REEF Tutorial

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Goal of this tutorial

- Help students start programming!
  - What you need to write in code-level
  - Step-by-step instruction of how to build a REEF application
  - Tips and Q & A

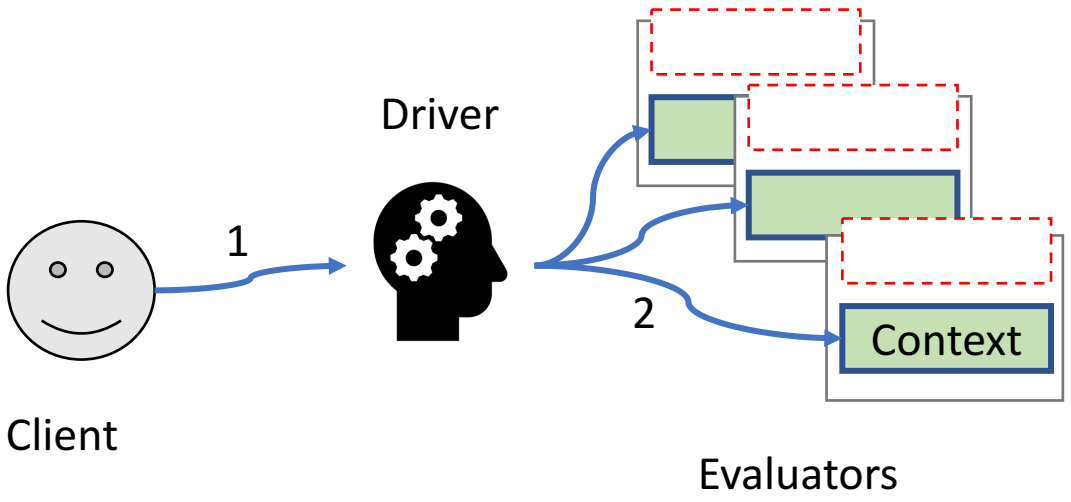
- This is **not** a hands-on practice
  - Most effective solution, but we don't have enough time ☹
  - You will see the TA struggle to write code ☺
    (very similar example with our assignment)
  - Slides will be uploaded, but the code is NOT!

