# Solution M7: Databases, Web Servers and Web Applications

One possible solution could be:

1. Install **Apache**, start it, and make it start on boot

**sudo dnf install httpd httpd-tools**

**sudo systemctl enable httpd**

**sudo systemctl start httpd**

1. We must open the **HTTP** port through the firewall

**sudo firewall-cmd --permanent --zone=public --add-service=http**

**sudo firewall-cmd --reload**

1. Details about our **demo.html** page:
   1. Code - **<h2>Hello from CentOS</h2>**
   2. Path - **/var/www/html/demo.html**
   3. URL - **http://localhost/demo.html**
2. To define a virtual host, we must create new file:
   1. Create file **/etc/httpd/conf.d/secure.conf** that contains

**<VirtualHost \*:80>**

**ServerName "secure.lsa.lab"**

**DocumentRoot "/var/www/secure"**

**<Directory "/var/www/secure">**

**Require valid-user**

**AuthType Basic**

**AuthName "Private Access"**

**AuthBasicProvider file**

**AuthUserFile "/etc/httpd/conf.d/secure"**

**</Directory>**

**</VirtualHost>**

* 1. Create new directory **/var/www/secure**
  2. Create the first user

**htpasswd -c /etc/httpd/conf.d/secure samantha**

* 1. Create the second user

**htpasswd /etc/httpd/conf.d/secure richard**

1. Open **/etc/hosts** and add the following line:

**127.0.0.1 secure.lsa.lab**

1. Install for example **lynx** browser

**sudo dnf config-manager --enable powertools**

**sudo dnf install lynx**

**lynx http://secure.lsa.lab**

1. Install and configure **mariadb**

**sudo dnf install mariadb mariadb-server**

**sudo systemctl enable mariadb**

**sudo systemctl start mariadb**

**sudo mysql\_secure\_installation**

1. We must execute the following commands to create a database:

**mysql -u root -p**

**CREATE DATABASE city\_stats;**

1. Then to create the user we should do:

**GRANT ALL ON city\_stats.\* TO cs\_user@localhost IDENTIFIED BY 'S3cP@ss';**

**FLUSH PRIVILEGES;**

1. To create the table, we should do:

**USE city\_stats;**

**CREATE TABLE cities (city\_name varchar(30), population int);**

1. We will use the population data from this site (https://littlebg.com/10-te-nai-naseleni-grada-v-bg/):

**INSERT INTO cities VALUES ('Sofia', 1307376);**

**INSERT INTO cities VALUES ('Plovdiv', 341625);**

**INSERT INTO cities VALUES ('Varna', 334466);**

**INSERT INTO cities VALUES ('Burgas', 203017);**

**INSERT INTO cities VALUES ('Stara Zagora', 148443);**

**INSERT INTO cities VALUES ('Ruse', 145765);**

**INSERT INTO cities VALUES ('Pleven', 99628);**

**INSERT INTO cities VALUES ('Sliven', 87895);**

**INSERT INTO cities VALUES ('Dobrich', 86292);**

**INSERT INTO cities VALUES ('Veliko Tarnovo', 73508);**

1. Retrieve the data requested with:

**SELECT city\_name, population FROM cities WHERE population >= 150000;**

1. To make a backup we should exit from the **mariadb** client:

**quit**

**mysqldump -u root -p city\_stats > city\_stats.sql**

1. To install and enable **PHP** we should do the following:

**sudo dnf install php php-mysqlnd**

**sudo systemctl restart httpd**

1. We will create a simple page named **/var/www/secure/population.php** that will have the following code:

**<h2>Top 10 cities in Bulgaria</h2>**

**<?php**

**$host = 'localhost';**

**$db\_name = 'city\_stats';**

**$db\_user = 'cs\_user';**

**$db\_pass = 'S3cP@ss';**

**if ($con = mysqli\_connect($host, $db\_user, $db\_pass, $db\_name)) {**

**$query = "SELECT city\_name, population FROM cities ORDER BY population DESC";**

**if ($result = mysqli\_query($con, $query)) {**

**echo "<ol>";**

**while ($row = mysqli\_fetch\_array($result, MYSQL\_ASSOC)) {**

**echo "<li>".$row['city\_name']." - ".$row['population']."</li>";**

**}**

**echo "</ol>";**

**}**

**}**

**?>**

1. Open the page with:

**lynx http://secure.lsa.lab/population.php**