Lab Exercise 02.03: Rule Execution Control with Salience

Objective:

This lab exercise is designed to advance students' understanding of Drools rule management, focusing on session management, execution control and the practical application of rules for a policy issuance system. Students will create a new demonstration scenario (`demo 6`) under `lesson 04` that involves validating applications, cross-validating application IDs, and issuing new policies based on application approval status. This exercise will utilize salience to control rule execution order.

Prerequisites:

- Basic understanding of Drools rule syntax, session management, and rule attributes such as salience.
- Access to the provided Java classes and repository setup.

Instructions:

Part 1: Setup Demo 6 Directory and Session

1. **Create `demo 6` Directory**: In your project structure, navigate to the `lesson 04` directory and create a new subdirectory named `demo 6`.
2. **Declare New Session in `kmodule.xml`**:
    - Open the `kmodule.xml` file located under `src/main/resources/META-INF`.
    - Declare a new KIE session for `Lesson04 demo 06` as follows:

```
<kbase packages=" org.sw.lesson04.demo6">
  <ksession name="FactInsertionAndExecutionOrderDemo6"/>
</kbase>
```

    - Ensure the package attribute correctly points to where your new rule files will be stored.

Part 2: Adjust FactInsertionAndExecutionOrder Class

1. **Modify `FactInsertionAndExecutionOrder.java`**:
    - Ensure this class can differentiate when to run `demo 6` based on user input or specific conditions set for the exercise.
    - Try to locate and raise the prompt range from 1-5 to 1-6

Part 3: Create Rule Files and Implement Rules

1. **Create New Rule Files in `demo 6` Directory**:

- `ApplicationValidation.drl`
- `ApplicationIDCrossValidation.drl`
- `IssueNewPolicy.drl`

2. **Copy Rules from `lesson03`, `demo2`**:
    - Copy the content of rule files from `lesson03`, `demo2` into `ApplicationValidation.drl` and `ApplicationIDCrossValidation.drl` respectively. Adjust package paths and any necessary attributes to fit the new directory structure.
3. **Implement New Rule in `IssueNewPolicy.drl`**:
    - Ensure that the package declaration at the top of the file matches the new directory (`org.sw.lesson04.demo6`).
    - Create a new rule called `Issue New Policy to Approved Application` that will insert a new policy object to Application with Status.APPROVED. 'premium' and 'coverage' attributes can be hard-coded or randomly generated.
    - Try to create rule yourself. If difficult, collaborate with classmates or, lastly, ask teacher for solution rule.

Part 4: Control Execution Order

1. **Use Salience to control firing order**:
    - Utilize salience to set rule precedence, keeping in mind which rules should fire from first to last.

Part 5: Testing and Validation

1. **Run the Session**:
    - Test the new setup by running the `FactInsertionAndExecutionOrder.java` class, ensuring to prompt or select `demo 6` accordingly.
    - Verify that applications with `Status.APPROVED` have new policies issued, and the order of rule execution is as expected, preventing invalid policy issuance and unnecessary rule reruns.

Evaluation Criteria:

- Correct implementation and integration of the new `demo 6` scenario.
- Proper use of salience to control rule execution order.
- Successful demonstration of rule functionality, particularly the issuance of new policies to approved applications without errors.