



# i2b2 Installation Guide

(Linux/Oracle/SQL Server)

## Data

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## ABOUT THIS GUIDE

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Informatics for Integrating Biology and the Bedside (i2b2) is one of the sponsored initiatives of the NIH Roadmap National Centers for Biomedical Computing (<http://www.bisti.nih.gov/ncbc/>).

One of the goals of i2b2 is to provide clinical investigators broadly with the software tools necessary to collect and manage project-related clinical research data in the genomics age as a cohesive entity; a software suite to construct and manage the modern clinical research chart. This guide with the provided database scripts will help you to learn how to install the i2b2 data package.

# 1. PRE-REQUISITES

## 1.1 Required Software

The i2b2 database can be setup in either an oracle or SQL environment. Only one is required and depending on your environment you can go to either the section called Oracle Express Edition (1.1.1) or SQL Server Express Edition (1.1.2)

### 1.1.1 Oracle Express Edition

Download *Oracle Database 10g Express Edition (Universal)* 'oracle 10g EE' (oracle-xe-univ-10.2.0.1-1.0.i386.rpm) from the following Oracle website:

<http://www.oracle.com/technology/software/products/database/xe/htdocs/102xelinsoft.html>

1. Run `rpm -i oracle-xe-univ-10.2.0.1-1.0.i386.rpm` as root.
  - a. Configure the database by running `'/etc/init.d/oracle-xe configure'` as root
  - b. Select HTTP and listener ports (use defaults 8080/1521 if they are available).
  - c. Select 'Y'es to start on boot when asked.
2. Verify Oracle was properly installed.
  - a. Open a browser
  - b. Enter <http://yourHost.yourPort/apex>
  - c. You should see an Oracle Database Express Edition login screen.

### 1.1.2 SQL Server Express Edition

1. Download SQL Server Express Edition 2005 from the following site:

<http://www.microsoft.com/express/sql/download/default.aspx>

2. Download and run the SQL Server Express Install Wizard.
  - a. Select the edition of SQL Server Express to install
  - b. Click install

## 1.2 Assumptions

### 1.2.1 PM setup

The data in this package provides data for a domain of *i2b2demo* and two projects:

1. Demo
2. Demo2

The assumption is that the PM service has been configured as such. You can reference the *PM Installation Guide* for further information about setting up the PM.

You will need to ensure that group Demo and Demo2 have been created as shown in the Project Data section of the *PM Installation Guide*. Once you have verified the projects are setup you can once again reference the *PM Installation Guide* to assign users to the Demo and Demo2 projects.

## 2. INSTALLING I2B2 DATA

This chapter outlines the process of installing the i2b2 data.

### 2.1 Unzip the data package

The following steps are for unzipping the data package.

1. Unzip the data package into a folder (/opt/data).
2. You should see the project called *edu.harvard.i2b2.data*.
3. Enter `'cd edu.harvard.i2b2.data/Release_1-5/NewInstall'`

This directory (*edu.harvard.i2b2.data/Release\_1-5/NewInstall*) is considered your data installation working directory. Under this directory are folders for Metadata, Demodata, Workdata, Hivedata and Pmdata. These folders map to the following schemas:

Directory Folder	Schema	Project
Demodata	i2b2demodata	Demo
	i2b2demodata2	Demo2
Metadata	i2b2metadata	Demo
	i2b2metadata2	Demo2
Workdata	i2b2workdata	Demo
	i2b2workdata2	Demo2
Hivedata	i2b2hive	
Pmdata	i2b2pm	

 **If using SQL Server proceed to the next section. If using Oracle proceed to section 2.3.**

### 2.2 Create user accounts in SQL Server

The following outlines the steps to take when setting up the database in SQL.

1. Log in to SQL Server Management Studio.
2. Create the databases.

The following table lists the databases to be created:

Database
i2b2metadata
i2b2demodata
i2b2workdata
i2b2metadata2
i2b2demodata2
i2b2workdata2
i2b2hive
i2b2pm

