Fibonacci Numbers

The *Fibonacci Numbers* pattern creates a Business Process representing the generation of Fibonacci numbers and a BPSim configuration element and a number of reports. Fibonacci numbers are a sequence where every number (after the first two) is the sum of the two proceeding numbers. The recurrence relation (Fn = Fn-1 + Fn-2) is encoded into the process diagram algorithmically using the Activities and a Gateway.

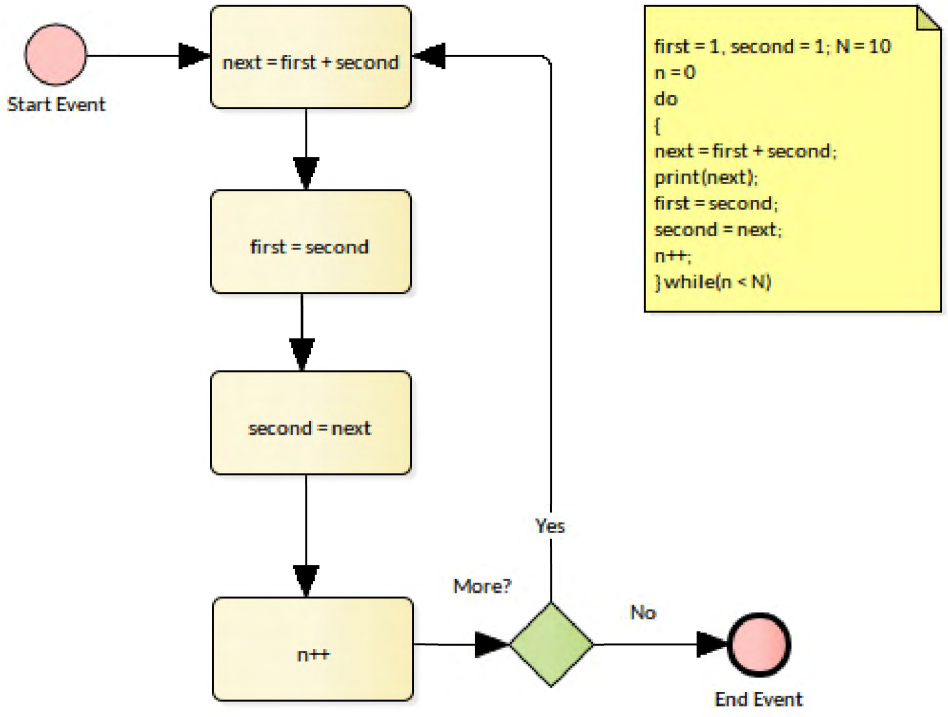

Figure 1. Shows a Business Process diagram that is used to encode the recurrence relation. A gateway is used to check whether the upper bound of the sequence has been reached.

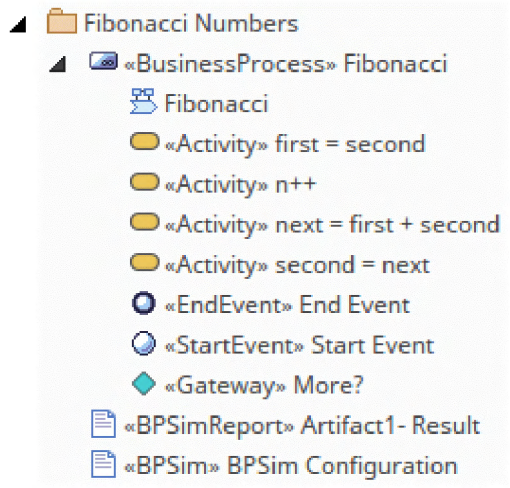

Figure 2. Shows the structure of the elements and diagrams in the Project Browser.

Reference

The following help topics will assist you learn about how to work with this pattern.

Business Process Simulation (BPSim)

Using the MDG BPSim Execution Engine

The BPSim Control Perspective

The BPSim Resource Perspective

The BPSim Time Perspective

Configuration Inheritance

The following are some of the tools that will be helpful when working with this pattern.

Business Process Simulation (BPSim)

The BPSim facility provides a way of simulating processes written in Business Process Model and Notation (BPMN), providing valuable results that can be used in process analysis. The BPMN models are augmented with extra data as parameters to the simulation. It allows structural and capacity analysis to be performed, providing for pre and post execution optimization. Enterprise Architect allows you to construct the

Process models and enter the appropriate data, which is then sent to an internal or external BPSim Simulation engine. For more details see the Business Process Simulation (BPSim) help topic.

Artifact

An Artifact can be used as a way of configuring the parameters used or the BPSim simulation For more details see the Artifact help topic.

BPMN Business Process Diagram

Business Process Diagrams are part of the Business Process Model and Notation (BPMN) standard and allow a modeler to document a business process, including the way the process starts, what work is performed and how it ends. Gateways and connecting lines determine the sequence of activities. Current state and Future state process models can be created and managed in Enterprise Architect. The diagrams can be organized into a process hierarchy allowing drill down from high level to lower level diagrams. BPMN is emerging as an important standard for modeling business processes and has gained much traction with business and technical communities. It can be automatically generated to the Business Process Execution Language (BPEL), which is an XML based language that can be ingested by a number of orchestration engines. For more details see the BPMN Business Process Diagram help topic.

