

## Assignment 10 - Math 448

**Assignment 10:** Due 4/14 by email

The goal of this assignment is learn how to create simulations to accurately estimate probabilities.

The first part of this assignment is to fix my Monty Hall problem code. The switching strategy should be successful  $2/3$ s of the time.

The second part is to simulate a modified version of the Monty Hall problem. In this game there are 7 doors, 6 goats and 1 car. This game has 7 doors and the player chooses 3. The host opens three of the unselected doors to reveal goats. The player has the option to switch to the one un-opened un-selected door or keep the 3 selected doors. What should the player do in order to maximize the chance they will win the car?

Generalize this game for  $2n+1$  doors,  $2n$  goats, and 1 car, where the player selects  $n$  doors and then has the opportunity to trade the  $n$  doors selected for the 1 un-revealed door. What's the optimal strategy and what's the chance the player will win as a function of  $n$  using the optimal strategy.