ECE 151
Assignment 5
Due Wednesday May 31

1. You are designing a large-scale multiplayer interactive game, with
    thousands of players and many servers scattered across the globe.
    You will design your system so that each server can act as either
    or both of:
    i) a gateway server to which players connect
    ii) a game server that is responsible for all activity
        in a part of the virtual game space
    Both gateway servers and game servers are liable to fail, and
    mechanisms must be provided to replicate their information on
    alternative servers that will be their backups, and to transfer
    the processing operations to those backup servers after a failure.

    Explain how you would arrange communication between
    a) a player and a gateway server
    b) a gateway server and a game server
    c) a game server and another game server
    d) a gateway server and a backup gateway server
    e) a game server and a backup game server.
    How many messages are involved in a typical player interaction?

    How would you ensure that information is consistent between
    a) a game server and a gateway server
    b) two game servers
    c) a game server and a backup game server?

    Will your design scale to millions of players and thousands of
    servers?