

Quality Attribute Assignment

1- Calculate a software availability quality attribute percentage where

- a. The software is down 2 hours per day.

$$\text{availability percentage} = \frac{24-2}{24} \times 100\% = 91.67\%$$

- b. The software is down 24 hours per week.

$$\text{availability percentage} = \frac{(24 \times 7) - 24}{24 \times 7} \times 100\% = 85.71\%$$

2- Identify the used security techniques for a [Laravel](#) or [DevExpress XAF](#) for the following items:

- a. Authentication

Laravel includes a User model in your app/models directory which may be used with the default Eloquent authentication driver. When building the Schema for this Model, the password field is a minimum of 60 characters.

- b. Authorization.

To log a user into your application, Auth::attempt is used method.

```
if (Auth::attempt(array('email' => $email, 'password' => $password))) {  
    return Redirect::intended('dashboard');  
}
```

- c. Encryption.

Laravel provides facilities for strong AES encryption via the mcrypt PHP extension:

1) Encrypting A Value : `$encrypted = Crypt::encrypt('secret');`

2) Decrypting A Value : `$decrypted = Crypt::decrypt($encryptedValue);`

3) Setting The Cipher & Mode :

```
Crypt::setMode('ctr');
```

```
Crypt::setCipher($cipher);
```

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.

$$\text{throughput} = \frac{(1000 \times 8 \text{bits}) \times 1}{1\text{s}} = 8 \text{kbps}$$

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.

Tresponse = n/r - Tthink

$$= (200 / ((500 \times 8) / 1)) - 3$$

$$= -2.95$$

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.