Tips

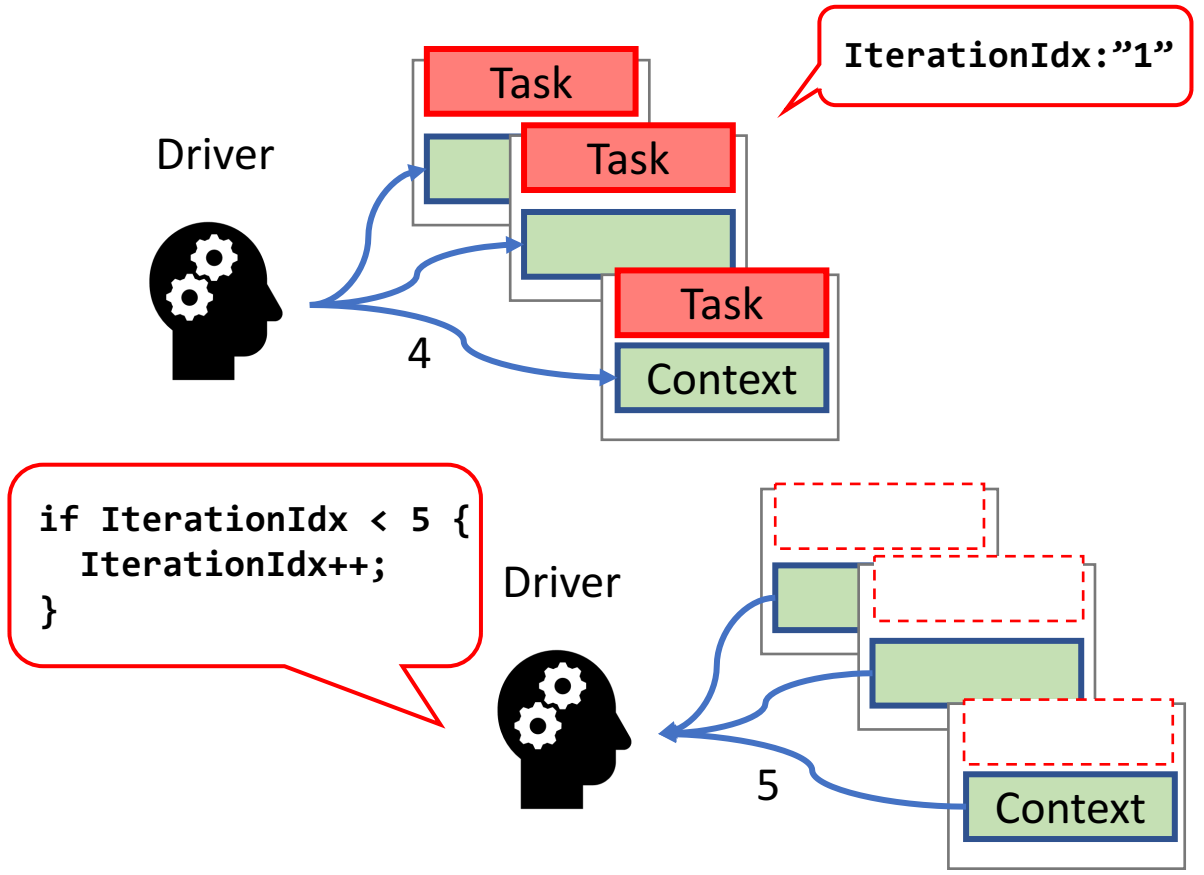
- Coding practices: *checkstyle will not allow you to write a bad code*
  - Add `package-info` (with a newline at the end)
  - `final` as possible
  - …
- REEF beginners' Pitfalls
  - Don't forget the `@Inject` in the constructors
  - Don't forget `@Unit` in the Driver
    - It allows injecting inner classes
    - without injectable constructors
- `Suspend` example will help you understand how `memento` is used

Welcome to IterativeHelloWorld!

- Scenario



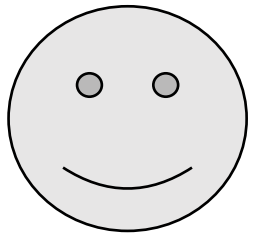
1. Client starts REEF Driver
2. Driver allocated Evaluators
3. Driver submits Context to Evaluators



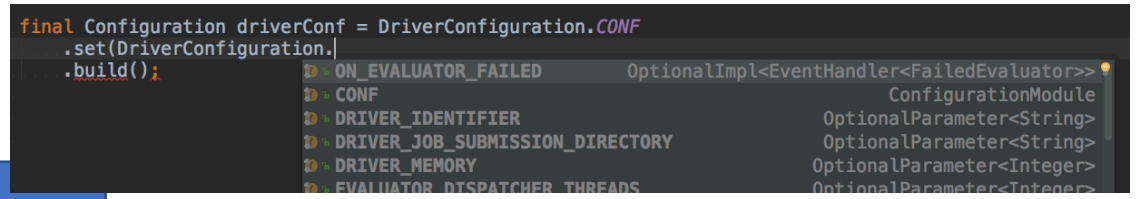
4. Driver submits Tasks to the Contexts
   We will send the iteration idx as Memento
5. Once Tasks completed, check the iteration idx
   and start the next iteration (go to 4)

