2. Many programming languages and technologies can be combined in the development of web applications.

(a) **GET** and **POST** requests allow you to recieve data sent from a client. Explain the difference between GET and POST requests and describe situations where each is best suited. [4]

(b) Given the PHP code in listing 1, write secure implementations for the missing methods *storePassword*, *checkPassword*. You make use the *readColumn* and *writeColumn* to read or write values to the database. You may define additional methods if you wish. [8]

Listing 1: PHP User Class

```php
<?php
  class User {
    public storePassword($newPassword) {
      //You need to implement this.
    }

    // returns true if the
    // password matches stored value
    public checkPassword($password) {
      //You need to implement this.
    }

    //You may use the methods below, which will read
    //and write individual columns to the database.

    //Returns the value of the read column.
    private readColumn($columnName) { ... }

    private writeColumn($columnName, $value) { ... }
  }
?>
```

(c) Structured Query Language (SQL) queries are subject to injection attacks. Write a query that is susceptible to an attack, and suggest **two** ways to mitigate it. [3]

(d) Javascript enables the creation of interactive documents through its event model. Describe with the aid of an example how events on an element are triggered, and any side effects of the process. [5]

(e) Javascript is often used for form validation. Do you think that this validation is sufficient for your applications? Explain your reasoning. [2]

(f) Execution of Javascript is often deferred until the document is loaded. Explain the mechanism for this process and why this is required. [3]