WESTERN UNIVERSITY - CANADA
FACULTY OF ENGINEERING,
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

SE 2203B – SOFTWARE DESIGN

Laboratory 4: MagicDraw – Class Diagrams

Due Date: February 17, 2023 – 11:55PM

1 Goal

- In this Lab you will learn how to use MagicDraw to create UML Class diagrams.
- If you did not install Cameo Systems Modeler already, please refer to Appendix A (posted with Lab3 instructions) to download, install, and get started with the MagicDraw software.

2 Directed Work

2.1 Task 1: Create a class diagram

- A class diagram is a graphic representation of the static structural model. It shows classes and interfaces, along with their internal structure and relationships. The classes can be related to each other in a number of ways: associated (connected to each other), dependent (one class depends/uses another class), specialized (one class is a subtype of another class.
- To create a class, first create a new SysML project (UML project). From the File menu, choose New Project and then select the SysML Project icon. Name the project "*yourUwoId*_Lab4.mdzip", don't leave it untitled, and click OK. Note that, *yourUwoId* is the first part of your UWO email address before the @ sign.
- Using the menu option Diagrams → Create Diagram. In the diagrams toolbar, double click on the Class Diagram icon. See Figure 1.
- The diagram will be created and the diagram pane appears. Enter a name of the new class diagram instead of "Untitled1", **please name it Lab4-1.**

2.2 Task 2: Create a new class element in diagram

- The panel on the immediate left of the diagram pane provides an easy way of creating a class by dragging the class icon  onto the pane and start typing the name immediately, to stop click anywhere else in the diagram pane.
- Now, add two classes on the diagram pane and name them "FieldOfficer" and "EmergencyReport", see Figure 2.

