Brilliant Students vs. Zombie Professors

Conceptual Overview

The campus has been taken over by mutant zombie professors who are intent on eating the brains of brilliant students. The only hope is to destroy them with bombs made out of "lame excuses" and "whining twine". Since brilliant students come by neither of these things naturally, so they have to obtain them from "excuse generators" and "whining spinners." Different kinds of bombs can be made by different quantities of excuses and whining.   For example, bombs with made from lots of excuses and a just a little whining could have a big impact on zombies but only a short range, i.e., a student won't be able to toss them very far.   A bomb with a just one excuse and lots of whining may have less of an impact, but a greater range. Gathering excuses and whining, as well building the bombs, will take time.

The playing field will be the quad, including the surrounding and intersecting sidewalks.   Zombie professors will emerge from the surrounding buildings. The brilliant students, excuse generators, and whining spinners will be located somewhere on the quad, but not on a sidewalk.

There will also be an Old Main clock tower that sends out game "ticks" every $1/10^{th}$ of a second or so. These ticks will not only mark time, but will also provide temporal authorizations for actions, such as building, movement, and throwing bombs. For example, an excuse generator might require 3 "ticks" to create a valid excuse and a whining spinner might require 3 "ticks" to create some whining twine.   Once a brilliant student acquires enough excuses and whining twine for a desired bomb, it might require another 2 ticks for each excuse and length of twine used in the construction of the bomb. Each tick will include a logical clock timestamp and validity marker. The authorization that these ticks provide expire, so a process cannot stock pile them. These pieces of information will flow through the system to ensure player and game integrity.

There will be registrar, with which all brilliant students, excuse generators, and whining spinner can register themselves.

Finally, there be a game monitor that will watch the game's network traffic and probe the status of the zombies, brilliant students, excuse generators, and whining spinners.   The game monitor will also display some kind of visualization of the game's overall state.

The instructor will implement the playing field, clock tower, registrar, and game monitor.

Key Ideas or Characteristics of the Systems
- The system consists of multiple concurrent processes
- The system includes different kinds of process
- The system requirements some asymmetrical protocols

- Some of the processes will have to contend for limited, shared resources to succeed
- Some of the processes may have a frequent concurrent requested for the same resource

Ideas up for Discussion

- What are the different kinds of zombies professors and their characters
- What are the different strengths and effects of the bombs
- Are there any special features or constraints of the playing field?
- Are there any "power up" capabilities or prizes?
- Should we allow the brilliant students to move around? If so, how? What rules do they have to follow?
- What are the bomb construction rules and time requirements?
- What the excuse construction rules and time requirements?
- What the whining spinning rules and time requirements?
- How much time does it takes zombie to move between squares on the playing fields? Should the move randomly for follow a goal?
- If a zombie is on the same square as brilliant student, how many ticks should it take before it eats its brain?
- If a zombie is on the same square as excuse generator or whining spinner, how many ticks should it take before it is destroyed?
- Any other game rules