3. Create the users.

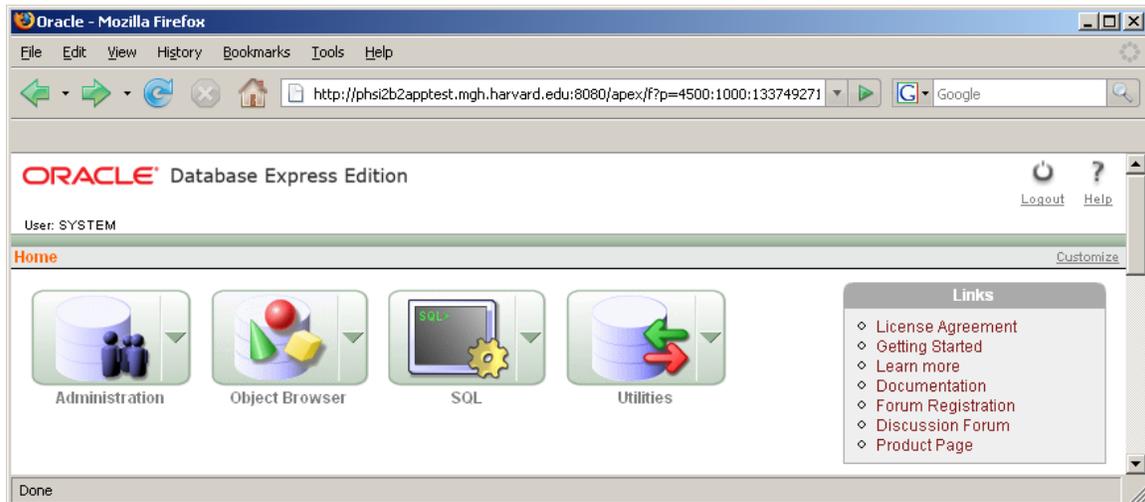
The users to be created are listed below along with their password and specific database:

User Name	Password	Database
i2b2metadata	demouser	i2b2metadata
i2b2demodata	demouser	i2b2demodata
i2b2workdata	demouser	i2b2workdata
i2b2metadata2	demouser	i2b2metadata2
i2b2demodata2	demouser	i2b2demodata2
i2b2workdata2	demouser	i2b2workdata2
i2b2hive	demouser	i2b2hive
i2b2pm	demouser	i2b2pm

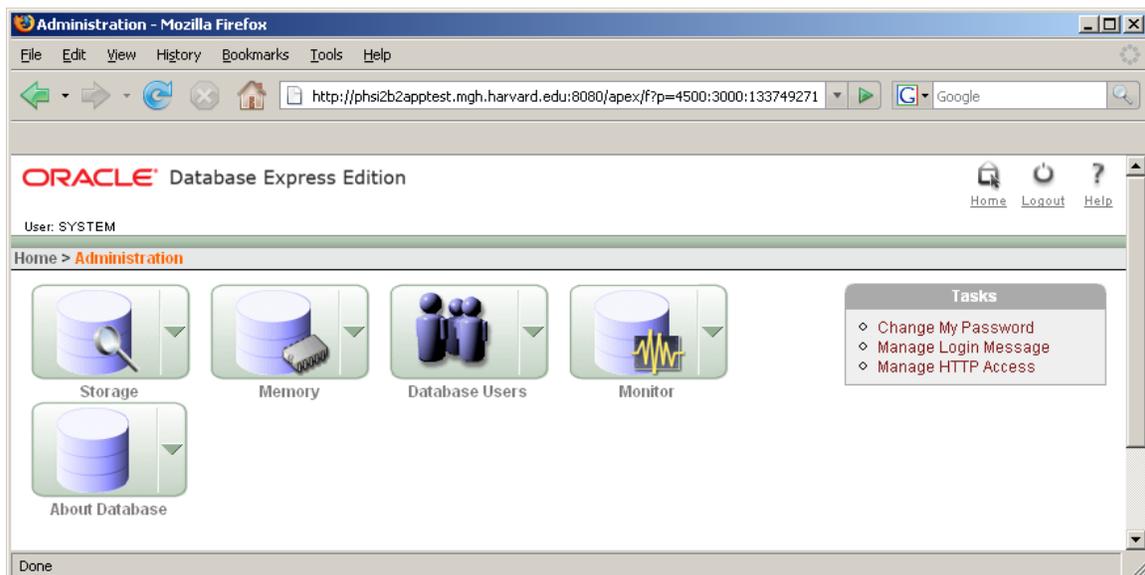
## 2.3 Create user accounts in Oracle

The following outlines the steps to take when setting up the database in Oracle.

