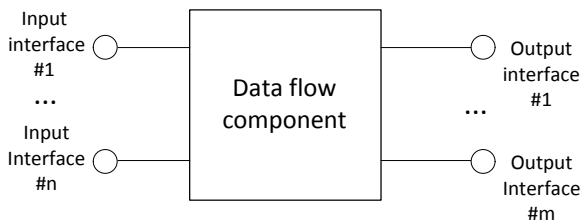
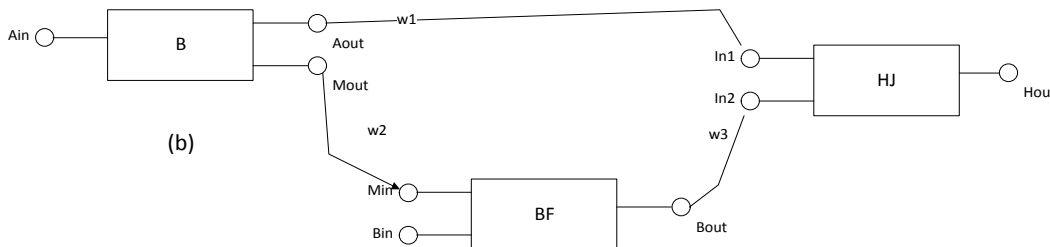


Homework #2: Due Thursday October 6th, 8pm

Recall a **dataflow graph** consists of named nodes called **components** and a set of named directed edges called **wires**. Each node has zero or more input interfaces on the left and zero or more output interfaces on the right. The diagram below shows a component with n inputs and m outputs. *A constraint is that every name must be unique.*

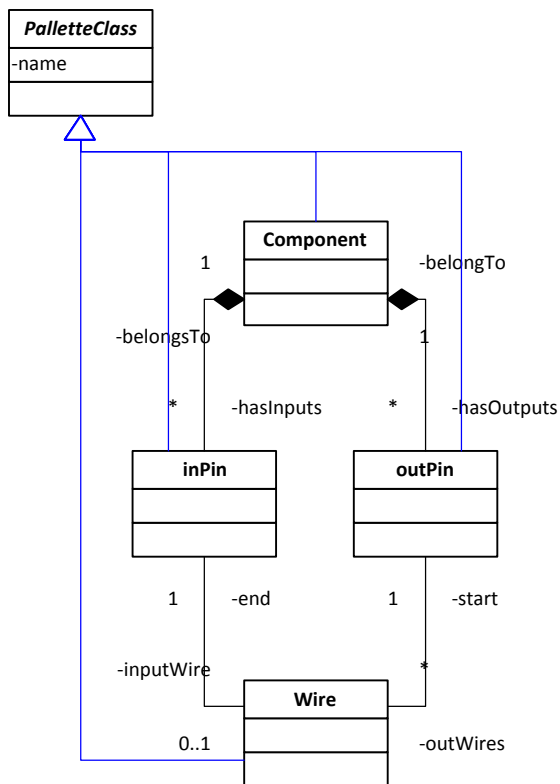


An instance of a dataflow graph is shown below that connects 3 nodes:



Your manager likes the solution to the right (which may be the one that you proposed). Here's the problem: customers do not want to constantly build components from scratch. They want a library of components (that they can add to), AND that each member of this library appear on the palette which currently has only the "Component", "inPin", and "Wire" primitives, so that customers can simply drag and drop instances of components like B, BF, and HJ.

1. How would you modify this diagram to allow for this? And how would your MDE editor have to change to support this?



2. Some time later, your manager comes to you and says customers want an additional feature that allows them not only to drag-and-drop predefined components on to a canvas (Problem #1 of this assignment), but also be able interpret a component as an interface and bind it to one or more implementations. Shown below is a sketch of what he has in mind. A dataflow graph is surrounded by a dashed-box boundary. Its inputs and outputs must correlate with the input and output pins of an interface (shown below called HJA). Each interface can have zero or more implementations. HJA below has 2 such implementations.

How would you modify your diagram to allow for this? And how would your MDE editor have to change to support this addition?

