CS 513 Software Systems(ESD)

Lab 1 - Environment Setup

Lab Objectives

We would be installing all the necessary packages and libraries that are needed for a simple 3-tier full
stack development project up and running.
At the end of this lab, we'll be ready with an environment that supports:

- Frontend
  - HTML
  - CSS
  - JavaScript
- Middleware
  - Java
  - Maven
  - Hibernate
- Backend
  - MySQL

Lab Activities

1. **Installing Java**
   - Ubuntu 20.04:

     https://www.digitalocean.com/community/tutorials/how-to-install-java-with-apt-on-ubuntu-20-04
   - Ubuntu 18.04:

https://www.digitalocean.com/community/tutorials/how-to-install-java-with-apt-on-ubuntu-18-04

For Testing java installation:

`$ java -version`

`$ javac -version`

For changing the java version:

`$ sudo update-alternatives --config javac`

`$ sudo update-alternatives --config java`

2. **Installing MySQL**

   For Ubuntu 20.04:
   https://www.digitalocean.com/community/tutorials/how-to-install-mysql-on-ubuntu-20-04
   ○ For Ubuntu 18.04
   https://www.digitalocean.com/community/tutorials/how-to-install-mysql-on-ubuntu-18-04

```
$ sudo apt update
$ sudo apt install mysql-server
```

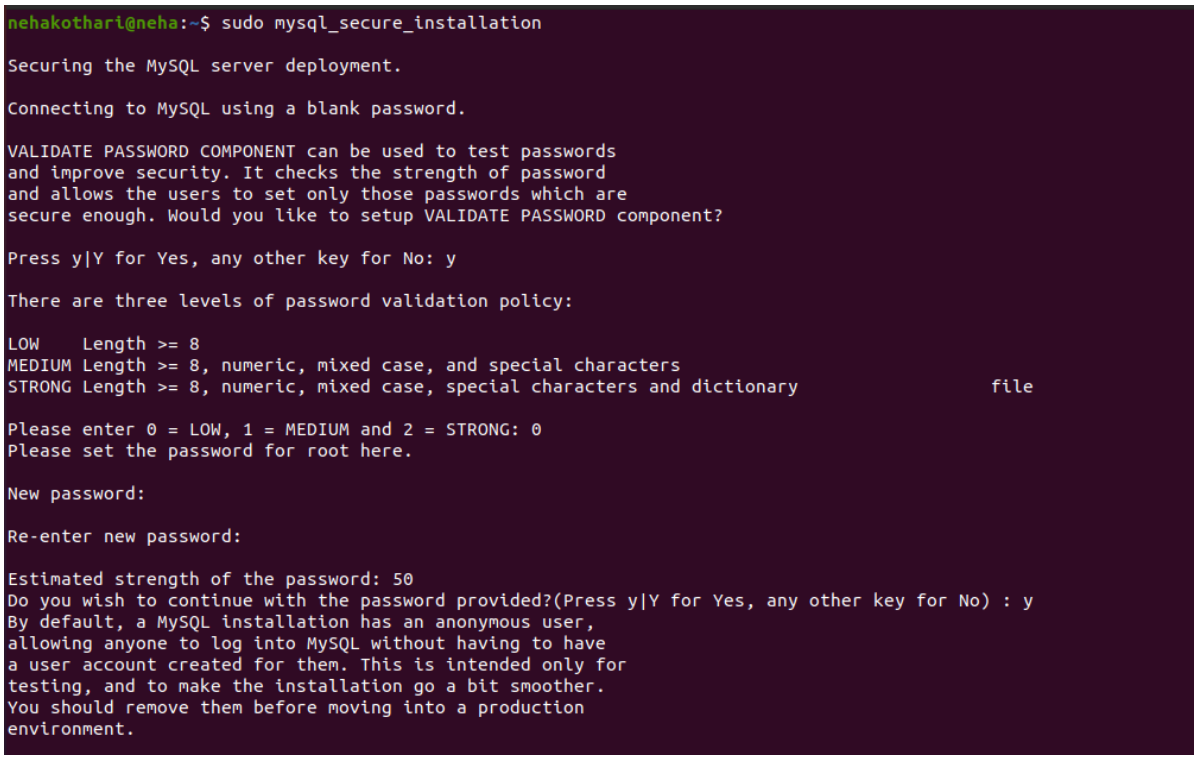
This will install MySQL, but will not prompt you to set a password or make any other configuration changes. Because this leaves your installation of MySQL insecure, we will address this next.

```
$ sudo mysql_secure_installation
```