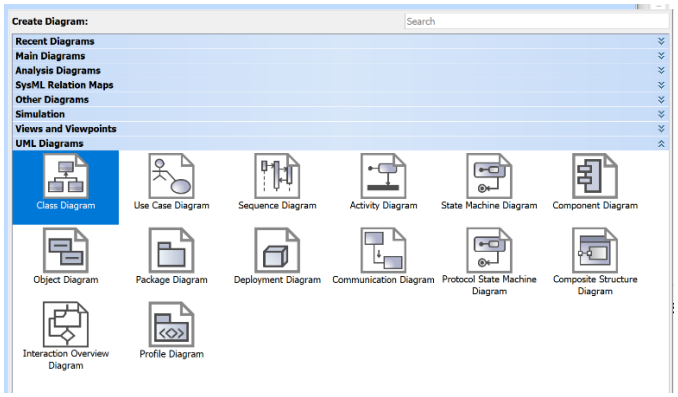

Figure 1

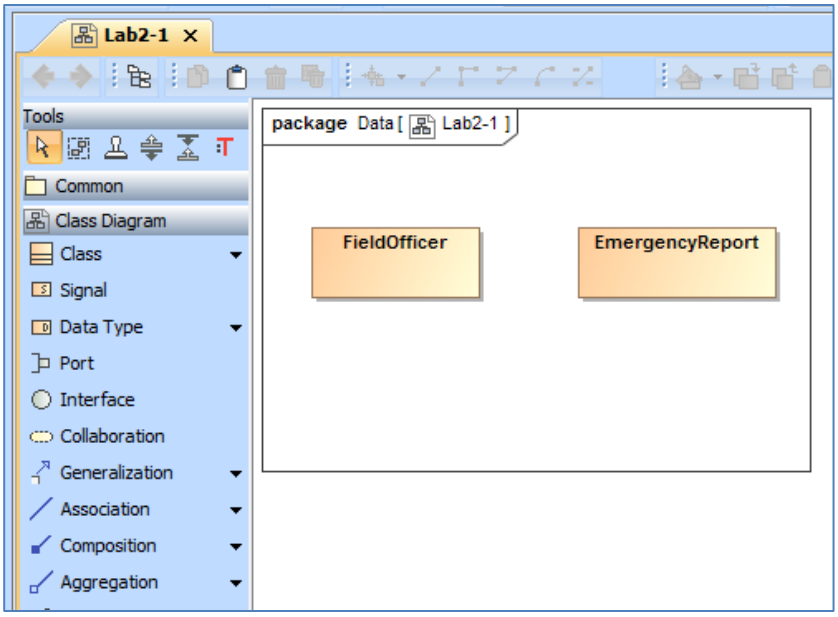

Figure 2

- Double click on a class. The Class Specification dialog box appears. It contains various features of a class. For more detailed information about this dialog box, see MagicDraw Help (see Figure 3).
- Select the Documentation/Hyperlinks group, add some documentation about this class. Click Close.

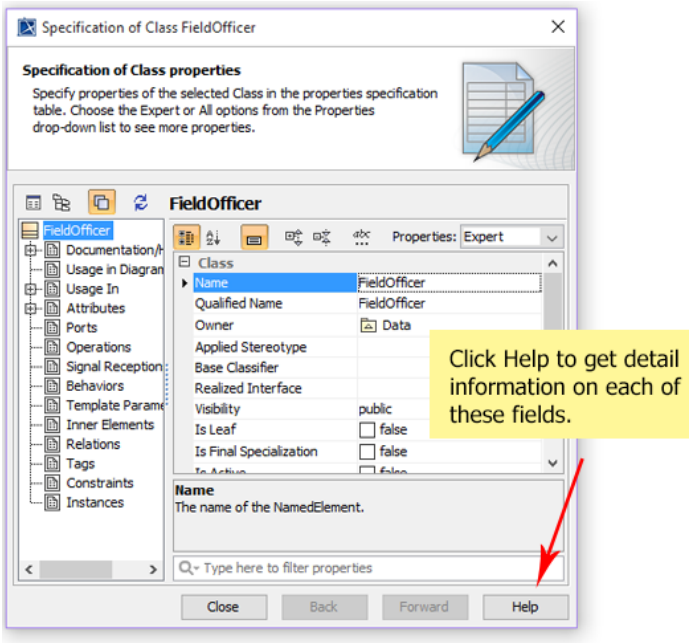

Figure 3

2.3 Task 3: Draw relationships

- In the diagram toolbar, click on the Association button  . Connect the two classes with this path. If it is allowed to draw the link from one element to another, a blue border appears around it.
- You can draw the same path using the pop up menu as it is shown in Figure 4.
- To change the style of the path, click on special buttons in the Toolbar. 
- Double click on the path. The Association Specification dialog box appears. See Figure 5.

