# Zenda: a Prisoners' Dilemma Game for the NeXT Computer

a.   This application was written by Hal Varian, with some assistance from Joseph Klein.    The address for Hal Varian is given at the end of the file.

b.   Economics

c.   **Zenda** is an implementation of a Prisoners' Dilemma game for a network of NeXT computers.

d.   **Zenda** has been used for research to illustrate a way that "contracts" can be used to induce cooperation in class Prisoners' Dilemma games.   It may also be useful in the classroom.

e.   **Zenda** was developed under NeXTstep 2.1, but it should also run on 3.0.

f.   The file Referee.rtf   tells how to install **Zenda**.   The file Player.rtf should be given to the players as instructions.

The first stage of **Zenda** is a classic Prisoners' Dilemma.   Human subjects do pretty much as the theory predicts---after 6 or 7 rounds most people play the "defect" strategy.

The twist on the classic Prisoners' Dilemma comes in the second stage of **Zenda**, where I offer the "pay for play" option.   The subgame perfect equilibrium of this two-stage game is the efficient outcome.     This has been confirmed in my experiments in the laboratory.

The second stage of **Zenda** is a variation on the "compensation mechanism".   This is a general mechanism to solve many kinds of externalities problems.     It is described in my paper, "A Solution to the Problem of Externalities when Agents are Well-Informed."

I found that if I run more than 8 subjects at a time, the network performance deteriorates significantly.     I intend to rewrite the code when I move to distributed objects in NeXTstep 3.0 to see if this improves performance.

The file **DataAnalysis.ma** uses some Mathematica routines to analyze the data generated by **Zenda**.

If you use this code for something interesting, let me know about it.
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