MainProcess **Public Class** MainProcess() 🕪 Main(resumesTable: List<Resumes>, jobsTable: List<Jobs>, userJobsTable: List<UserJobs>) : List<List<JobRecommendation>> EntityExtractionProcess Public Class EntityExtractionProcess() DoEntityExtractionProcess(allUsersInSystem: List<User>, allJobsInSystem: List<Job>): Void AssignNewWeights(cleanedAllDocumentsInSystem: List<TextDocument>): Void ExtractAllDocuments(allUsersInSystem: List<User>, allJobsInSystem: List<Job>): List<TextDocument> **JobRecommendationProcess Public Class** maxRecommendationsForUser: Int32 JobRecommendationProcess() JobRecommendationProcess() GetRecommendations(ratingTable: List<RatingTable>, relatedUsers: List<RelatedUsers>, relatedJobs: List<RelatedJobs>, allUsers: List<User>, allJobs: List<Job>): List<List<JobRecommendation>> OrderInDescendingOrderBySimilarities(jobRecommendations: List<JobRecommendation>): Void ComputeSimilarities(jobRecommendation: JobRecommendation, job: Job, user: User): Void <u>CalculateUserThreshold(userJobs: List<Job>) : Double</u> GetSimilarityScore(first: List<Vector>, second: List<Vector>): Double getJobsForUser(userID: Int32, ratingTable: List<RatingTable>, allJobs: List<Job>): List<Job> RatingTableCreator RelatedUsersJobsCreator Public Class RelatedUsersJobsCreator() RatingTableCreator() <u>CreateRatingTable(UserJobsTable: List<UserJobs>) : List<RatingTable></u> OreateRelatedUsersTable(users: List<User>, ratingTable: List<RatingTable>): List<RelatedUsers> <u>CreateRelatedJobsTable(jobs: List<Job>, ratingTable: List<RatingTable>): List<RelatedJobs></u> **Entities** User Public Class UserID: Int32 cleanUserProfile: CleanUserProfile fuzzyUserProfile: FuzzyUserProfile fuzzyUserProfile cleanUserProfile User(cleanUserProfile: CleanUserProfile) FuzzyUserProfile CleanUserProfile Public Class **Public Class** profileVector: List<Vector> CleanUserProfile(CvProfile: Profile, CtrProfile: Profile) GetFeaturesVector() : List<Vector> FuzzyUserProfile() GetFeaturesVector(): List<Vector> AppendJobProfile(profile: CleanJobProfile, Rating: Int32): Void Profile Public Class Profile(doc: TextDocument) CleanJobProfile FuzzyJobProfile Public Class Public Class profileVector: List<Vector> CleanJobProfile(jobDescProfile: Profile, jobCtrProfile: Profile) GetFeaturesVector() : List<Vector> FuzzyJobProfile() GetFeaturesVector(): List<Vector> AppendUserProfile(profile: CleanUserProfile, Rating: Int32) : Void /\\ ₁ Job Public Class JobID: Int32 fuzzyJobProfile cleanJobProfile: CleanJobProfile cleanJobProfile fuzzyJobProfile: FuzzyJobProfile Job(cleanJobProfile: CleanJobProfile) TextDocument Vector Feature Public Class **Public Class** Public Class featureID: Int32 features: List<Feature> 🧬 featureWeight: Double TextDocument(text: String, type: docType) 💗 GetVector() : Vector Vector(features: List<Feature>) Feature(text: String, type: docType) 🚱 GetID(text: String) : Int32 GetTF_Idf() : Double UpdateTfldfWeight(newWeight: Double) : Void Data components UserJobs Public Class Jobs Resumes Public Class Public Class UserID: Int32 UserID: Int32 JobID: Int32 JobID: Int32 text: String text: String CvID: Int32 CTR: String TabIndex: Int32 CTR: String ■ UserJobs() =

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Jobs() RelatedJobs RelatedUsers RatingTable Public Class Public Class Public Class UserID: Int32 UserID: Int32 UserID: Int32 mRelatedUsers: List<Int32> mRelatedJobs: List<Int32> JobID: Int32 SimilarityScores: List<Double> SimilarityScores: List<Double> Rating: Int32 RelatedUsers() RelatedJobs() 🗐 RatingTable() JobRecommendation **Public Class** UserID: Int32 JobID: Int32 CleanUserProfile_CleanJobProfile_similarity: Double CleanUserProfile_FuzzyJobProfile_similarity: Double CleanJobProfile_FuzzyUserProfile_similarity: Double FuzzyJobProfile_FuzzyUserProfile_similarity: Double JobRecommendation(UserID: Int32, JobID: Int32) **Utility Classes** LuceneTfldfExtractor AzureSqlWriter Public Class **Public Class** LuceneTfldfExtractor() AzureSqlWriter() DoIndexing(allDocumentsInSystem: List<TextDocument>): Void WriteUsersFeaturesTable(users: List<User>): Void CreateIndexFile(): Void WriteJobsFeaturesTable(jobs: List<Job>): Void ExtratWeights() : Void WriteRatingTable(ratingTable: List<RatingTable>): Void Utils FuzzyProfileUpdater Public Class Public Class =

○ Utils() FuzzyProfileUpdater() <u>CreateUsersList(resumesTable: List<Resumes>): List<User></u> UpdateFuzzyProfiles(ratings: List<RatingTable>, AllUsers: List<User>, AllJobs: List<Job>): Void <u>CreateJobsList(jobsTable: List<Jobs>) : List<Job></u> LuceneIntegrator Public Class LuceneIntegrator() <u>ExtractRelevantFeatures(allDocumentsInSystem: List<TextDocument>): List<Feature></u> CleanDocuments(allDocumentsInSystem: List<TextDocument>, importantFeatures: List<Feature>): List<TextDocument> NgramsCreator Enums Internal Class **Public Class** NgramsCreator() ≡© Enums() CreateNGrams(words: List<String>, maxExpressionLength: Int32): List<String> docType Public Enum **₽** CV = 1 ■ JobDesc = 2

Process