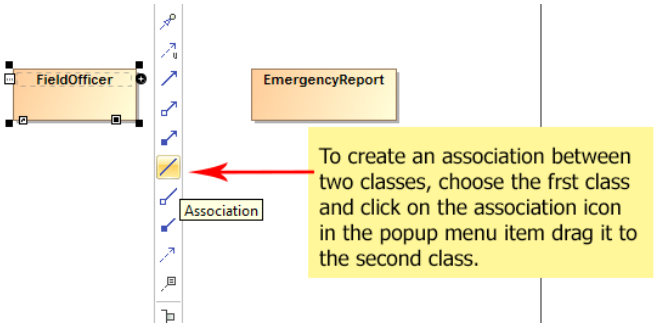

Figure 4

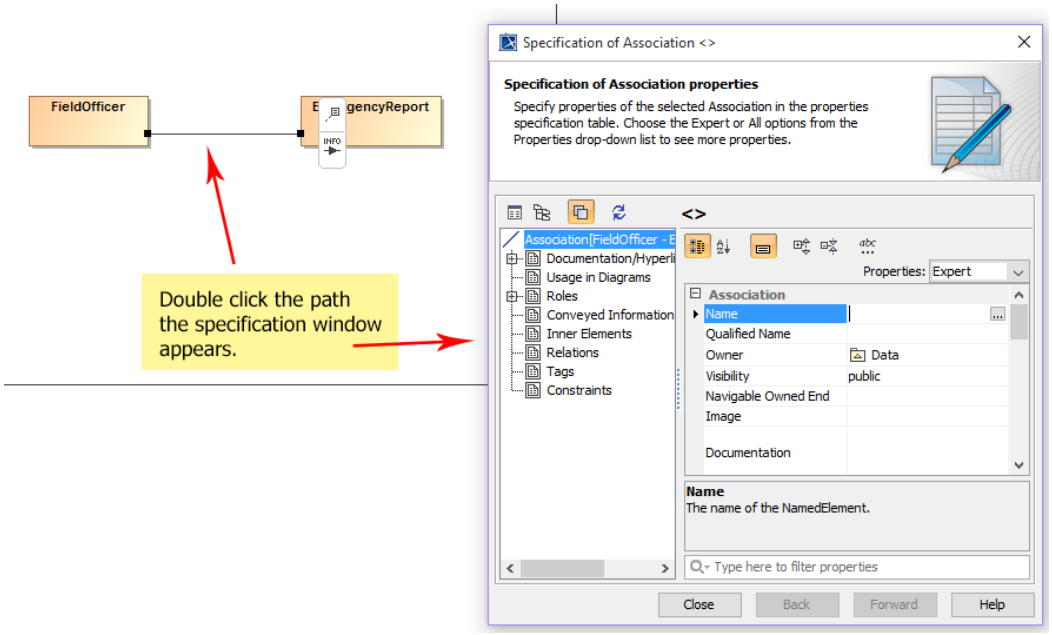

Figure 5

- In the Name field, enter the path name "writes". Click Close.
- Drag the association name link around and leave it on the diagram pane. Select the link. From the main toolbar, using a special Reset Labels Positions button  , put the path's name into place.
- To show the direction arrow near the association name, Right click on the middle of the association path, select Symbol properties and then from the pop up select Show Direction Arrow. See Figure 6.

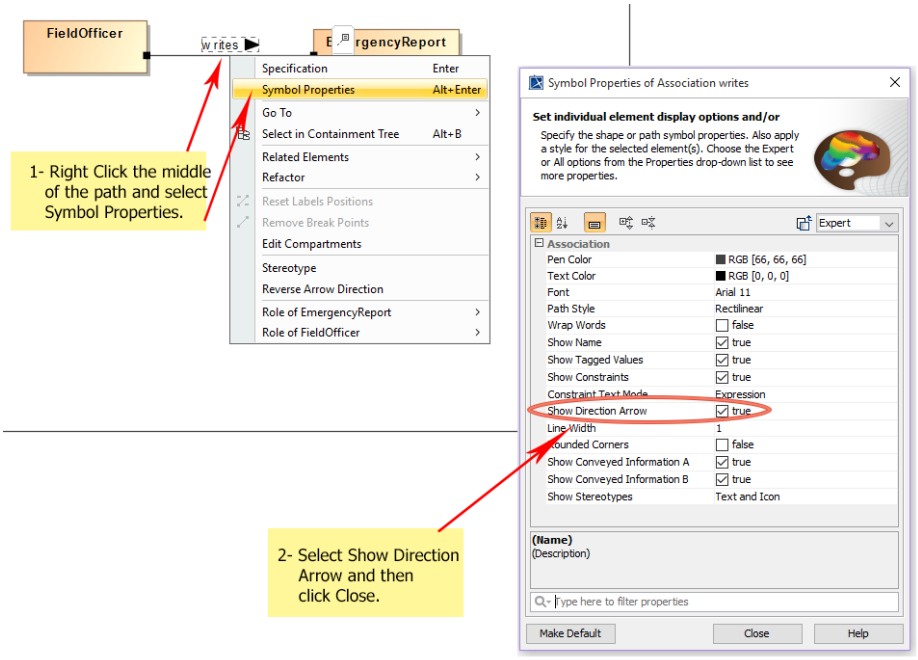

Figure 6

- To add multiplicity between two classes, Right click the path near the first class and then select your choice. Repeat the same steps for the second class. See Figure 7.

