CSI 5342 Assignment 14.1

By: Matthew Tuan and Robbie Dutton

The first step in specifying a location-aware role-based access control (LRBAC) model is to update our RBAC model from Assignment 13.1 to incorporate the Location class:

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The class and associations are based on the model developed in “LRBAC: A Location-Aware Role-Based Access Control Model” which incorporates locations with Users, Roles, Permissions, and Objects.

**Impact of Location on Role Hierarchies and SSD/DSD constraints**

Role Hierarchies contain a Senior-Junior relationship where the Senior roles can inherit the permissions of Junior roles or activate a Junior role. In the paper “A Spatio-Temporal Role-Based Access Control Model”, they outline 8 different hierarchical constraints based on unrestricted and restricted permission inheritance. Focusing only on the location-based constraints in definitions 11 and 12, we will add location restricted permission inheritance and location restricted activation constraints as follows:

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Next looking at SSD constraints, we need to ensure that a user cannot be assigned two roles that have SSD constraints while also taking into account the location of the user.

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DSD constraints also need to be updated to ensure conflicting roles with the same location cannot be activated in the same session.

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**Summary of each member’s contribution**