

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dec 11 2022 what is an er diagram an entity relationship diagram erd is a visual representation of different entities within a system and how they relate to each other it is a tool used to design and model relational databases and shows the logical structure of the database

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sep 20 2023 the entity relationship diagram explains the relationship among the entities present in the database er models are used to model real world objects like a person a car or a company and the relation between these real world objects in short the er diagram is the structural format of the database

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diagrams created to represent attributes as well as entities and relationships may be called entity attribute relationship diagrams rather than entity relationship models an er model is typically implemented as a database in a simple relational database implementation each row of a table represents one instance of an entity type and each

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oct 2 2020 here s the basic order to follow 1 determine the entities in your erd start by identifying the what s in your system or architecture entities are represented with a rectangle and you ll want to give them plenty of room so that you

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what is an entity relationship diagram erd erd stands for entity relationship diagram people also call these types of diagrams er diagrams and entity relationship models an erd visualizes the relationships between entities like people things or concepts in a database an erd will also often visualize the attributes of these entities

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jul 19 2021 to capture an intuitive picture of a system er diagrams use a set of symbols such as triangles rectangles diamonds ovals and lines that display the relationships between entities a typical entity diagram mirrors grammatical structure entities are expressed as nouns and relationships are portrayed as verbs