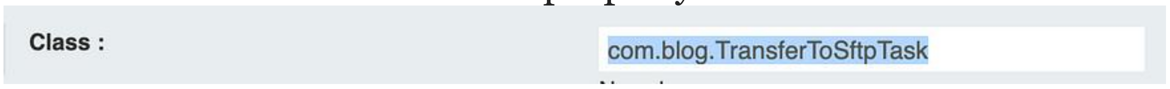
Overcoming Common Hurdles In Flowable

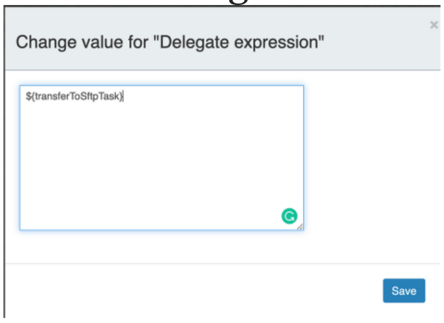
Autowiring Was Not Working In Service Tasks

After I finished modelling my flow in Flowable, it was time to wire the service tasks added in the model with the actual JavaDelegate classes of the application. I first tried giving the fully qualified class name in the Service Task class property.



Class : com.blog.TransferToSftpTask

The class TransferToSftpTask implemented Flowable JavaDelegate interface. The problem with this approach was that any class that I was auto wiring was not getting instantiated and hence, my business logic was failing. After some research, I found that rather than using the class property, I had to use the delegateExpression property and point it to the bean in Spring Application context that implemented the JaveDelegate.



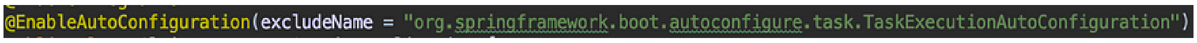
Change value for "Delegate expression"

${transferToSftpTask}

Since delegate expression points to the bean, we need to annotate the TransferToSftpTask as a Component so that Spring creates and injects the bean to the application context.

The Flowable Process Was Not Starting

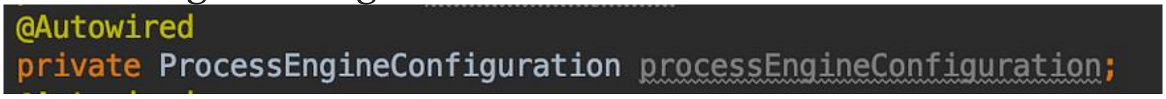
As part of my business flow, I had to copy some files from an S3 bucket to an SFTP folder. I thought of using Spring Integration to achieve this. As soon as I brought in the Spring Integration dependancy, I discovered that my process was not triggering. It’s important to mention that all my service tasks were marked as asynchronous. When we have Flowable and spring-boot-integration-starter in our application, both will try to create 2 beans of TaskExecutor interface. Spring-integration creates a bean of ThreadPoolTaskScheduler, while Flowable tries to create a bean springAsyncTaskExecutor of type TaskExecutor if there are no beans of that type available. Spring boot WebMvc tries to auto-configure a ThreadPoolTaskExecutor, a type of TaskExecutor. When you don’t have the spring integration, Flowable uses this ThreadPoolTaskExecutor. When you have the spring integration, it gets confused as there are two beans of the same type and thus, tries to resolve the dependency by determining if one is primary or has a higher priority. Hence, when we try to start a process and it does not find any, it fails. Spring boot WebMvc injects this TaskExecutor through TaskExecutionAutoConfiguration. Thus, all we needed to do was exclude this TaskExecutionAutoConfiguration from our Spring Boot Auto Configuration.



```
@EnableAutoConfiguration(excludeName = "org.springframework.boot.autoconfigure.task.TaskExecutionAutoConfiguration")
```

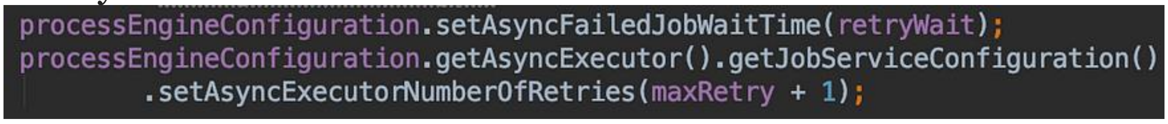
Configuring Retry Mechanism

In its default configuration, Flowable reruns a job three times if there's an exception in the job execution. On the other hand, our clients wanted the number of retries and the delay between two retries reconfigured. This can be achieved in Flowable by auto wiring ProcessEngineConfiguration



```java
@Autowired
private ProcessEngineConfiguration processEngineConfiguration;
```

And then by introducing the following two lines. The method setAsyncFailedJobWaitTime sets the delay in seconds, while setAsyncExecutorNumberOfRetries sets the number of retries.



```java
processEngineConfiguration.setAsyncFailedJobWaitTime(retryWait);
processEngineConfiguration.getAsyncExecutor().getJobServiceConfiguration()
        .setAsyncExecutorNumberOfRetries(maxRetry + 1);
```

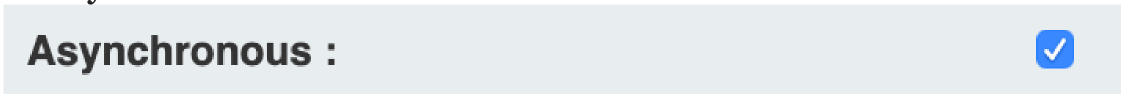
The only thing that we should keep in mind here is that the above code will set the configuration as a whole. If we need more granular-level configuration such as for a specific task, we need a different retry or delay value that can be achieved by adding the following tag in the process XML under the service task tag.

```
<extensionElements>

<flowable:failedJobRetryTimeCycle>R5/PT7M</flowable:failedJobRetr
yTimeCycle>

</extensionElements>
```

Time cycle expression follows the ISO 8601 standard, just like timer event expressions. The example above makes the job executor retry the job 5 times and wait 7 minutes between before each retry. This expression cannot be added through modeller yet, so after the process is modelled and downloaded as XML, the above expression needs to be manually added.

Only Retry The Task That Failed

Our business flow was quite complex. It had two subprocesses running in parallel. Each sub-process has a series of tasks. To keep things simple, let us consider a business flow that has 3 services tasks in sequence. If there was an exception on the third task, Flowable would retry it again from the first task. Though this behaviour is okay for some business flows, this was a problem for the one we had. To resolve this problem, we had to mark each task as asynchronous in the modeller.



Asynchronous : ✓

When a task is marked as asynchronous, Flowable marks them as separate jobs. Thus, when an asynchronous task is executed, Flowable will commit the transaction and the job-related progress will be visible by other components in the database. So now if an exception is thrown in the second task, while the transaction associated with the first task has been committed, the transaction associated with the second task would be rolled back. When the tasks are not marked asynchronous, the same transaction will be associated with all tasks. Thus, an exception in the second task will also rollback the changes done by the first task. After marking the tasks as asynchronous, the retry mechanism only triggered the task where the exception was thrown and not any before that.

Logging Error-Related Information In The Database

This is an extension of the earlier problem I shared. However, once you understand how Flowable manages the transaction, the solution becomes clear. When an exception is thrown in one of the service tasks, we wanted to log an error in our database. But since Flowable was rolling back the transaction, our database save was not persisted. The solution to this problem was simple. We called one more service to persist the data using a REQUIRES_NEW transaction type. This will create a new transaction and suspend the outer transaction. When this method is exited, the new transaction is committed. So now if we throw an exception at the task level, the outer transaction rolls back, while the error log gets persisted in the database.