



# Developing Custom File-Based Modules for LabKey Server

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- Pre-requisites
- Module Overview
  - What is it? When should I use one?
  - File anatomy
- Demo
  - Views and Webparts
  - Queries and Reports
  - Styling and Appearance
  - Module Editing
- Developing and Deploying
- Advanced Topics
- Docs Links + Conclusion
- Questions



- **Development Machine**

And that's it!



## **Modules are encapsulated functionality in a standardized structure.**

Benefits include:

- Version control integration
- Ease in deploying between test & prod servers
- Modularity and reusability
- Can leverage built-in capabilities and features



```
MODULE_NAME
├── build.gradle
├── gradle.properties
├── module.properties
├── resources
│   ├── ...
│   ├── data
│   ├── domain-templates
│   ├── folderTypes
│   ├── queries
│   │   ├── SCHEMA_NAME
│   │   │   ├── QUERY_NAME.query.xml
│   │   │   ├── QUERY_NAME.sql
│   │   │   └── ...
│   ├── reports
│   │   ├── schemas
│   │   │   ├── SCHEMA_NAME
│   │   │   │   ├── QUERY_NAME
│   │   │   │   │   └── MyRScript.r
│   │   │   │   └── ...
│   └── views
│       ├── VIEW_NAME.html
│       ├── VIEW_NAME.view.xml
│       └── TITLE.webpart.xml
└── web
```

- Lowercase names are literal values, while uppercase are variable
- Ellipses indicate more possible file types and functionalities
- More info will be available on the 'Documentation Links' slide!
- Placed in trunk/server/modules

The background is a solid orange color with several horizontal bars of varying lengths and shades of orange. Some bars have rounded ends, while others are straight. There are also dotted patterns in the corners, consisting of small white dots arranged in a grid. The text "Time for the Demo!" is centered in a bold, white, sans-serif font.

**Time for the Demo!**

The background is a solid blue color with several abstract, semi-transparent blue shapes. These include horizontal bars of varying lengths and thicknesses, some with rounded ends. There are also clusters of small white dots arranged in grid-like patterns. The overall aesthetic is modern and clean.

**Questions?**



## Use GitHub

- We add the module to your distribution via TeamCity
- Recommended choice

## Module Loading UI

- See Docs Slide for more detail
- Cons: If deploying to new instance, modules are not persisted by default

## Send LK the Module

- We load your module onto your server
- Cons: Takes work, bills hours





## Modules

### Known Modules

Each of these modules is installed and has a valid module file. [CLICK HERE](#)

To delete a module that does not have a delete link, first delete its .mod file from `<labkey_deployment_root>/modules` and `<labkey_deployment_root>/external`

[CREATE NEW EMPTY MODULE >](#)

Additional modules available, click [here](#) to learn more.

Name	Release Version	Schema Version	Class
Announcements	20.5-SNAPSHOT	20.000	Announcem

modules

## Create new empty module

Module Name:

Name	Release Version	Schema Version	Class	Location	Schemas			
alodingdemo			SimpleModule	externalModules\alodingdemo.module		<a href="#">EDIT MODULE &gt;</a>	<a href="#">UPLOAD MODULE &gt;</a>	<a href="#">DELETE MODULE &gt;</a>
Announcements	20.11-SNAPSHOT	20.000	AnnouncementModule	modules\announcements-20.11-SNAPSHOT.module	comm	<a href="#">EDIT MODULE &gt;</a>		
API	20.11-SNAPSHOT		ApiModule	modules\api-20.11-SNAPSHOT.module		<a href="#">EDIT MODULE &gt;</a>		
Assay	20.11-SNAPSHOT	20.003	AssayModule	modules\assay-20.11-SNAPSHOT.module	assayresult	<a href="#">EDIT MODULE &gt;</a>		



## Use GitHub ★

- We add the module to your distribution via TeamCity
- Recommended choice

## Module Loading UI

- See Docs Slide for more detail
- For servers running in Production Mode
- Cons: If deploying to new instance, modules are not persisted by default

## Send LK the Module

- We load your module onto your server
- Cons: Takes work, bills hours



## Dev

- Work on module source
- Build with a gradle `deployApp` or `deployModule` command
- Obtain the `.module` archive from `trunk/build/deploy/modules`

## QA / Staging

- Deploy by adding the `.module` file to the `trunk/build/deploy/externalModules` directory
- Determine if module is ready for prod

## Production

- Build on dev with `gradle deployApp -PdeployMode=prod --no-build-cache` or `BuildType: Production` in `module.properties`
- Deploy using server UI or adding `.module` file to the `trunk/build/deploy/externalModules` directory



- Assay Types
- ETLs
- Trigger Scripts
- Java and React Modules



```
<module-name>/
  assay/
    ASSAY_NAME/
      config.xml example
      domains/ - example
        batch.xml
        run.xml
        result.xml
      views/ - example
        begin.html
        upload.html
        batches.html
        batch.html
        runs.html
        run.html
        results.html
        result.html
      queries/ - example
        Batches.query.xml
        Run.query.xml
        Data.query.xml
        CUSTOM_ASSAY_QUERY.query.xml
        CUSTOM_ASSAY_QUERY.sql
        CUSTOM_ASSAY_QUERY/
          CUSTOM_VIEW.qview.xml
      scripts/
        script1.R
        script2.pl
```



- Assay Types
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	<b>Insert New Row (single record)</b>	<b>Import Bulk Data (TSV or file import)</b>	<b>Import via Client APIs</b>	<b>Import via Archive (study, folder, list, XAR)</b>	<b>ETLs</b>
<b>Lists</b>	yes	yes	yes	yes	yes
<b>Datasets</b>	yes	yes	yes	yes	yes
<b>Module/External Schemas</b>	yes	yes	yes	no	yes
<b>Assay (see <a href="#">Transform Scripts</a>)</b>	no	no	no	no	no
<b>Sample Type</b>	yes	yes	yes	no	yes
<b>DataClass</b>	yes	yes	yes	no	yes



- Assay Types
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- Sourdough Module Source Code and Doc Page
- Docs
  - [Development Machine](#)
  - [Develop Modules](#)
  - [Map of Module Files](#)
  - [XML Docs](#)
  - [JS API Docs](#)
  - [Deploy Modules to a Production Server](#)
  - [Create Production Builds](#)
  - [Module Loading Using the Server UI](#)
  - [Assay Types](#)
  - [ETLs](#)
  - [Trigger Scripts](#)
  - [Java Modules](#)

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**Questions?**