Designing Decision Modeling and Notation using Camunda Modeler

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Abstract

In this article we are analyzing how to implement a Decision Modeling and Notation table for a Login Page using Camunda BPMN Modeler. Usernames or Login-IDs and Passwords are widely used as Login Credentials for accessing or logging securely into Computers, Computer Networks, Mobile Phones, Social Media Profiles and so on. In Business, every user or employee as his/her own user credentials. This way information is accessible to those a particular access based on. In this article we will be creating a simple Login Page by integrating Decision Rule into a Camunda BPMN.

1. Introduction

What is a Decision Model and Notation (DMN)?

Decision Model and Notation (DMN) is an industry standard for modeling and executing decisions that are determined by business rules. The DMN is a standard approach that provides the industry with a modeling notation for decisions that will support decision management and business rules. This notation is designed to be easily understood by business and IT users alike. This enables various groups to effectively collaborate in defining a decision model:

● the business people who manage and monitor the decisions,

● the business analysts or functional analysts who document the initial decision requirements and specify the detailed decision models and decision logic,

● the technical developers responsible for the automation of systems that make the decisions [1].

Why Decision Model and Notation?

DMN was published in 2015 and is currently adopted quickly by the industry. DMN can be easily modeled and understood by Business Analyst, Software Developer, Software Test Engineer and other technical or non-technical groups in industry. Business analysts can model the rules that lead to a decision in easy to read tables, and those tables can be executed directly by a decision engine (like Camunda, FICO DMN Modeler). This reduces the risk of misunderstandings between business analysts and developers, and it even increase the possibilities of rapid changes in production.

What is BPM?

BPM stands for Business Process Management. It is a discipline in which one can use various methods to discover, model, analyze, measure, improve, optimize, and automate business processes. BPM sees processes as important assets of an organization that must be understood, managed, and developed to announce and deliver value-added products and services to clients or customers. BPM helps in aligning Business Process to its Business Strategy.

Business Process can be analyzed and modeled using BPM tools like PEGA, IBM BPM, Camunda BPM [2].

What is BPMN?

BPMN stands for Business Process Model and Notation. It is a graphical representation for specifying business processes in a business process model. It was initially developed by the Business Process Management Initiative (BPMI) and BPMN has been maintained by the Object Management Group (OMG). BPMN supports only the concepts of modeling applicable to business process [3].

How to design a DMN?

1. In Camunda Modeler tool, go to File -> New File-> DMN Table (recommended) or DMN Diagram

2. A new DMN file will be created as shown below

Figure 1: Decision Table

3. Below is a Sample Decision Table that we have modeled for your understanding:

Figure 2: Decision Table

4. Provide a unique and appropriate Decision Name and Decision ID for the Decision table in the upper left corner

5. Below the Decision ID we have an "U", which stands for Unique. This is Hit Policy that needs to be specified. Here 'Unique' means that, when a decision has to be made, only one of the rows below can be true.

6. In this case, only if the user enters input value for Username as "demo" and input value for Password as "demo" an output will be provided. Else decision table will not provide an output.

7. Click on the Input Label to provide an unique Input Label and set the Input Expression as shown below figure 3. An Input Label is a short description of the input. And an Input Expression is a simple reference variable which will be evaluated by DMN engine.

Figure 3: Input Label and Input Expression

8. Click on the Input Type Definition to select the Input Type as shown below 3

Figure 4: Select Input Type

9. Provide desired Input values and Output values as shown below

Figure 5: Provide Input values and Output values

10. Your sample DMN Table is ready
11. Now let's create a BPMN model to incorporate above DMN table to an application [4].