UML Activity Diagram

Activity diagrams are one of the Behavioral Unified Modeling Language diagrams and allow a modeler to describe the sequence of behaviors including how they start, what work is performed and decisions that change the flow and the way the process ends. They are a useful alternative to using other diagrams such as flow charts and business process diagrams. The syntax of activity diagrams when Actions and Pins are used can be drawn at the execution level and express detailed system semantics. For more details see the Activity Diagram help topic.

Specification View

The Specification View can be used as a way of working with any element type in a spreadsheet or word process view. It is particularly useful when there are a large number of elements as is typically the case when describing a system of any appreciable size. For more details see the Specification View help topic.

Relationship Matrix

The Relationship Matrix provides a spreadsheet like view of two groups of elements and the relationships that exist between them. It can be a used as a powerful analysis

mechanism to visually indicate how elements are related to each other and to discover which elements are missing relationships. For more details see the Relationship Matrix help topic.

Traceability Window

The Traceability Window automatically displays the relationships that exist between Use Cases and other model elements including up-process and down-process elements. The traceability tree view can be conveniently expanded to see deeper relationships and elements displayed in the window can be located in all diagrams in which they appear. For more details see the Traceability Window help topic.

Document Generator

The Document Generator is a powerful facility in Enterprise Architect that allows a Database Engineer or other stakeholder to create high quality corporate or technical documentation directly from the model, suitable for internal or external audiences. For more details see the Documentation help topic or the more general topic on Model Publishing.

Image Manager

The Image Manager is a tool for managing images such as photos and screen shots and other pictures in a variety of formats. Often when observations are made an analyst will take one or more photos of a user in situ in their work environment. An analyst might also capture screen shots of the current applications the user is working with. All these digital assets can be imported into the Image Manager and then applied to elements in diagrams as an alternate image. Alternatively a picture contained in the Clipboard can be pasted directly into a diagram. For more details see the Image Manager help topic.

Scenario Builder

The Scenario Builder is a productive and unique tool and editor that allows the analyst to work with the text of Use Cases and Scenarios directly inside the model. Many analysts will be familiar with creating long and voluminous Word Processor documents describing the details of Use Cases. With the Scenario Builder the descriptions and steps of Scenarios can be entered directly into the repository and linked to other elements. Alternate and Exception paths can be defined including branch and re-entry points. Diagrams representing the steps in a scenario can be generated and automatically synchronized. For more details see the Scenario Builder help topic.

Model Simulator

Model Simulation brings your behavioral models to life with instant, real-time

behavioral model execution. Coupled with tools to manage triggers, events, guards, effects, breakpoints and simulation variables, plus the ability to visually track execution at run-time, the Simulator is a powerful means of 'watching your behavioral models in action' and verifying their correctness. With Simulation you can explore and test the dynamic behavior of models. For more details see the Model Simulation help topic.

Element Discussions

The Element Discussion facility is a fully featured collaboration tool allowing modelers and model viewers and reviewers to communicate with each other directly inside the repository. Modelers using the full client or occasional viewers using WebEA can both post and reply to discussions and communicate and engage in chat. For more details see the Element Discussions help topic.

Hand Drawn and Whiteboard Diagrams

The Hand Drawn and Whiteboard Mode are display options available for any diagram that changes a system-drawn diagram to appear as though it was drawn by hand and, optionally, hand drawn on a whiteboard. It is a powerful device to engage an audience by presenting the diagram in a rough and more immediate style giving the impression that it is just a sketch that can be changed. For more details see the Hand Drawn and Whiteboard Mode help topic.

Alternate Images for Diagram Elements

Most standard elements allow an alternate image to be defined for an element that will be used in place of the graphical notation for the element either on a selected diagram or as a default on all diagrams. For more details see the Using the Image Manager help topic.

Diagram Layout

The Diagram Layout tool allows you to layout an entire diagram, selected elements or sections of a diagram to make it more visually appealing or meaningful to a particular audience. There are a wide range of layout types to choose from and some types have filters that can be applied. For more details see the Diagram Layout help topic.

Pan and Zoom

The Pan and Zoom facility is one of the tools that can be used to navigate around a large diagram. Often the resolution of a diagram must be reduced to ensure it is wholly visible but by using the Pan and Zoom window you can leave the diagram at a readable resolution and pan around to areas of interest zooming in when necessary. For more details see the Pan and Zoom help topic.

Diagram Legends

The Diagram Legend facility is useful for manually or automatically changing the appearance of elements and connectors on a diagram. A legend can be added from the Common Toolbox and configured to codify the fill and line color and line thickness. This is a powerful way to add meaning and expression to a diagram and is particularly expressive when applied automatically based on element or connector properties. It can be used with a number of specialized diagrams such as roadmaps to create a powerful visualization. For more details see the Diagram Legends help topic.