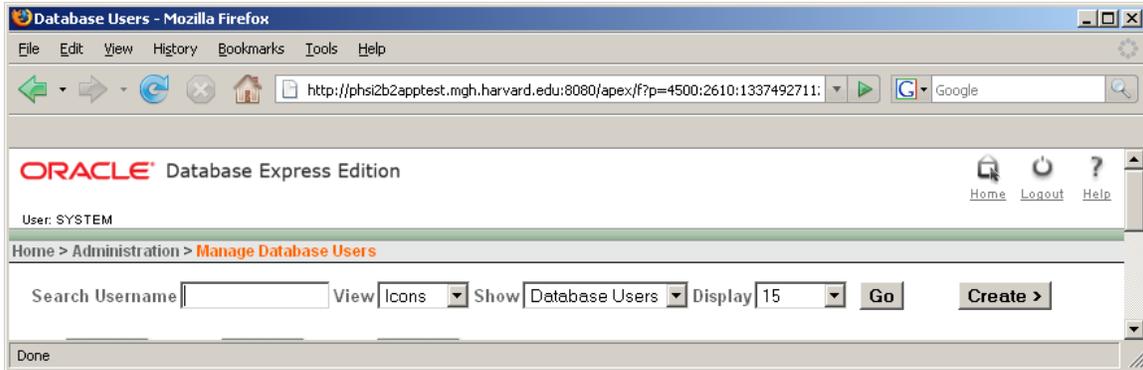
1. Open a browser.
2. Enter <http://yourHost.yourPort/apex>
3. Log in as system user.
4. Select Administration.