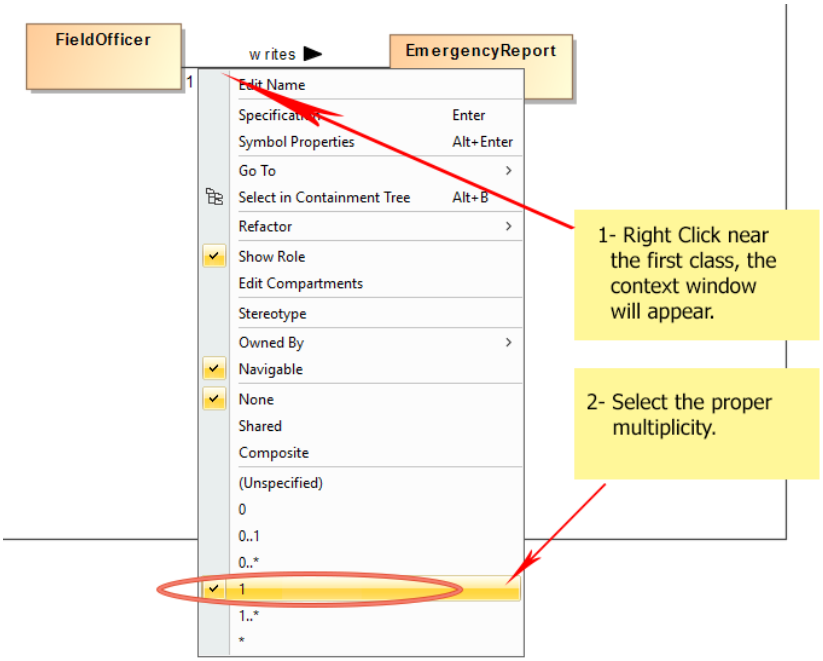

Figure 7

- To add association roles, follow the instructions shown in Figure 8.