(After setting the password level as **0**, For password I used: **root1234**)

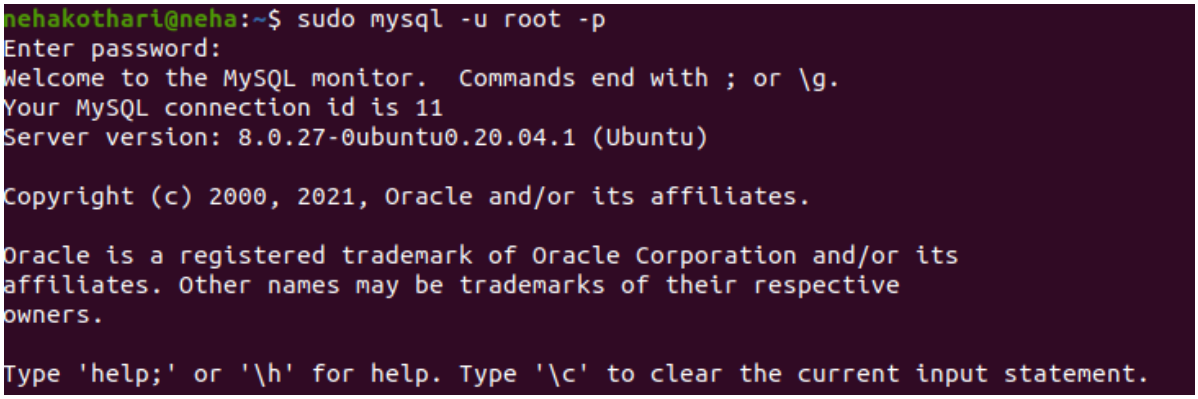
```
Securing the MySQL server deployment.
Connecting to MySQL using a blank password.
VALIDATE PASSWORD COMPONENT can be used to test passwords
and improve security. It checks the strength of password
and allows the users to set only those passwords which are
secure enough. Would you like to setup VALIDATE PASSWORD component?
Press y|Y for Yes, any other key for No: y
There are three levels of password validation policy:
LOW    Length >= 8
```

```
MEDIUM Length >= 8, numeric, mixed case, and special characters
STRONG Length >= 8, numeric, mixed case, special characters and dictionary
file
Please enter 0 = LOW, 1 = MEDIUM and 2 = STRONG: 0
Please set the password for root here.
New password:
Re-enter new password:
Estimated strength of the password: 50
Do you wish to continue with the password provided?(Press y|Y for Yes, any other key
 for No) : y
By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.
```




```
Remove anonymous users? (Press y|Y for Yes, any other key for No) : y
Success.
Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.
Disallow root login remotely? (Press y|Y for Yes, any other key for No) : n
```

```
... skipping.
By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.
Remove test database and access to it? (Press y|Y for Yes, any other key for No) : y
Dropping test database...
Success.
Removing privileges on test database...
Success.
Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.
Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.
All done!
```



```
Remove anonymous users? (Press y|Y for Yes, any other key for No) : y
Success.


Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : n

 ... skipping.
By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.


Remove test database and access to it? (Press y|Y for Yes, any other key for No) : y
 - Dropping test database...
Success.

 - Removing privileges on test database...
Success.

Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
```

Creating a Dedicated MySQL User and Granting Privileges

```
$ sudo mysql -u root -p
```

```
nehakothari@neha:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.27-0ubuntu0.20.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.01 sec)

mysql> use mysql;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
```

```
mysql> select Host, User from user;
+-----------+------------------+
| Host      | User             |
+-----------+------------------+
| localhost | debian-sys-maint |
| localhost | mysql.infoschema |
| localhost | mysql.session    |
| localhost | mysql.sys        |
| localhost | root             |
+-----------+------------------+
5 rows in set (0.00 sec)
```

```
mysql> alter user root@localhost identified with mysql_native_password by 'password';
mysql> flush privileges;
```

```
mysql> alter user root@localhost identified with mysql_native_password by 'password';
Query OK, 0 rows affected (0.18 sec)
```