5. Select **Database Users**.

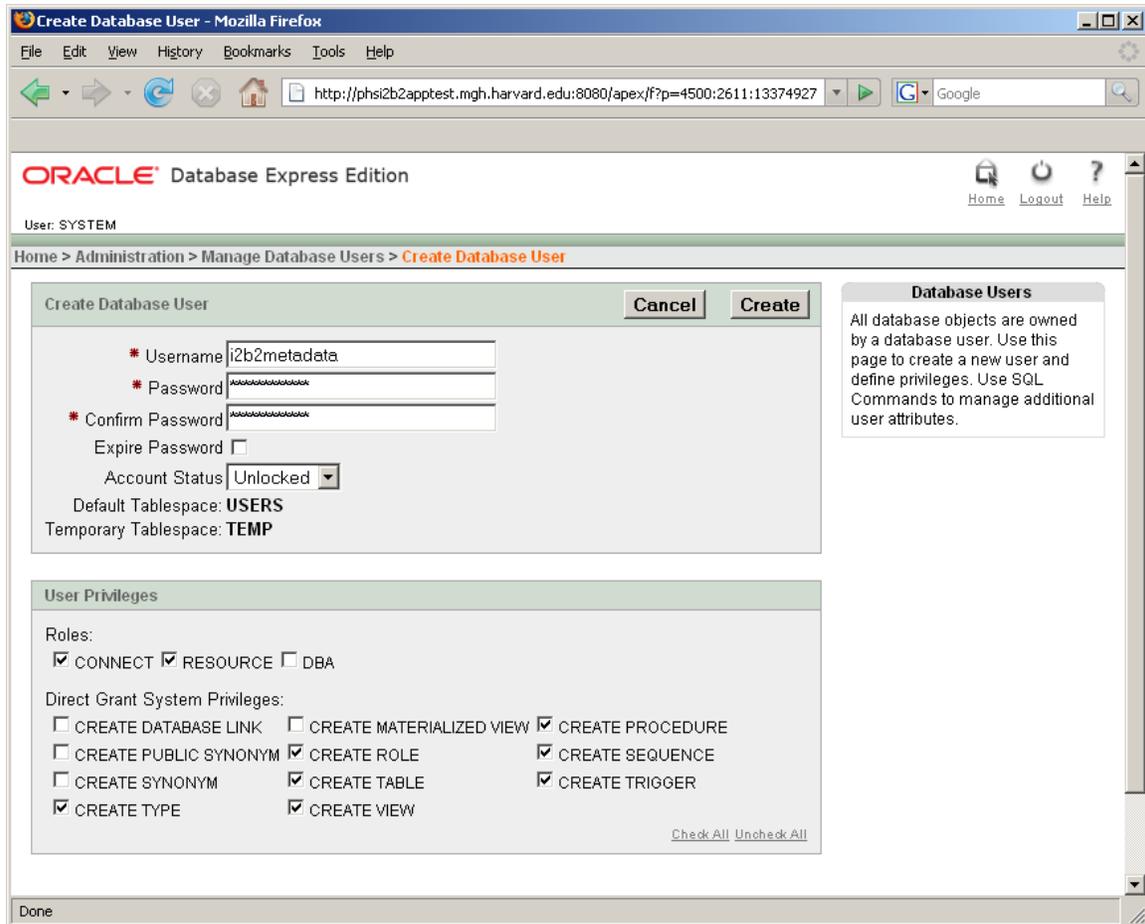


6. Select **Create**.



7. Enter i2b2metadata user name and password.

8. Check off **Direct grant system privileges** as shown below.



9. Repeat steps 1-8 to create *i2b2demodata* and *i2b2workdata* users for the **Demo** project.
10. Repeat steps 1-8 to create *i2b2metadata2*, *i2b2demodata2* and *i2b2workdata2* users for the **Demo2** project.
11. Repeat steps 1-8 to create *i2b2hive* and *i2b2pm* users.

## 2.4 Create Metadata tables and load data

The following outlines the steps to take to create the metadata tables and load the data into them.

1. 'cd *Metadata*' of your working directory (edu.harvard.i2b2.data/Release\_1-5/NewInstall).
2. Edit the ***db.properties*** file.

- Ⓢ ***When setting the database properties make sure you set the user/password to i2b2metadata and the project to demo.***

**If running Oracle:**

```
db.type=oracle
db.username=i2b2metadata
db.password=i2b2metadata_pswd
db.server=localhost:1521:xe
db.driver=oracle.jdbc.driver.OracleDriver
db.url=jdbc:oracle:thin:@localhost:1521:xe
db.project=demo
```

- OR -

**If running SQL Server:**

```
db.type=sqlserver
db.username=i2b2metadata
db.password=i2b2metadata_pswd
db.driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
db.url=jdbc:sqlserver://localhost:1433;databasename=demo
db.project=demo
```

3. Create the metadata tables, indexes and sequences by running the following:

```
ant -f data_build.xml create_metadata_tables_release_1-5
```

4. Load the data.

If you wish to load your own metadata, do that now. Otherwise run the following:

```
ant -f data_build.xml db_metadata_load_data
```

- Ⓢ ***The load may take a while (15 minutes).***

5. Edit the ***db.properties*** file for the user/password i2b2metadata2 and project demo2.
6. Repeat steps 3 and 4 (Create metadata tables and load data).

## 2.5 Create Demodata tables and load data

The following outlines the steps to take to create the Demodata tables and load the data into them.

1. 'cd *Demodata*' of your working directory (edu.harvard.i2b2.data/Release\_1-5/NewInstall).
2. Edit the **db.properties** file.

 ***When setting the database properties make sure you set the user/password to i2b2demodata and the project to demo.***

#### **If running Oracle:**

```
db.type=oracle
db.username=i2b2demodata
db.password=i2b2demodata_pswd
db.server=localhost:1521:xe
db.driver=oracle.jdbc.driver.OracleDriver
db.url=jdbc:oracle:thin:@localhost:1521:xe
db.project=demo
```

- OR -

#### **If running SQL Server:**

```
db.type=sqlserver
db.username=i2b2demodata
db.password=i2b2demodata_pswd
db.driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
db.url=jdbc:sqlserver://localhost:1433;database=demo
db.project=demo
```

3. Create the demodata tables, indexes and sequences by running the following:

```
ant -f data_build.xml create_demodata_tables_release_1-5
```

4. Create the stored procedures by running the following:

```
ant -f data_build.xml create_procedures_release_1-5
```

5. Load the data.

If you wish to load your own demo data, do that now. Otherwise run the following:

```
ant -f data_build.xml db_demodata_load_data
```

 ***The load may take a while (15 minutes).***

6. Edit the **db.properties** file for the user/password *i2b2demodata2* and project *demo2*.
7. Repeat steps 3, 4 and 5 (Create demodata tables, stored procedures and load data).

## 2.6 Create Workdata tables and load data

The following outlines the steps to take to create the Workdata tables and load the data into them.

1. 'cd Workdata' of your working directory (edu.harvard.i2b2.data/Release\_1-5/NewInstall).
2. Edit the **db.properties** file.

