

Performing Lifecycle Aware Data Loading with Loaders



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What to Expect from This Module



Queries and the Activity UI

LoaderManager

CursorLoader

Challenges of Multiple Loaders

Initializing vs. Restarting a Loader

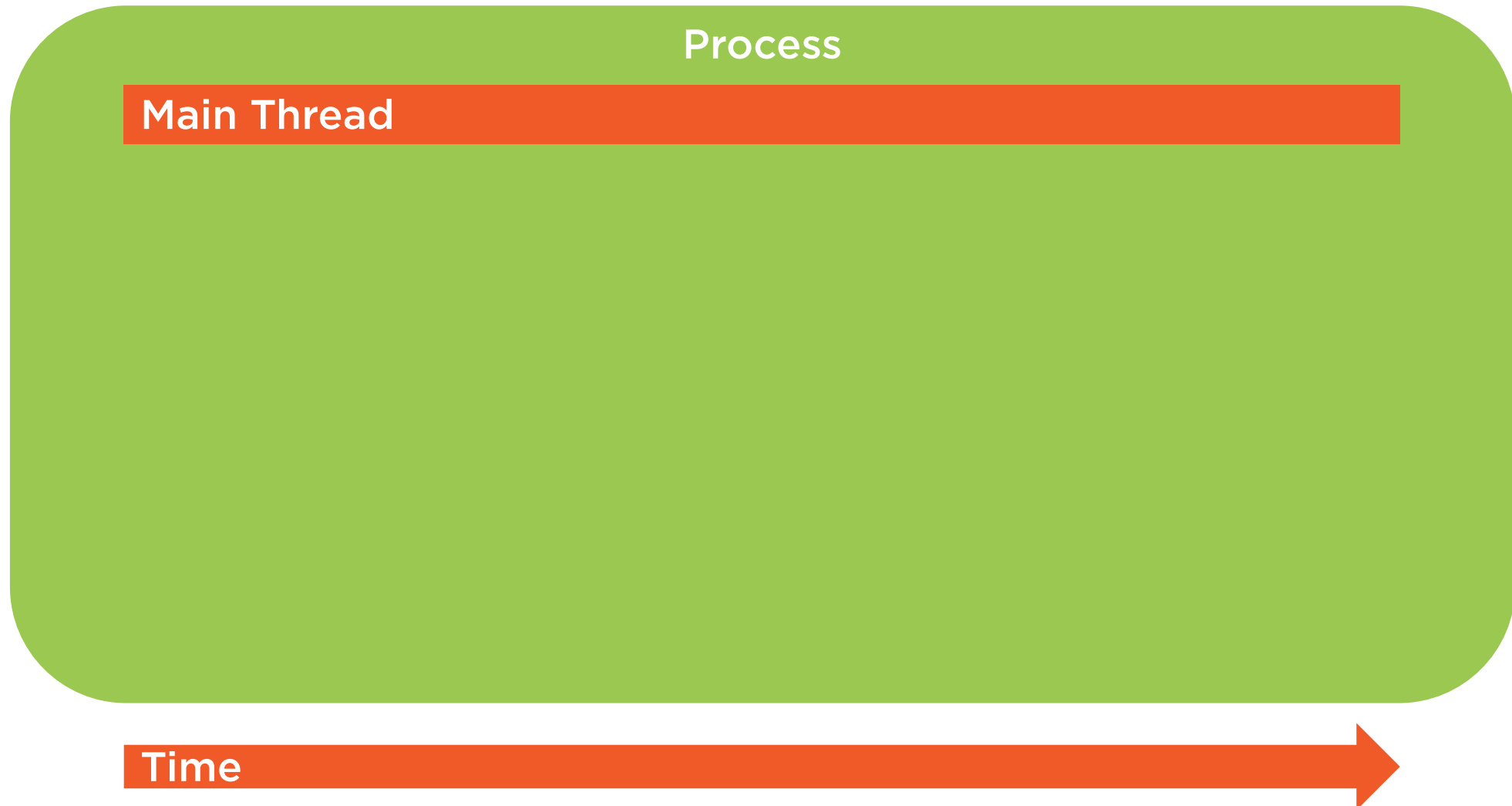
Queries and Activity UI

Avoid queries in activity's main flow

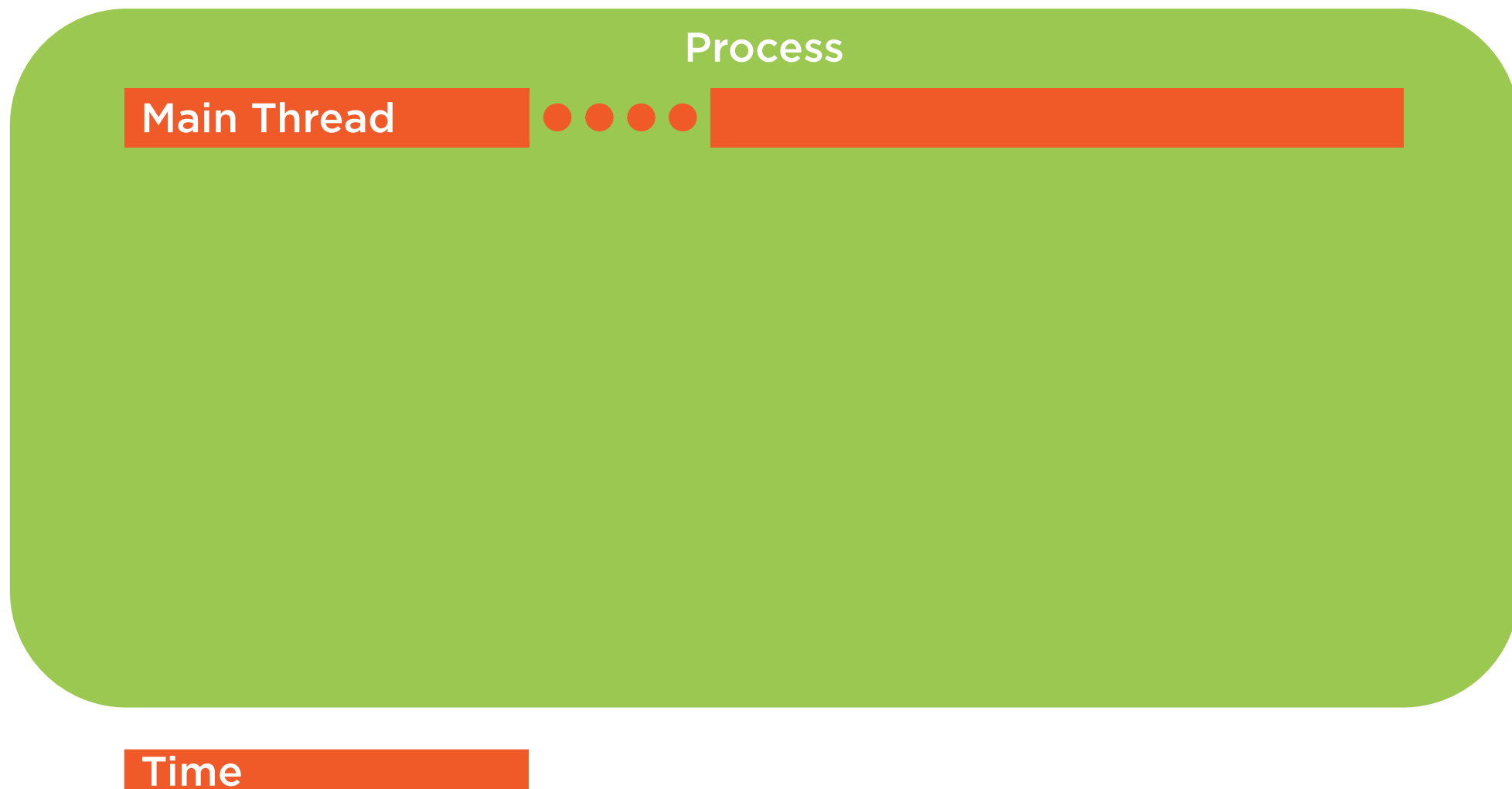
- Queries can be time-consuming
- Can cause inconsistent UI performance
- May cause Application Not Responding error message



