Homework 3
Stat 150

Michael Knopf

24457981

February 19, 2015

Q 1. On a game show there are two contestants. A contestant answers a series of questions until they make a mistake and then it becomes the other contestants turn. Contestant one answers questions correctly 70% of the time while contestant two answers correctly 80% of the time. Over the long run what proportion of questions are asked of contestant 1?

Proof. Let $X_n = 1$ if contestant 1 is asked question n, and 2 if contestant 2 is asked question n. The transition matrix for X_n is

$$P = \begin{pmatrix} .7 & .3 \\ .2 & .8 \end{pmatrix}$$

$\square$