Review: RBAC

• RBAC supports both Static Separation of Duty (SSoD) and Dynamic Separation of Duty (DSoD). Let \( \{RS, n\} \) denote a constraint that no user should be assigned to \( n \) or more of the roles in the set \( RS \). For simplicity, assume that there is no role hierarchy defined.

• Let \( \{(r_1, r_2, r_3, r_4), 3\} \) be a defined SSoD. Which of the following UA (User Assignment) sets are valid?
  - \( UA_1 = \{(u_1, r_1), (u_2, r_1), (u_3, r_1), (u_1, r_2), (u_4, r_2), (u_5, r_2), (u_1, r_3), (u_2, r_3), (u_3, r_3), (u_4, r_4)\} \)
  - \( UA_2 = \{(u_1, r_1), (u_3, r_1), (u_5, r_1), (u_1, r_2), (u_2, r_2), (u_3, r_2), (u_5, r_2), (u_2, r_3), (u_4, r_3)\} \)
• \( UA_1 = \{(u_1, r_1), (u_2, r_1), (u_3, r_1), (u_1, r_2), (u_4, r_2), (u_5, r_2), (u_1, r_3), (u_2, r_3), (u_3, r_3), (u_4, r_4)\} \)

  – Invalid UA since \( u_1 \) has 3 roles

• \( UA_2 = \{(u_1, r_1), (u_3, r_1), (u_5, r_1), (u_1, r_2), (u_2, r_2), (u_3, r_2), (u_5, r_2), (u_2, r_3), (u_4, r_3)\} \)

  – Valid UA since no user has 3 or more roles
What are the implications of having both the following pairs of SSoD and DSoD present in a system at the same time?

• $\{r_1, r_2, r_3, r_4\}, 3 \in SSoD$ and $\{r_1, r_2, r_3, r_4\}, 3 \in DSoD$
  
  – Fine although one of them is redundant.

• $\{r_1, r_2, r_3, r_4\}, 3 \in SSoD$ and $\{r_1, r_2, r_3, r_4\}, 2 \in DSoD$
  
  – Fine since DSoD is more stringent.

• $\{r_1, r_2, r_3, r_4\}, 2 \in SSoD$ and $\{r_1, r_2, r_3, r_4\}, 3 \in DSoD$
  
  – Fine though DSoD is redundant because it will never happen.