**Case Based Reasoning (Cocktails)**

1. **Phases of matching(Be the first search to be exact search):**
   1. Phase1: Generalize the ingredients(desired) and search using AND. Ex White Rum generalized to Rum.
      1. If NULL Set then search using OR
      2. Rank the results with “Score” obtained using Machine Learning
   2. Phase2: Fetch all from above Set without undesired ingredients. Result Set = {X cocktails with D1, D2, D3 AND/OR - Undesired Ingredient}
   3. Fetch results with specific ingredients. If NULL set Adapt on generalized set from above.
2. **Types of Cases in the result set after match and fetch:**
   1. All ingredients match + No Undesired Ingredient [Best case][No adaptation][Select One based on score]
   2. All ingredients match + Undesired Ingredients [Adapt]
   3. X ingredients match + Undesired Ingredients Present/Not Present [Adapt]
   4. None ingredients[Specific/Generalized] match + Undesired Ingredients Present/Not Present. [Adapt for all desired ingredients. Find replacement ‘R’ such that ‘R’ belongs to the list of desired ingredients but does not belong to the undesired ingredients]
3. **Finding “Score” using Machine Learning:**
   1. Create features using the ingredients from the query string where Query String = D1, D2, D3, U1, U2 ….
   2. Create feature vector while searching for the recipes. [1,1,0,1,0]
   3. Create weight vector. Give high wt. e.g. +100 for matching ingredient and low wt. e.g. -300 for ingredient which is to be excluded.
   4. Calculate the Score by multiplying the two vectors and adding the values.
4. **Types of Adaptations:**
5. For the desired ingredients with extra ingredients.
6. For the undesired ingredients: Either to remove them or replace them with desired ingredients.