1. Derive the first and second moments, and the variance of Poisson, Exponential, Geometric and Binomial random variables, from first principles (i.e. from their definitions and not using Moment Generating Functions).

2. Consider a link, connecting two nodes, used for packet transmission. Packets that are received in error at the receiver are retransmitted by the sender (assume that there is feedback using acknowledgnments). For a 1000-bit packet, what is the expected number of retransmissions given a bit-error-rate (BER) of 0.01?