

Project Preliminary Proposal

Students should form provisional teams and submit a proposal as a team. Students can submit proposals alone or as a member of more than one team, however within a week after the proposal is due teams must be finalized. The proposal should have a name and list all team members and should contain the information requested below.

Project Overview

The term project will be to modify an existing dynamic simulation to add some interesting new behavior. The suggested starting point can be classroom demonstrations such as the balloon or the brick wall, but other code can be used. Examples of new behavior include having the balloon pop, flutter around after being punctured, having the balls punch holes in paper, etc.

There will be several assignments related to the project, this is the first one.

Problem 1: Behavior: Indicate the starting point for your project (balloon, boxes, or other) and then describe the added behavior. The behavior must be interesting and depend upon variable physical constants (such as gravity or friction) and interactive state such ball position or balloon location.

This should be the most completely worked out part of the preliminary proposal.

Example: Add seams between tiles on ball platforms. When balls strike seams they will bounce off and possibly damage the seams. Seam height can be adjusted, when very high the tiles will appear more like pigeonholes. If a ball hits slowly it will discolor the seam, if it hits faster it will dent it.

Problem 2: Physics: Indicate ideas on how the behavior will be modeled. A detailed description is not needed for this preliminary proposal, but please put some ideas. Include both ideas for physics and the physical state. The graded proposal will include suggestions.

Example: Model each seam as having three faces, most are planar. Balls can strike a face or the edge between two faces. A ball strike of sufficient speed will shift the position of the struck seam. Details to be worked out. Physical state includes seam width, height, and strike points.

Problem 3: Graphics: Indicate how the behavior will be graphically modeled. Include ideas for any graphical state needed. As with physics, it is not necessary that this be worked out in detail.

Example: Seams will appear gray. When struck the seams will have either a spherical indentation or a circular mark. If struck hard enough the seam will bend and sparks will fly from the contact point.

Problem 4: Coding: Indicate any special challenges for coding, including computing physical state or graphics.