(I forgot to take a screenshot after running the "flush privileges" command, but please don't forget to run it!)

```
mysql> create user neha@localhost identified by 'password';
mysql> GRANT ALL PRIVILEGES ON *.* to neha@localhost WITH GRANT OPTION;
mysql> exit
```

```
mysql> create user neha@localhost identified by 'password';
Query OK, 0 rows affected (0.17 sec)

mysql> select user, host from mysql.user;
+------------------+-----------+
| user             | host      |
+------------------+-----------+
| debian-sys-maint | localhost |
| mysql.infoschema | localhost |
| mysql.session    | localhost |
| mysql.sys        | localhost |
| neha             | localhost |
| root             | localhost |
+------------------+-----------+
6 rows in set (0.00 sec)

mysql> grant all priviliges on *.* to neha@localhost with grant option;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the
ption' at line 1
mysql> GRANT ALL PRIVILEGES ON *.* to neha@localhost with grant option;
Query OK, 0 rows affected (0.27 sec)

mysql> exit
Bye
nehakothari@neha:~$ sudo mysql -u neha -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 15
Server version: 8.0.27-0ubuntu0.20.04.1 (Ubuntu)

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```

Note : In case you get an error related to
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
You can refer the two links:

https://ostechnix.com/fix-mysql-error-1819-hy000-your-password-does-not-satisfy-the-current-policy-requirements/
https://www.tecmint.com/fix-mysql-error-1819-hy000/

```
mysql> create user ‘nehakothari’@’localhost’ IDENTIFIED BY ‘password’;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds
mysql> create user nehakothari@localhost identified by 'password';
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql> SET GLOBAL validate_password.policy=LOW;
Query OK, 0 rows affected (0.00 sec)

mysql> create user 'nehakothari'@'localhost' identified by 'password';
Query OK, 0 rows affected (0.25 sec)
```

```
mysql> GRANT ALL PRIVILEGES ON *.* to nehakothari@localhost WITH GRANT OPTION;
Query OK, 0 rows affected (0.16 sec)