2. Designing a BPMN Model

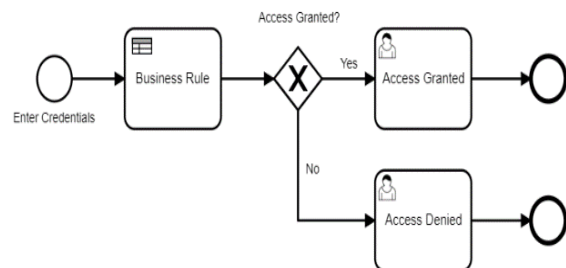1. Create a new BPMN model using Camunda Modeler as shown in below figure:

Figure 6: BPMN Model

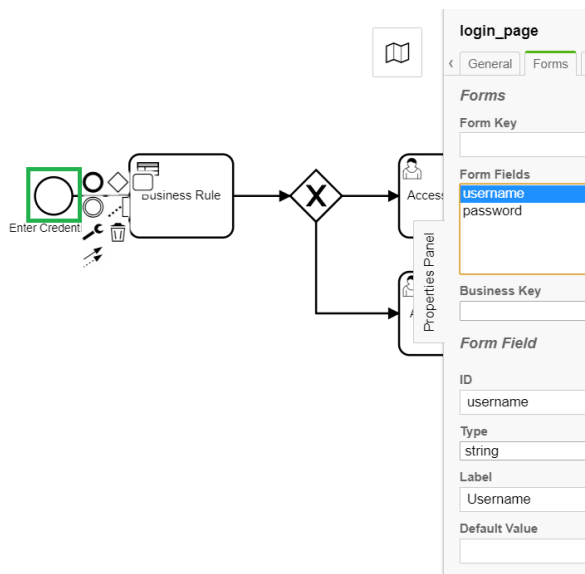2. Click on Start Event highlighted on below figure:

Figure 7: Start Event

Figure 9: Sequence Flow

7.   Click on Access Granted task as highlighted in below figure and add a Form field in Properties Panel as shown in the figure

3.   Go to 'General' tab in Properties Panel, and set id as 'login_page' and name as 'Enter Credentials'
4.   Go to 'Forms' tab in Properties Panel, and add a Form Field by clicking '+' symbol. Set Form Field ID as 'username', Type as 'string' and Label as 'Username. Similarly create another Form Field for Password
5.   Click on Business Rule task, and configure Properties as shown in below figure

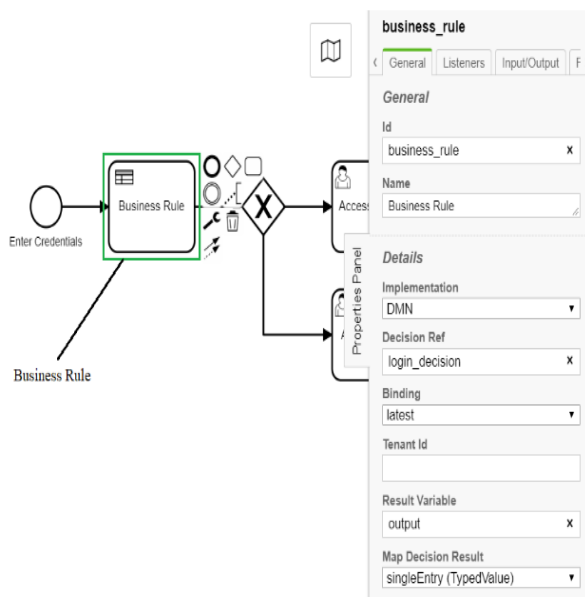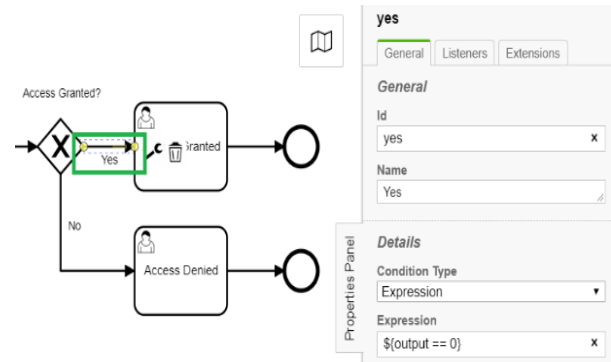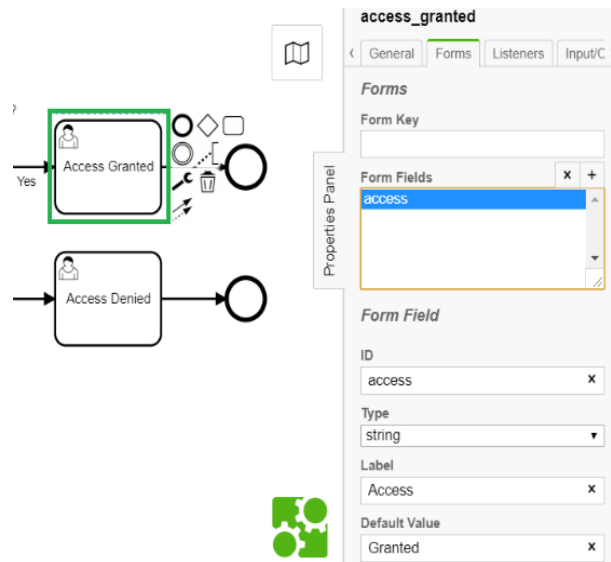Figure 10: Access Granted Task

