# EEL 5737 Principles of Computer System Design

# Homework #2 - Solutions

## PART 1

## 2.1.

Answer:

**a.** The context `/project/systems` is used for resolving 'exercises' from the given path and it has to start from context reference `root`.

**b.** 'Default' and 'built-in' are the terms associated with Context Reference for the above resolution.

## 2.5

Answer:

A web browser is an example for software interpreter. It communicates with various servers depending on what URL the User gives as an input. It also navigates back and forth through web pages, refreshes/reloads the current page, etc., on receiving a command from the user.

In this case, User who enters URL/ commands decides what the browser should do as its next action. So User provides *instruction reference.*

On receiving a command, the application for web browser (which is installed in the system) decides what it should do. It is *repertoire* for the web browser and has a set of actions defined which it can perform.

The URL which decides which should be the page to be displayed and which server to be communicated serves as *environment reference*.

## 4.3. To client software, a notable difference between remote procedure call and ordinary local procedure call is:

Answer:  **E.** The runtime system may report a new type of error as a result of an RPC.

## 4.7.

*A. When the server responds to a client's write call, all modifications required by that write will have made it to the server's disk.*

**- TRUE**

*B. An NFS client might send multiple requests for the same operation to the NFS server.*

**- TRUE**

*C. When an NFS server crashes, after the operating system restarts and recovers the disk contents, the server must also run its own recovery procedure to make its state consistent with that of its clients.*

**- FALSE**


## 4.8.

**A.** *If the server maintains an in-memory reply cache in which it records all operations it previously executed, and there are no server failures, the server will return "OK".*

 - **TRUE**

**B.** *If the server maintains an in-memory reply cache but the server has failed, restarted, and its reply cache is empty, both of the following responses are possible: the server may return "file not found" or "OK".*

**- FALSE**

*C. If the server is stateless, it will return "file not found".*

**- TRUE**

**D.** *Because remove is an idempotent operation, any server implementation will return "OK".*

**- FALSE**