

Assignment: Configurable Form and Workflow Engine

Objective

Design and implement a minimal system that allows:

- Admins to configure forms
- Admins to configure a state machine-based workflow
- Users to submit forms, triggering the associated workflow
- Role-based actions to move the workflow between states
- Authentication and role management via Keycloak

Problem Description

You are tasked with building a small, modular system that enables:

1. Form Configuration:

Admins should be able to define form templates using JSON Schema or a similar structure.

Example:

```
{
  "title": "Leave Application",
  "fields": [
    { "name": "reason", "type": "text", "required": true },
    { "name": "from_date", "type": "date" },
    { "name": "to_date", "type": "date" }
  ]
}
```

2. Workflow Configuration:

Admins define workflows as state machines. Each workflow:

- Has one or more states (e.g., Draft → Review → Approved → Closed)
- Has transitions allowed from one state to another based on roles
- Triggers when a form of a given type is submitted

Example:

```
{
  "states": ["Draft", "Review", "Approved", "Closed"],
  "transitions": [
    { "from": "Draft", "to": "Review", "allowed_roles": ["Employee"]
  },
    { "from": "Review", "to": "Approved", "allowed_roles": ["Manager"]
  },
    { "from": "Approved", "to": "Closed", "allowed_roles": ["HR"] }
  ]
}
```

3. Form Submission & Workflow Execution:

- Authenticated users fill and submit forms
- Form submission creates a workflow instance at the initial state
- Users with allowed roles can transition workflow states via UI

4. Authentication & Role Management:

- Use Keycloak for user login and role-based access
- The system should validate user roles via Keycloak before allowing transitions