AM 121: Homework # 4  (Due date Nov 10, Thursday)


1. Problem 14.3-1.

2. Mo and Bo each have a quarter and a penny. Simultaneously they each display a coin. If the coins match Mo wins both coins; if they don’t match Bo wins both coins. Determine the optimal strategy for this game.

3. Consider the following simplified version of football. On each play the offense chooses to run or pass. At the same time, the defense chooses to play a run defense or pass defense. The number of yards gained in each play is determined by the reward matrix

<table>
<thead>
<tr>
<th></th>
<th>Defense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run</td>
<td>1</td>
</tr>
<tr>
<td>Pass</td>
<td>10</td>
</tr>
</tbody>
</table>

The number of yards gained is determined by the reward matrix

\[
B = [b_{ij}] = \begin{bmatrix}
1 & 2 \\
3 & 4 \\
\end{bmatrix}.
\]

Player A picks a row or a column, while player B picks a single component. Suppose player B picks \(b_{ij}\), then player B must pay player A the amount of \(b_{ij}\) if player A picks either row \(i\) or column \(j\) (B hides, A seeks). But the payoff is zero when player A picks a row or a column not containing \(b_{ij}\). Formulate an LP that solves the game.