ME 314 Project Proposals.

Project Proposals

Your project in this class will be due online by the Thursday of finals week. You need to choose a system to model that is somehow *interesting* to you. Last year, students modeled simple walking, ringing a bell, trebuchets, children's toys, and other examples. Other possibilities include modeling a ratchet or choose some other mechanical device. The general guidelines are that your project must:

1. involve at least two bodies and be more than 2 but not more than 5 degrees of freedom (unless something makes the extra degrees of freedom straight forward);
2. include rotational inertia in at least one body;
3. include impacts;
4. include some sort of external forcing (but this could be friction–not necessarily control forces/-torques).
5. be planar; we will be limiting ourselves to projects in 2D.
6. animate the resulting simulation to show that it "works";
7. no spheres—anything like a "ball" must be modeled as a polygon (typically a triangle or rectangle) so that impacts have some sort of nontrivial update.

You additionally have the option of choosing a "default" project—described below. This project

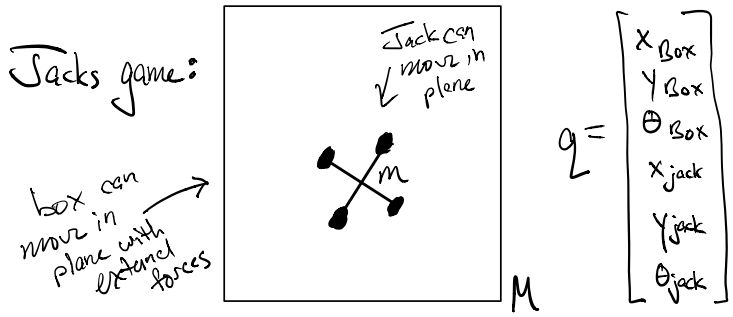

Figure 28: A "jack" or "dice" in a cup: The cup can be moved by external forces, causing the jack to bounce inside the cup.

has two bodies, six degrees of freedom, includes impacts, has external forces (for shaking the cup), and is planar; it satisfies all the requirements and is a good indication of what is a reasonable level of complexity.

If you want to do a final project different from this default project, you will turn in a single page PDF that describes how your project meets all the requirements. Moreover, you will turn in a diagram indicating the configuration variables and the frames you will use to compute the equations of motion.