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Getting started

In this document, we show how to write simple application using Tudas library in each of three supported programming languages. If you prefer to test ready to use example, you can also run prepared by us client-side applications. We discuss it later in this section.

Creating example application

In our example, we'll create client-side application that will save roman pot offsets data into the database. Then we'll try to load this back and finally, we'll print it to ensure if everything is correct.

- Creating java application
- Creating python application
- Creating c++ application
- Using TUDAS in CMSSW

Running ready to use examples

We prepared few examples of using our libraries, one per each functionalities set. Available examples are:

- Alignment calculations
- Optics generation (elastic and inelastic)
- Luminosity calculations
- General measurements management
- Saving run information

In the tutorial we use luminosity calculations example. Steps to run other examples are similar. We assume that you have installed Tudas library and you are in *release* directory.

Running java example

1. Open your terminal and navigate to java directory:

```
cd java
```

2. Compile all examples using [ant](#) builder:

```
ant
```

3. Run example using our bash script:

```
bash run ExampleLuminosityClient
```

Running python example

1. Open your terminal and navigate to python directory:

```
cd python
```

2. Export all needed environment variables:

```
. configuration
```

3. Simply run example python script:

```
python example_luminosity_client.py
```

Running c++ example

1. Open your terminal and navigate to c++ directory:

```
cd c++
```

2. Export all needed environment variables:

```
. configuration
```

3. Compile examples using *make*:

```
make all
```

4. Run the example:

```
./ExampleLuminosityClient
```

Running CMSSW example

If you installed CMSSW version with Tudas module, you can basically run example configuration, which uses connection to database:

```
cmsRun TotemUnifiedDatabaseAccessService/RPAlignmentESSource/test/test_cfg.py
```

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