Question 1 (20%)

A Bernoulli trial is a process that generates one of two outcomes, usually called success and failure. A single toss of a coin is the typical example, you get either a head or a tail, where one is considered a success and the other a failure. A Bernoulli experiment is a succession consisting of a finite number of Bernoulli trials. For instance tossing a coin 100 times is a Bernoulli experiment.

Define a procedure that randomly generates a Bernoulli experiment consisting of n (this will be your parameter) trials. Your procedure should give a list of 1s and 0s, standing for success and failure, respectively.

Question 2 (40%)

A **run** in a Bernoulli experiment is defined as a consecutive succession of one or more successes. For instance, there are 4 runs in `(0 1 0 0 1 1 1 0 1 0 1 1 0 0 0)`, and 3 in `(1 0 0 0 1 0 0 1 1)`.

Define a procedure that computes the number of runs in a given Bernoulli experiment.

Question 3 (40%)

Define a procedure that computes the length of the longest run in a given Bernoulli experiment.