Strength of Materials Courseware

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Strength of material courseware is an interactive multimedia program designed to be used as a supplement to the undergraduate course of strength of materials taught here at Georgia Institute of Technology. The program by itself is not a teaching tool but rather the design of the module is structured to be problem based so as to facilitate the students to develop a greater understanding of the subjects they learn in the class. This is accomplished by integrating sound text and graphics in an authoring environment like the Macromind Director using techniques like data visualization and computer animated graphics.

The design of the module is done based on the requirements of the topics covered in a typical undergraduate curriculum. Primarily the module will focus on addressing twenty specific topics. Each subtopic is designed as a separate Director movie and an example problem will be chosen and the principles underlying their analysis will be demonstrated through quicktime movies and data visualization techniques. These topics include equilibrium equations, thermal stresses in beams, simple torsion of circular beam, shearing and normal stresses in a beam, centroids and moment of inertia, determinate and statically indeterminate axially loaded members, factor of safety etc. to name a few.

As an example the topic on centroids and moment of inertia was designed to demonstrate the principles behind the use of calculation of centroidal coordinates and moment of inertia of a simple symmetric T cross section. The interactivity was achieved by allowing the user specify the axes location with respect to which the module demonstrates the calculation of the various geometric properties of the cross section. A help screen is designed to aid the student to effectively use the module.

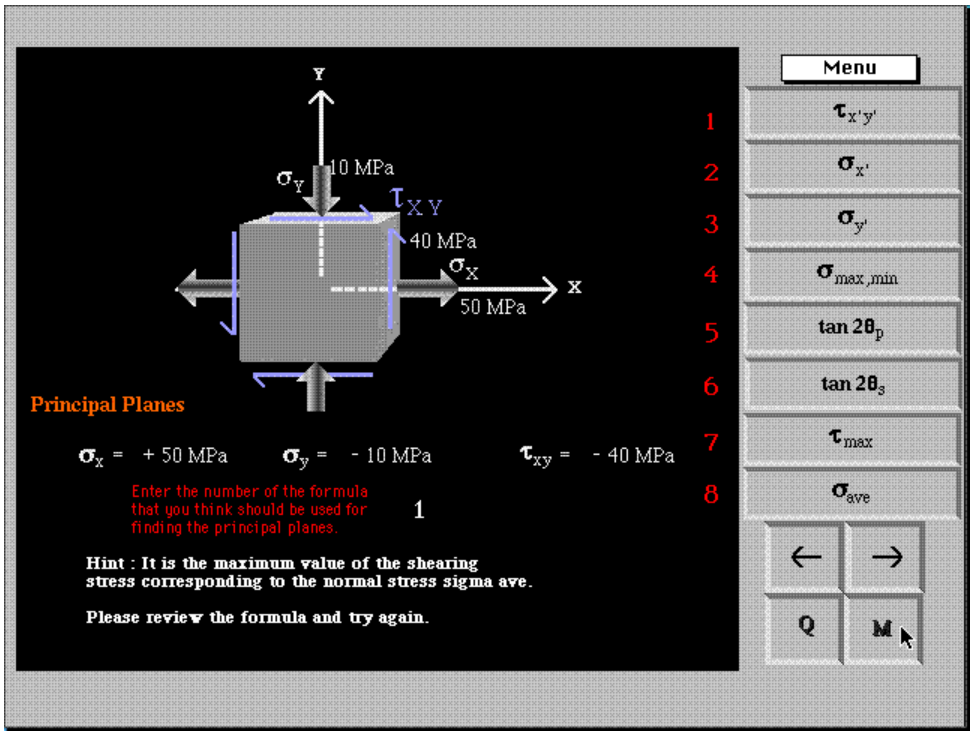

Fig. 1. Typical Screen for the Mohr's Circle Module.