Client builds the configurations of a REEF job

REEF provides `ConfigurationModuleBuilder`

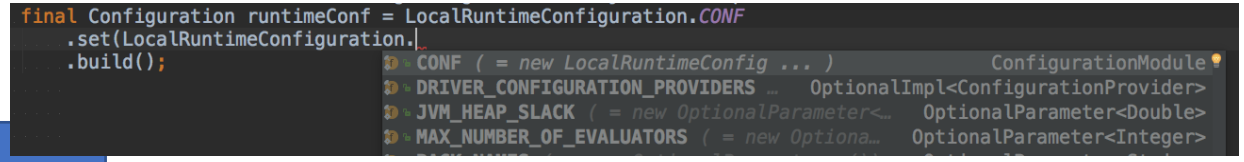


Client



Driver Config

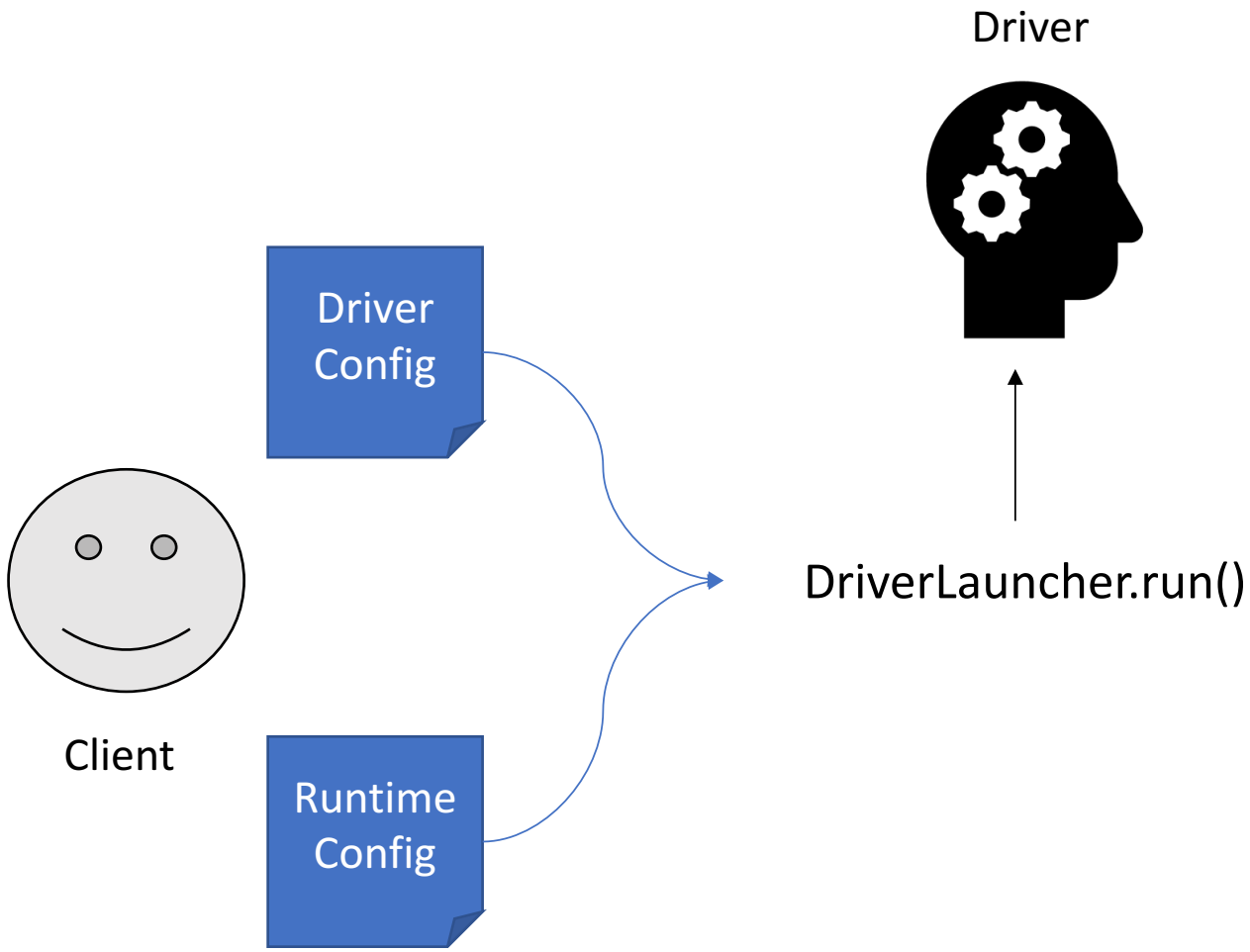
`DriverConfiguration`



Runtime Config

`LocalRuntimeConfiguration`
`YarnRuntimeConfiguration`

Launch the Driver!