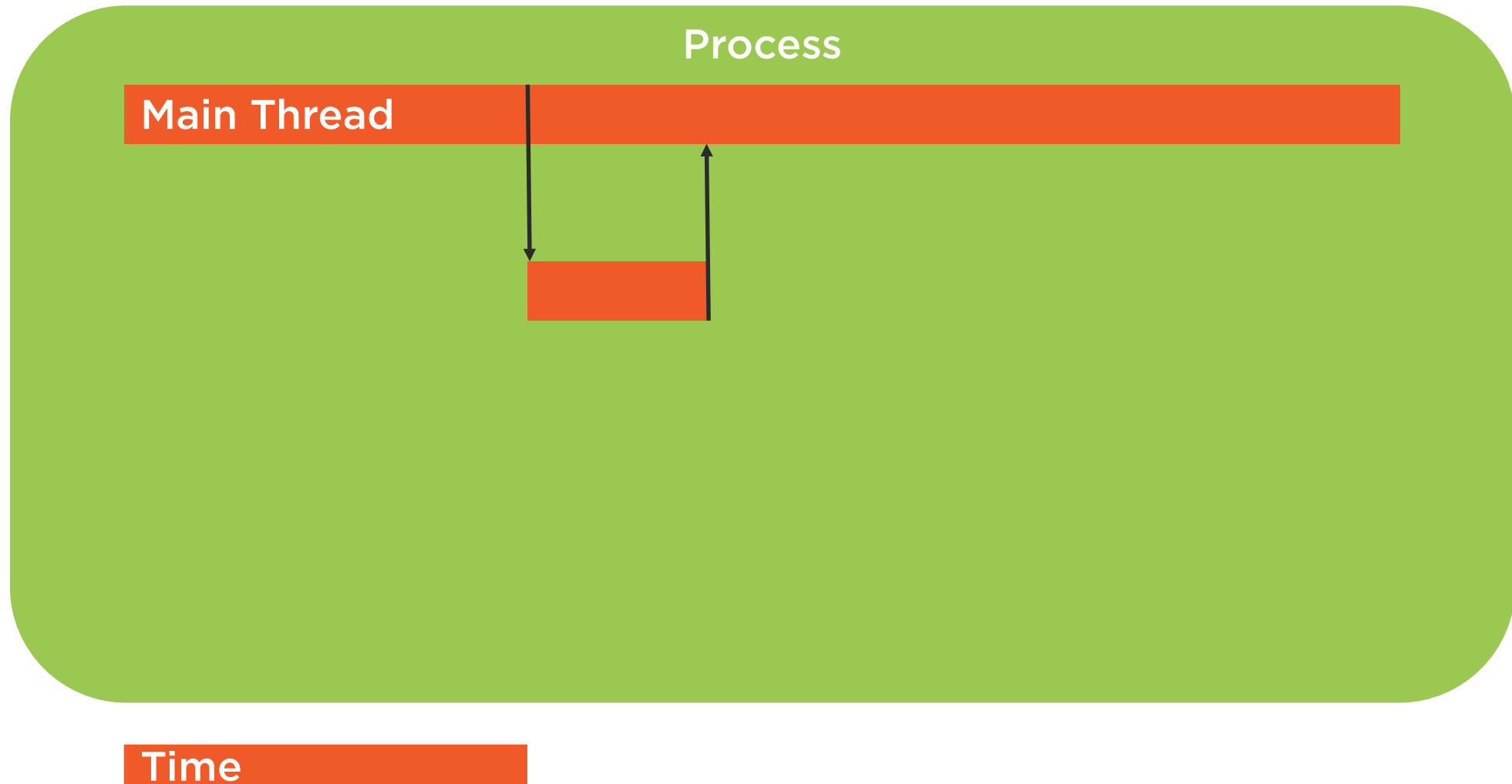
Queries and Activity UI



Queries and Activity UI



Queries and Activity UI



Lifecycle Aware Data Loading

Loader

- Runs query on background thread
- Cooperates with activity lifecycle

LoaderManager

- Coordinates loader and activity



LoaderManager

Each activity has a single LoaderManager

- Manages all loaders for an activity
- Initiates loader execution
- Initiates loader related cleanup
- Provides loader related notifications

Accessing an activity's LoaderManager

- Use getLoaderManager method



LoaderManager

Initializing data loading

- Use initLoader method
- Pass integer ID for loader
- Pass LoaderCallbacks reference



LoaderManager Callbacks

LoaderCallbacks interface

- Notifies of key steps in loader processing

Notification divided into 3 steps

- Request for Loader
- Data is ready
- Time to cleanup



LoaderManager Callbacks

LoaderCallbacks.onCreateLoader

- Request for Loader
- Create and return Loader

LoaderCallbacks.onLoadFinished

- Data is ready
- Receives a reference to the Cursor

LoaderCallbacks.onLoaderReset

- Time to cleanup
- Close associated Cursor



CursorLoader

Loader

- Run query on background thread
- Cooperate with activity lifecycle

CursorLoader

- Specialized Cursor based loader
- Override loadInBackground
- Issue database query
- Return the Cursor



Summary



Avoid queries in activity's main flow

- Can cause inconsistent UI performance
- May cause an ANR error message

Lifecycle aware data loading

- LoaderManager
- Loaders

Summary



Each activity has a single LoaderManager

- Manages all loaders for activity
- Initiates loader execution
- Initiates loader related cleanup

Receiving LoaderManager notifications

- Implement LoaderCallbacks interface
- Create loader in onCreateLoader
- Receive data in onLoadFinished
- Perform cleanup in onLoaderReset



Summary



CursorLoader

- Specialized Cursor based loader
- Override loadInBackground
- Issue database query
- Return the Cursor



Summary



Challenges of multiple queries

- Loader queries may run in parallel
- Be sure all data is available when expected

Restarting a data load

- Load performed once with `initLoader`
- Use `restartLoader`