mysql> exit
Bye
nehakothari@neha:~$ mysql -u nehakothari -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.0.27-0ubuntu0.20.04.1 (Ubuntu)
```

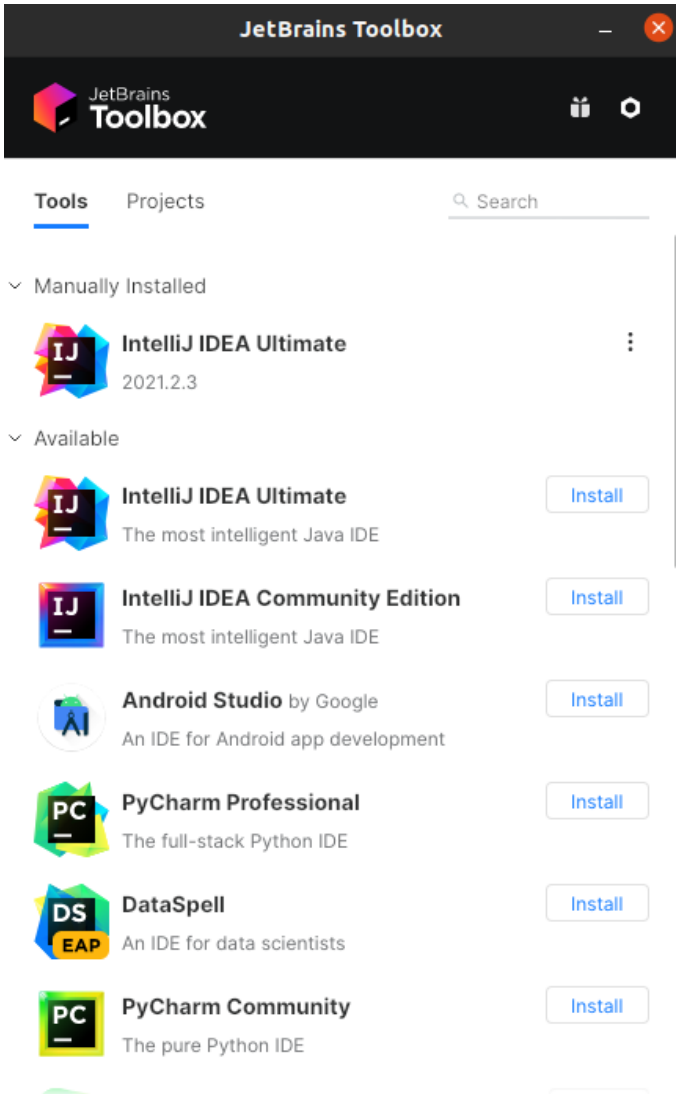
Now you can get into the sql prompt without using sudo.

3. **IntelliJ and Maven**
   to download the toolbox : https://www.jetbrains.com/toolbox-app/
   extract it : `$ sudo tar -xvf jetbrains-toolbox-1.21.9712.tar.gz`

   Then just double click the executable file to start the toolbox.

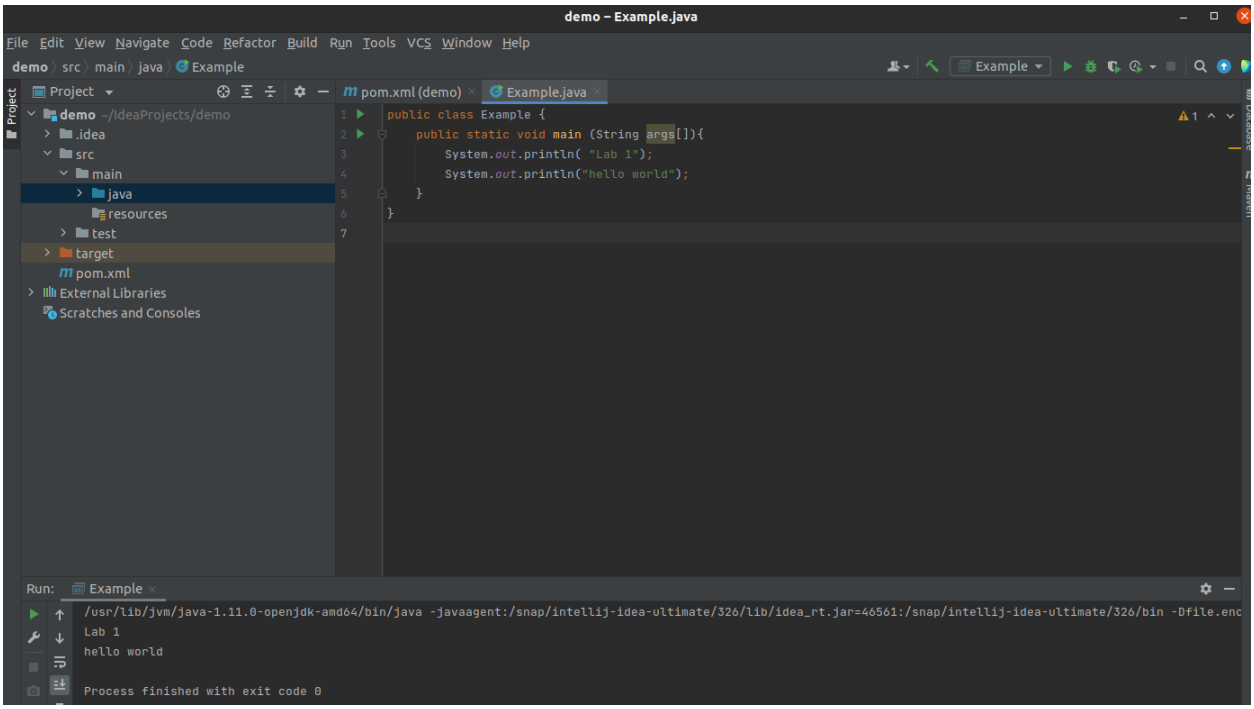
Create an account with your IIITB email address to avail 1 year free ultimate edition of IntelliJ. You can proceed with Community edition as well.

Login with your account and install the desired version of intelliJ.



Open IntelliJ and create a new maven project. IntelliJ will automatically detect your java SDK when you create a new project. Proceed with default configuration. Create a new project to run hello world program.
Right click on the source folder and create a new class called HelloWorld
Paste in the following code in your newly created class HelloWorld and run it.

```
public  static  void  main (String args[]){
System.out.println( "Lab 1" );
System.out.println( "hello world" );
}
```



You should see “Lab 1” and “hello world” on your output screen.

4. **Hibernate**

   - When you create a maven project you will notice a pom.xml file automatically created
   - Add this code snippet to get hibernate dependencies for your project.

```
<dependencies>
<!-- https://mvnrepository.com/artifact/org.hibernate/hibernate-core -->
  <dependency>
    <groupId>  org.hibernate </groupId>
    <artifactId>  hibernate-core </artifactId>
    <version>  5.4.22.Final </version>
  </dependency>
</dependencies>
```

You can get more dependencies later from : https://mvnrepository.com. They can be incorporated in a similar manner.

- Right click on the project file and select Maven and then select Download sources to download these files.