Figure 8: Business Rule Task

6.   Click on Conditional Sequence Flow as highlighted in below image and configure Condition Type and Expression fields in Properties as shown below image

8.   Similarly configure 'No' Conditional Sequence Flow and 'Access Denied' Task as shown in below images
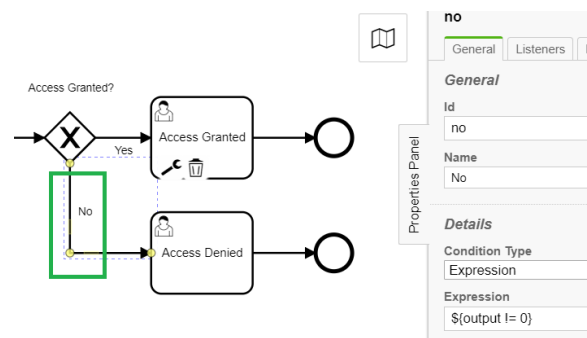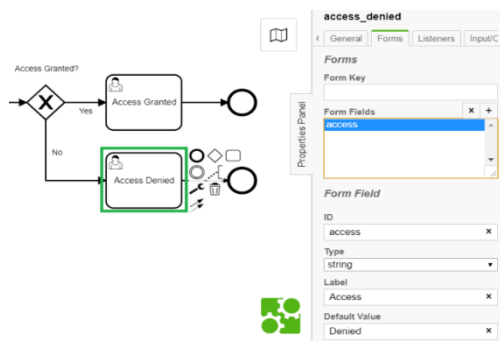

Figure 11: Conditional Sequence Flow 'No'

Figure 12: Access Denied Task

9.   Save both DMN and BMPN files.

3.   Run The Application

1.   Run Camunda BPM Platform
2.   Once Camunda BPM is running successfully, then Deploy both DMN and BPMN files from Camunda Modeler tool by clicking Deploy button as highlighted in below figure

Figure 13: Deploy Button

3.   Once both DMN and BPMN files are successfully deployed, go to Camunda BPM platform and start the application from the tasklist.
4.   Our application will look as below:

Figure 14: Login Page

5.   Enter Username as "demo" and Password "demo"
6.   Go to tasklist and check for new task in All Task tab
7.   Access Granted window will displayed as shown in below figure

Figure 15: Access Granted page

8.   We finally created a simple Login Application using Decision Table (DMN) and BPMN Model [5]

4.   Conclusion

Decisions are part every Business. And hence Decision Tables play an important role in Business Process Model. While developing Application, Decisions are usually implemented using an If condition along True and False statements using a programming language such C or Java. But software coding is generally not understood by non-technical users such a Business Analyst or a Client. DMN becomes easy to be understood by a non-technical user, since DMN can graphically represent Decisions in a Business Process and can be easily incorporated into a BPMN model.

References

[1]   Biard, Thierry & Mauff, Alexandre & Bigand, Michel & Bourey, Jean-Pierre. (2015). Separation of Decision Modeling from Business Process Modeling Using New "Decision Model and Notation" (DMN) for Automating Operational Decision-Making. 4(63). Pp:489-496. 10.1007/978-3-319-24141-8_45.
[2]   Debevoise, T., Taylor, J.: The MicroGuide to Process and Decision Modeling in BPMN/DMN: [Building More Effective Processes by Integrating Process Modeling with Decision Modeling]. (2014).
[3]   https://camunda.com/dmn/
[4]   https://docs.camunda.org/get-started/dmn11/model/
[5]   https://docs.camunda.org/manual/7.6/reference/dmn11/decision-table/input/