On Driver's Start!

- An `EventHandler` configured to `DriverConfiguration.`*`ON_DRIVER_STARTED`* is called

Driver

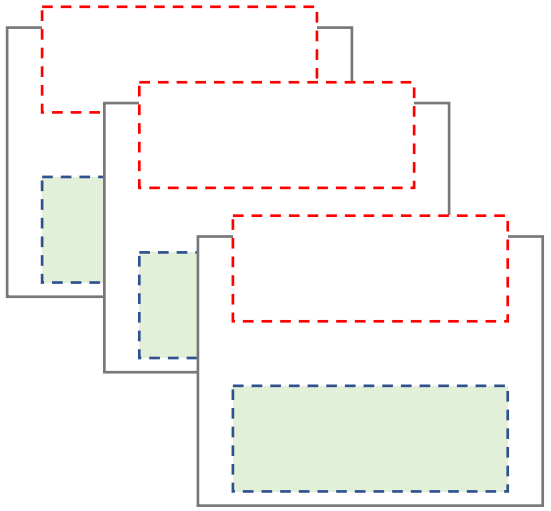
```
public final class StartHandler implements EventHandler<StartTime> {

  @Override
  public void onNext(final StartTime startTime) {
    // Do what you want
  }
}
```

- TODO: Request N Evaluators via `EvaluatorRequestor`
  (Hint: inject the object in the Driver's constructor)

On Allocated Evaluator

- An EventHandler configured to `DriverConfiguration.`*`ON_EVALUATOR_ALLOCATED`* is called

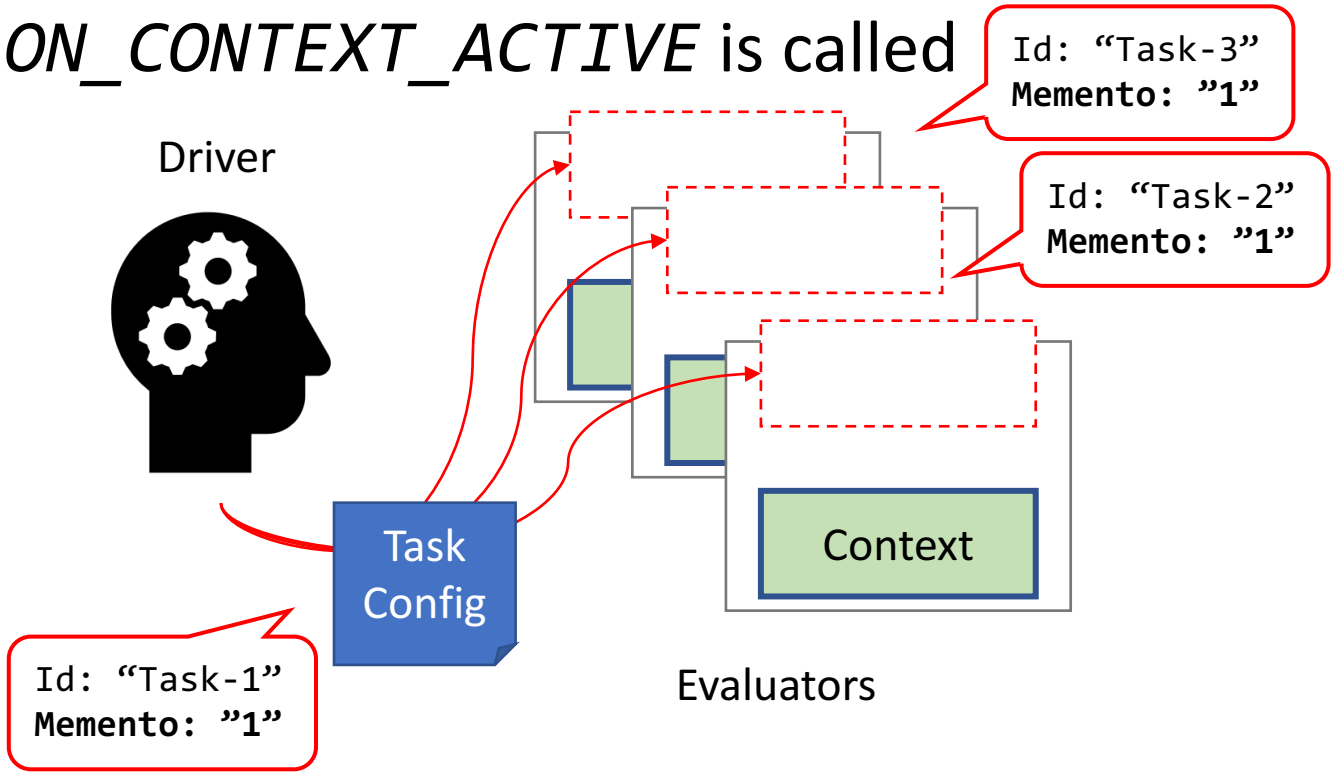

```
public final class AllocatedEvaluatorHandler implements EventHandler<AllocatedEvaluator> {

  @Override
  public void onNext(final AllocatedEvaluator allocatedEvaluator) {
    // Do what you want.
  }
}
```