 ***When setting the database properties make sure you set the user/password to i2b2workdata and the project to demo.***

### If running Oracle:

```
db.type=oracle
db.username=i2b2workdata
db.password=i2b2workdata_pswd
db.server=localhost:1521:xe
db.driver=oracle.jdbc.driver.OracleDriver
db.url=jdbc:oracle:thin:@localhost:1521:xe
db.project=demo
```

- OR -

### If running SQL Server:

```
db.type=sqlserver
db.username=i2b2workdata
db.password=i2b2workdata_pswd
db.driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
db.url=jdbc:sqlserver://localhost:1433;databasename=demo
db.project=demo
```

3. Create the workdata tables, indexes and sequences by running the following:  

```
ant -f data_build.xml create_workdata_tables_release_1-5
```
4. Load the data.

If you wish to load your own work data, do that now. Otherwise run the following:

```
ant -f data_build.xml db_workdata_load_data
```

5. Edit the **db.properties** file for the user/password i2b2workdata2 and project demo2.
6. Repeat steps 3 and 4 (Create workdata tables and load data).

## 2.7 Create Hive tables and load data

The following outlines the steps to take to create the hive tables and load the data into them.

1. 'cd Hivedata' of your working directory (edu.harvard.i2b2.data/Release\_1-5/NewInstall).
2. Edit the **db.properties** file.

 **When setting the database properties make sure you set the user/password to i2b2hive.**

### If running Oracle:

```
db.type=oracle
db.username=i2b2hive
db.password=i2b2hive_pswd
db.server=localhost:1521:xe
db.driver=oracle.jdbc.driver.OracleDriver
db.url=jdbc:oracle:thin:@localhost:1521:xe
```

- OR -

### If running SQL Server:

```
db.type=sqlserver
db.username=i2b2hive
db.password=i2b2hive_pswd
db.driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
db.url=jdbc:sqlserver://localhost:1433;databasename=demo
```

3. Create the hive tables, indexes and sequences by running the following:

```
ant -f data_build.xml create_hivedata_tables_release_1-5
```

4. Load the data.

If you wish to load your own hive data, do that now. Otherwise run the following:

```
ant -f data_build.xml db_hivedata_load_data
```

The data loaded into the three i2b2hive **db\_lookup** tables presumes that the default target location pointing to the hive you are currently setting up is “*i2b2demo*”.

Ⓢ ***This target location is also referred to as the domain of the hive and should match the domain that is setup in during PM setup.***

In the client **i2b2.properties** file:

```
I2b2.1=demo,REST,http://webservices:9090/i2b2/rest/PMSERVICE/  
I2b2.2=HarvardDemo,REST,http://services.i2b2.org/PM/rest/PMSERVICE/  
#I2b2.3=YourSite,REST,http://jbossHost:jbossPort/i2b2/rest/PMSERVICE/
```

The **I2b2.1** target location (“*demo*”) points to the hive residing on the vmware image.

The **I2b2.2** target location (“*HarvardDemo*”) points to the hive residing at Harvard.

Ⓢ ***The data installed at Harvard is identical to the data provided in this package.***

The hive you are currently setting up is **I2b2.3**. Please be sure to rename “*YourSite*” to “*i2b2demo*”.

## 2.8 Create PM tables and load data

The following outlines the steps to take to create the PM tables and load the data into them.

1. ‘*cd Pmdata*’ of your working directory (edu.harvard.i2b2.data/Release\_1-5/NewInstall).
2. Edit the **db.properties** file.

Ⓢ ***When setting the database properties make sure you set the user/password to i2b2pm.***

**If running Oracle:**

```
db.type=oracle  
db.username=i2b2pm
```

```
db.password=i2b2pm_pswd
db.server=localhost:1521:xe
db.driver=oracle.jdbc.driver.OracleDriver
db.url=jdbc:oracle:thin:@localhost:1521:xe
```

- OR -

**If running SQL Server:**

```
db.type=sqlserver
db.username=i2b2pm
db.password=i2b2pm_pswd
db.driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
db.url=jdbc:sqlserver://localhost:1433;databaseName=demo
```

3. Create the pm tables, indexes and sequences by running the following:

```
ant -f data_build.xml create_pmdata_tables_release_1-5
```

4. Create the pm triggers by running the following:

```
ant -f data_build.xml create_triggers_release_1-5
```

5. Load the data.

If you wish to load your own pm data, do that now. Otherwise run the following:

```
ant -f data_build.xml db_pmdata_load_data
```

## 2.9 Next Steps

At this point in the installation process you are ready to proceed with the **Hive installation**. Please return to the *Hive Upgrade Guide* for details on that process.

## LICENSE

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The i2b2 source code is licensed under the i2b2 Software License Software. This includes but not limited to all code in the edu.harvard.mgh.i2b2.\* package namespace.