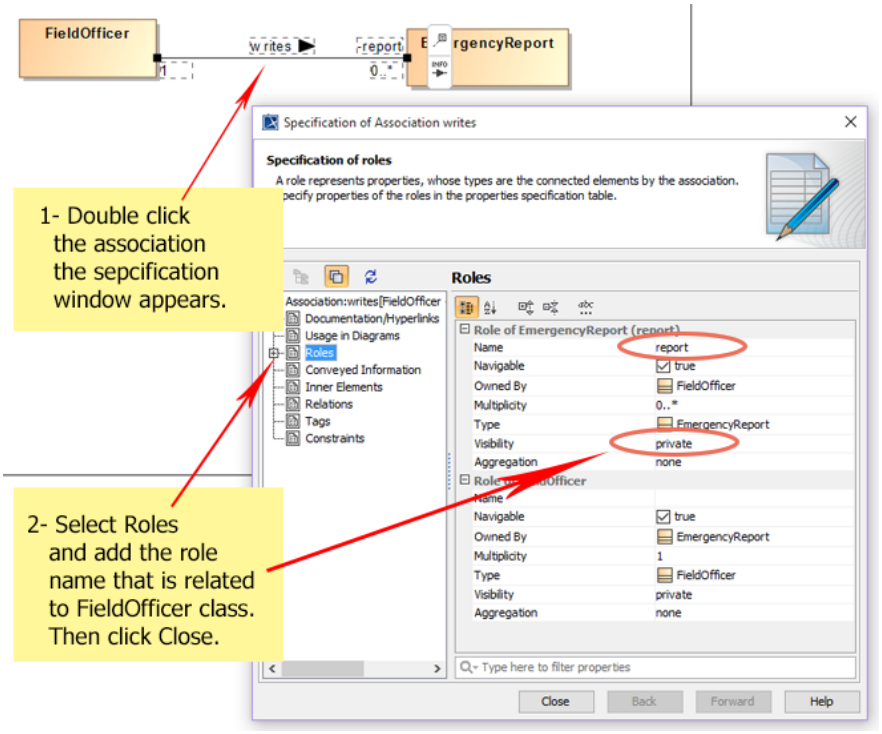

Figure 8

2.4 Task 4: Browser options

- In the left down Browser, click on the Documentation tab. The Documentation window will appear. Select a class containing the documentation you have added above. The documentation of a class will appear in the Documentation window.
- Click on the Zoom tab.
  The Zoom window will appear.
- Zoom in/out the picture by dragging the slider of the sliding scale to over/under 100% or zoom in/out the picture by dragging the blue border around the diagram in Zoom window.
- Note: To add slider to the Zoom tab, from the Options main menu, choose Environment and in the opened dialog box, Browser group, select the Show diagram zoom slider check box.

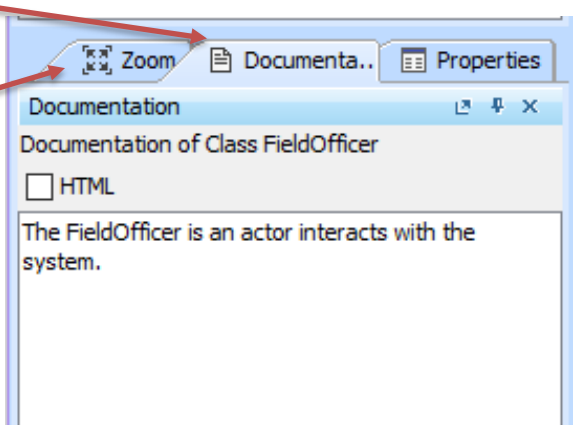

Figure 9

Checkpoint If you are unable to get this exercise run successfully, you should talk to your TAs during their announced office hours (the lab hours).

2.5 Task 5: Building one more class diagram

- Follow the instructions above to create a new class diagram called 'Lab4-2' to be part of your running UML project "*yourUwoId*_Lab4.mdzip". Build your class diagram to be like the one shown in Figure 11 in page 7.
- Figure 10 shows how to add attributes in your classes.

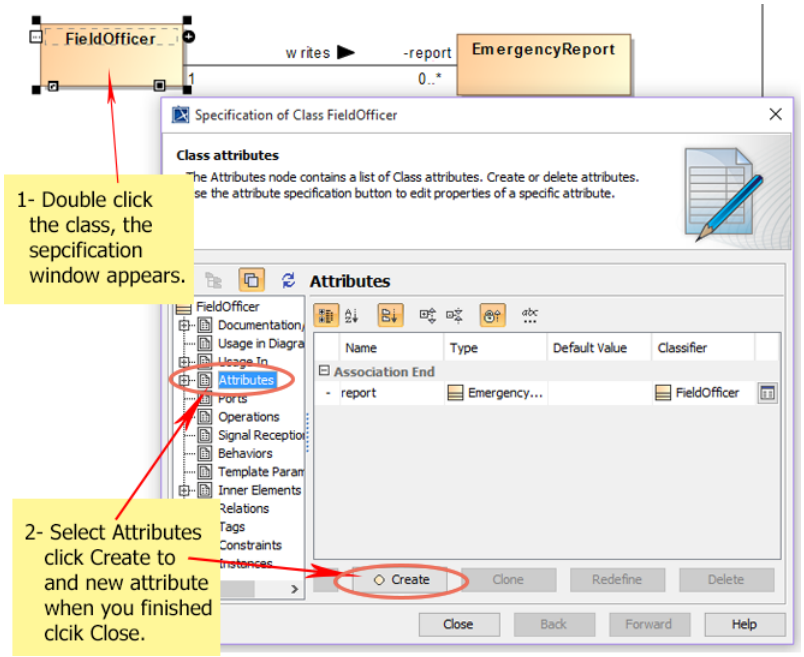

Figure 10

3 Hand In

- Submit your UML project file *yourUwoId*_Lab4.mdzip through OWL by the due date mentioned above, to be graded out of 20.
- This project file should include two class diagrams, "Lab4-1" and Lab4-2".

