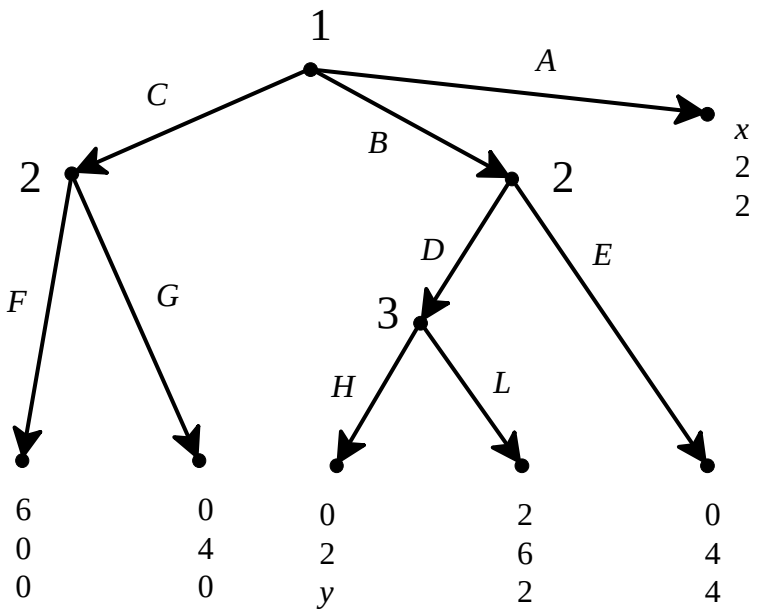
Department of Economics, University of California, Davis

Ecn 122 – Game Theory – Professor Giacomo Bonanno

HOMEWORK # 2 (for due date see web page)

Consider the following game, where the payoffs are given in the following order (from top to bottom): Player 1, Player 2, Player 3.



Note: to answer the following questions you don't need to write the normal form (you will save a lot of time if you reason on the extensive form without constructing the normal form).

(a) Are there values of x for which Player 1 has a **strictly** dominant strategy? If your answer is Yes, say what values and what strategy, if your answer is No explain why not.

(b) Are there values of y for which Player 3 has a **strictly** dominant strategy? If your answer is Yes, say what values and what strategy, if your answer is No explain why not.

(c) Does Player 2 have **weakly** dominated strategies? (If your answer is Yes, name the strategies and the strategies that dominate them; if your answer is No prove your claim.)

(d) For what values of y does Player 3 have a **weakly** dominated strategy? Name the strategy.

(e) How many strategies does Player 2 have?

(f) Find all the backward-induction solutions when $x = 1$ and $y = 2$?

(g) Find the backward-induction solution when $x = 1$ and $y = 3$.

(h) [4 points] Assume that $x = 1$ and $y = 1$. Explain why (B,D,L) is not a Nash equilibrium.

(i) Assume that $x = 1$ and $y = 1$. Explain why (B,D,L) is not a backward-induction solution.

(j) Assume that $x = 1$ and $y = 1$. Is there a Nash equilibrium where Player 1 plays A? If Yes, then say what the equilibrium is, if No then explain why not.