- TODO: Submit `Context`!
  (Hint: Use `ContextConfiguration`)

On Active Context

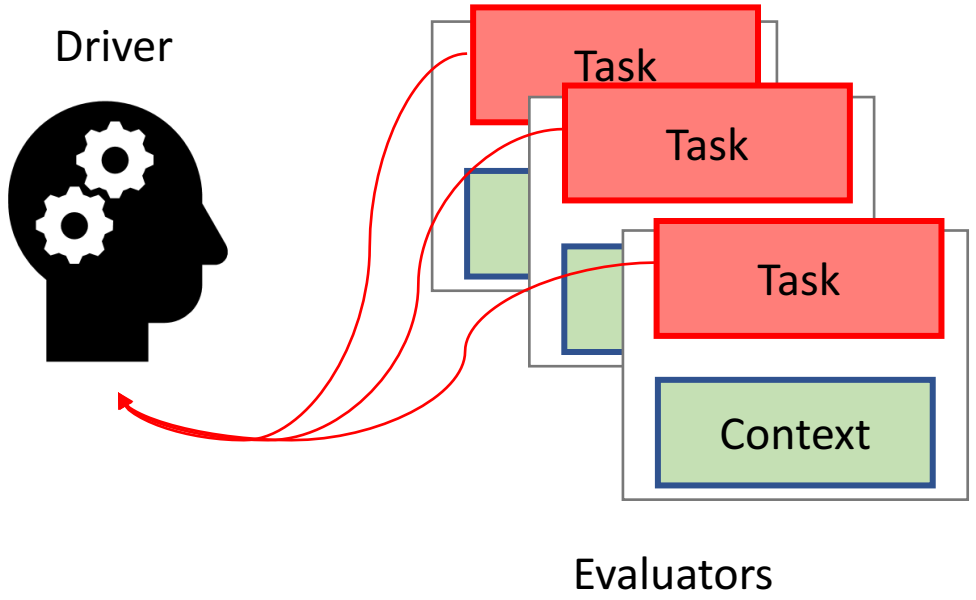
- An EventHandler configured to `DriverConfiguration.`*`ON_CONTEXT_ACTIVE`* is called



- TODO: Submit `Task`!
  Let’s set iteration idx as `Memento`

On Task Completed

- An EventHandler configured to `DriverConfiguration.`*`ON_TASK_COMPLETE`* is called



- TODO: Check `IterationIdx` and repeat!

Q&A?