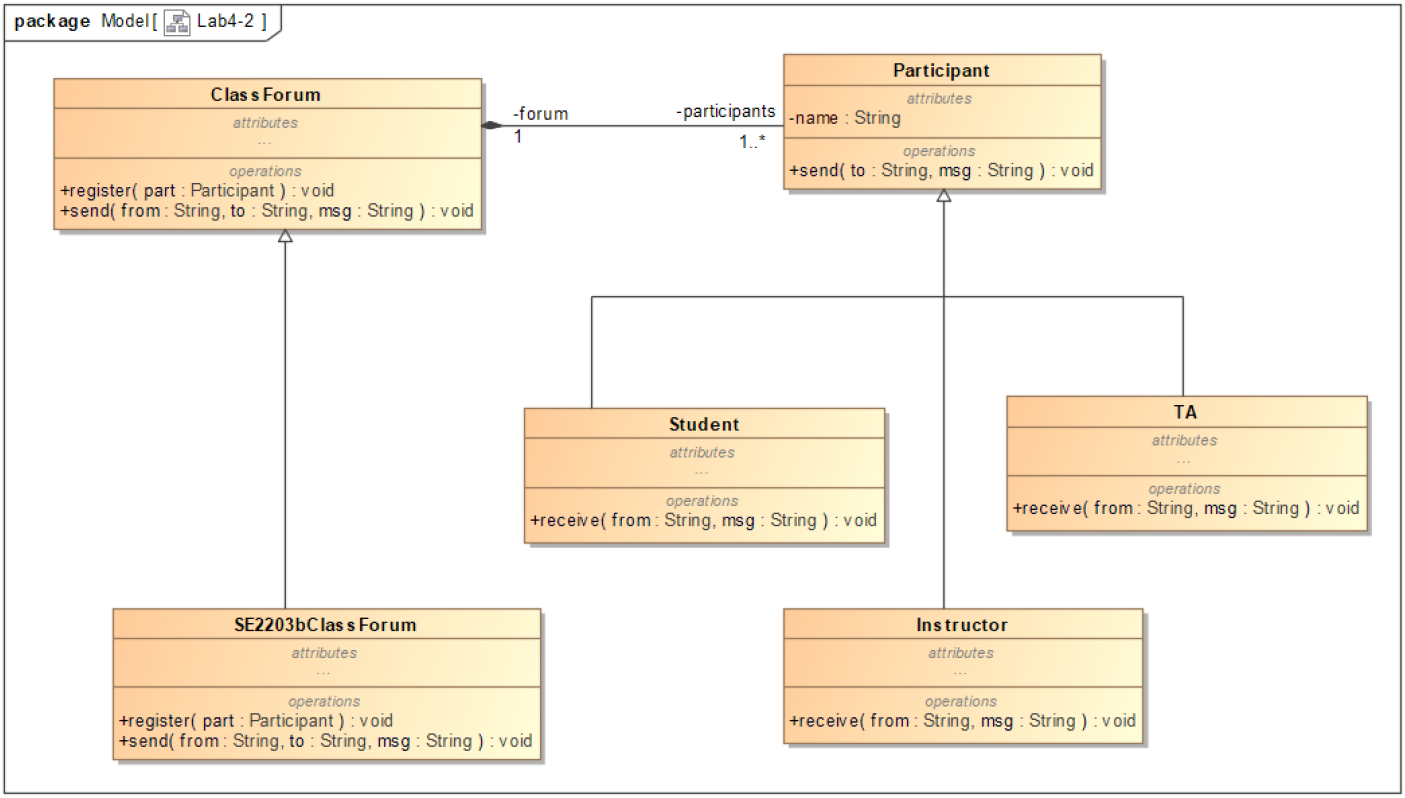

Figure 11