Quality Attribute Assignment

MTBF = Mean Time Between Failures
MTTR = Mean Time To Repair
Availability = (MTBF / (MTBF + MTTR)) / 100

1- Calculate a software availability quality attribute percentage where
   a. The software is down 2 hours per day.
      MTTR = 2 hours x 60 = 120 minutes
      MTBF = 1 day = 1 x 24 x 60 = 1440 minutes
      Availability = (1440 / (1440 + 120)) / 100
      = 0.0092%

   b. The software is down 24 hours per week.
      MTTR = 24 hours x 60 = 1440 minutes
      MTBF = 1 week = 7 x 24 x 60 = 10080 minutes
      Availability = (10080 / (10080 + 1440)) / 100
      = 0.0088%

2- Identify the used security techniques for a Laravel or DevExpress XAF for the following items:
   a. Authentication
      Laravel's authentication facilities are made up of "guards" and "providers". Guards define how users are authenticated for each request. For example, Laravel ships with a session guard which maintains state using session storage and cookies.

   b. Authorization.
      Laravel provides a simple way to authorize user actions against a given resource. Even though a user is authenticated, they may not be authorized to update or delete certain Eloquent models or database records managed by your application.

      Laravel provides two primary ways of authorizing actions: gates and policies. Think of gates and policies like routes and controllers. Gates provide a simple, closure-based approach to authorization while policies, like controllers, group logic around a particular model or resource.

   c. Encryption.
      Laravel's encryption services provide a simple, convenient interface for encrypting and decrypting text via OpenSSL using AES-256 and AES-128 encryption. All of Laravel's encrypted values are signed using a message authentication code (MAC) so that their underlying value cannot be modified or tampered with once encrypted.

3- Calculate the estimated performance throughput of a software where:
    a. The average data per order in 1000 byte.
    b. The upload bandwidth of the server is 1 mbps.
4- Calculate the estimated performance response time of a software where:
    a. The average data per screen in 500 byte.
    b. The average number of users in 200.
    c. The download bandwidth of the server is 1 mbps.
5- Regarding question number 4, how many server you need to add to your system in order to reduce response time to 1 sec.

- Justify you answers with required calculation and submit your answers at in your github host.
- We will pick up randomly 5 students next session to present their answers.