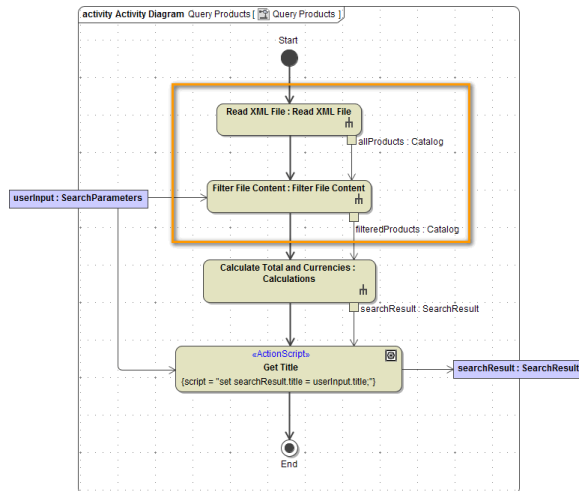# Activities Lesson 3.1 MD18

The next step in the development process is to model the implementation of the operation **queryProducts** .

The first step when modeling complex activity diagrams is to define a rough sketch of the activities. The picture below shows the completed activity diagram and provides an overview of all required UML elements.

Reading the XML File

The first action calls the activity **Read XML File** and contains actions to read the XML file and to create the output object **allProducts**, which is of type **Catalog**. The object contains the data **title**, **category**, **ma nufacturer**, **seller**, **sellerType**, and **priceUSD** for each product record. To retrieve the data from the XML file you need to use the file system adapter.

The second action calls the activity **Filter File Content**, which has two input objects: the object **userInput** of type **SearchParameters** containing the array **keywords**, and the object **allProducts**, which is the output of the first action **Read XML File**. The output of the activity **Filter File Content** is a subset of records that have been read from the XML file. The filtered data is assigned to the output object **filteredP roducts**. The object **filteredProducts** is of type **Catalog**.

The third action calls the activity **Calculate Total and Currencies**. For each product record found in the input object **filteredProducts** the attribute **PriceCHF** and some other data, such as total and delivery charge, is calculated and written to the final object **searchResult**.

The last step in the control flow is the action node called **Get Title**. It has two input objects, **userInput** and **searchResult**. The object **userInput** also contains the attribute **title**, which will be assigned to the attribute **title** of object **searchResult**.

In this first iteration, you will draw the reading of the XML file and the filtering of the file content, marked in the figure above. As no calculations will be done yet, the output parameter will be a list of products.
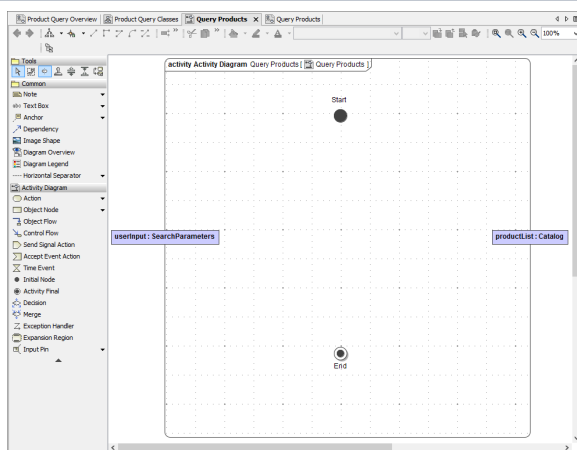
Now, start drawing the activity diagram.
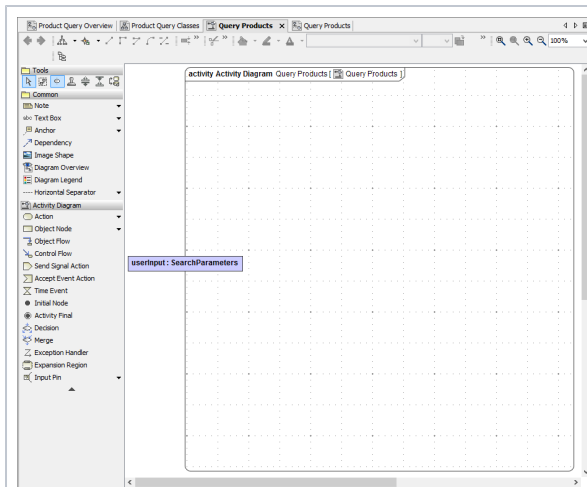
Add the input parameter **use rInput** to the diagram frame.
Place it on the left diagram frame border.
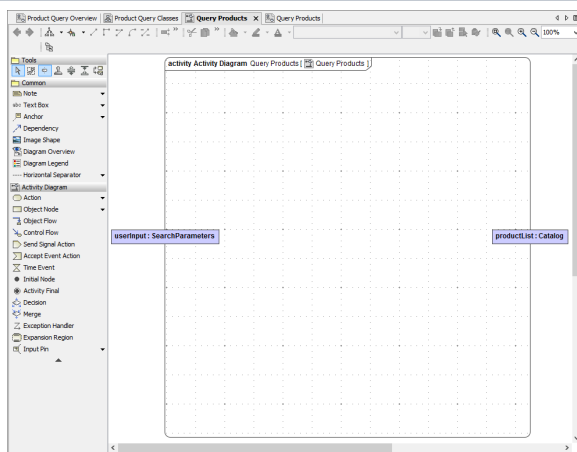
Add the output parameter **pro ductList** to the diagram frame.
Place it on the right diagram frame border.

Add an initial node and an activity final node to the activity diagram.
Assign the names **Start** and **End**.

Save the UML model.