# Assignment 2: Business Rules at Work

## Objective

The goal of this assignment is to apply the ZEN business rule engine and JDM Editor to automate decision-making processes within a university setting. You will create a business rule model that governs **a specific university process**, such as student admissions, course enrollment, scholarship eligibility, or grading policies. The choice of process is entirely up to you, but you should aim to implement between 5 and 8 different business rules.

### Part 1: Selecting a Decision-Making Process

Before designing a model for a specific process, you should select and analyse a specific decision-making process within a university. This process should align as closely as possible with reality, but you have some creative freedom and do not need to strictly adhere to a real-world context if your selection is well-motivated. If you choose **one** of the following processes, you may want to consider the correspondingly listed aspects:

- **Student Admissions:** Define rules for student eligibility based on criteria like GPA, and previous qualifications. These rules will help automate the decision-making process regarding whether a student can be admitted to the university or not.
- **Unit Enrollment:** Implement rules related to prerequisites and maximum seat limitations for unit registrations. The rules in this process will help ensure that students can only enroll in units for which they meet the necessary requirements and that class sizes are not exceeded.
- **Scholarship Eligibility:** Automate eligibility checks based on academic performance, financial need, socioeconomic status and extracurricular activities using rules. These rules will determine whether a student qualifies for scholarships based on their overall profile.
- **Grading Policies**: Define rules for grading structures, pass/fail conditions, and retake rules. The rules in this case will govern how grades are assigned, what constitutes passing, and how retakes are handled for students who do not meet the required grade thresholds.

### Part 2: Writing a Specification

Create a PDF specification document that details the scope of your selected process. This document should describe the process that you are going to model, the data structures and business rule statements that you plan to implement, the required functions (if any), and the tests that you will use to evaluate your implementation. The complete specification document should not exceed four pages and must include the following sections:

***Process Description***

Provide a concise (half-page) summary of the process and explain and refer to the sources of information used as a basis for modelling.

***Data Structures***

Incorporate the expected data structures in your specification document to define how the information is organised; for instance:

- Students (Attributes: ID, name, GPA, test scores, financial aid status)
- Courses (Attributes: course ID, name, prerequisites, max seats)
- Scholarships (Attributes: scholarship ID, GPA requirement, financial need threshold)

***Business Rule Statements***

Outline all the rules in precise natural language that govern your selected process within your process description; for example:

- If a student's GPA is 3.0 or higher and their test score is at least 75, then they qualify for admission.

Make sure to address different types of business rules. For example, in the context of admissions:

- If the entrance exam score is below the required threshold, the application is rejected unless the student qualifies for an exception (such as strong academic records or relevant work experience).

***Tests***

Make sure the specification document includes the tests designed to evaluate the decision model, and represent these tests using JSON notation for clarity and structure.

**Part 3: Implementing the Decision Model**

Use the JDM editor, create a rule-based decision model that automates the university process based on your specifications outlined in the specification document. Once completed, save the model as a JSON file.

**Part 4: Testing and Validation**

Test your process scenario using the JSON requests outlined in the specification document. Adjust rule conditions if needed to ensure accurate decision-making.

### Part 5: Video Presentation

Create an MP4 video that begins by outlining the selected process in your specification document and explaining your design choices (1 minute). Next, use the JDM editor to guide the viewer through the JDM implementation of your decision model, detailing how you incorporated the rules and functions (3 minutes). Finally, demonstrate how you tested the rules according to the tests outlined in your specification document, while also reflecting on any limitations encountered or insights gained during the testing process (1 minute). Ensure your face is visible in a window while delivering the video presentation. You can use Zoom to record your video.

### Submission

You must upload the following four items to iLearn before Friday, 2nd May 2025: 23:55:

- Specification document as a PDF file (limited to a maximum of 4 pages);
- JDM graph in JSON format;
- A screenshot of the complete JDM graph;
- MP4 video (5 minutes in length; +/- 10%).

### Assessment Rubric

This assignment is worth 35 marks (= 35%) in total. Marks will be awarded according to the following criteria:

| Criteria | Excellent | Good | Satisfactory | Needs Improvement | Marks |
|---|---|---|---|---|---|
| **Part 1: Decision-Making Process Selection** | Clearly identifies a relevant university process with well-justified selection and a strong understanding of real-world applications. Demonstrates deep analysis of key decision-making aspects. | Identifies a university process with reasonable justification. Some real-world considerations are addressed. | Process is identified but lacks strong justification or real-world relevance. Some aspects may be unclear. | Process selection is vague, lacks justification, or does not align with the assignment objectives. | **5** |
| **Part 2: Specification Document** | Well-structured specification with clear, concise descriptions of the process, data structures, business rules, and test cases. Includes well-formatted JSON tests. | Generally clear and well-structured specification. Some minor areas lack clarity or completeness. JSON tests are included but may have minor issues. | Specification is somewhat organized but lacks details in one or more areas. JSON tests may be incomplete or unclear. | Specification is poorly structured, missing key sections, or lacks coherence. JSON tests are missing or incorrect. | **5** |

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| **Part 3: JDM Decision Model Implementation** | Fully functional and well-structured JDM decision model. Correctly implements all specified business rules. | Mostly functional JDM model with minor errors or missing elements. | JDM model is present but has significant errors or missing key components. | JDM model is incomplete, incorrect, or not submitted. | **10** |
| **Part 4: Testing and Validation** | Demonstrates thorough testing with well-documented outcomes. Adjustments and refinements are clearly explained. | Adequate testing is conducted, but documentation of outcomes and refinements could be stronger. | Some testing is performed, but results are unclear or lack proper documentation. | Testing is missing, unclear, or lacks meaningful results. | **5** |
| **Part 5: Video Presentation** | A professional and engaging video featuring clear explanations, a demonstration of JDM implementation, and an effective walkthrough, with the presenter appearing on screen. | Video is clear and informative but may lack engagement or have minor technical issues. Presenter appears on screen. | Video is somewhat unclear or lacking in key explanations. Presenter may not appear consistently. | The video is unengaging, poorly organised, missing key elements, or does not feature the presenter. | **10** |