CSI 5342 Assignment 13.1

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After setting up our initial Class diagram (as seen below), we began adding in constraints to ensure our model behaves as expected.

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The first constraints we added were the basic SSD and DSD role constraints:  
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We confirmed these invariants with two example script files InvalidSSDTest.x and InvalidDSDTest.x:

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Next we add in additional invariants for to check the SSD Permissions constraint:

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For the operation Session::CheckSession(), we needed to find a way to make sure that a user who is in a session, has access to perform operation op, on object obj. To do this we had to make a few updates.   
  
The first, we needed to update the Descendants function on Role class, to return a list of all of its role descendants. Then, update the Session::CheckSession() method. To test this, we created a ValidSessionCheckSession.x file, ran that, and then opened the OCL window and ran s1.CheckSession(o1, op1). This returned true, which meant this session has access to that object with that operation.

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Next, we developed models that would make this false. To do that we created an InvalidSessionCheck.x file, that did not associate the role to the object. We got false!

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For checking on the Role::CheckAccess(object, operation) that was created. We can now check for that by calling the same on that role.

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To test an invalid case. We can then make a new role, and not assign it to anything. I just dragged a new Class onto the object diagram, not attaching it to any operations. Then I sent the same o1 and op1 and got false!  
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Lastly, for the PermissionCheck, we create a method that ensures the object and permission that enter in, are included in the permission.

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Now, for the false test, I added a new permission object, but only connected it to op1, and not o1. So it should return false, like pictured below.

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