

Database Schema for ND Adult Job Matching Platform

Core Principles:

- **Privacy by Design:** Minimize data collection to only what's necessary.
- **Consent:** Explicit consent for data use, especially for AI processing.
- **Neuro-Affirming:** Focus on strengths, traits, and accommodations.
- **Modular & Scalable:** Designed for future expansion.
- **Role-Based Access Control (RBAC):** Granular permissions for different user types.

Actors and Their Roles:

1. **ND Adult (Job Seeker):** Owns their data, provides traits/strengths, views job matches, manages profile.
 2. **Mentor:** Can view a specific ND Adult's *publicly shared* profile/progress, offer guidance (if permission granted by ND Adult).
 3. **Guardian:** Can manage account for an ND Adult (e.g., if the adult prefers support, or for young adults transitioning to adulthood), with explicit consent and defined scope.
 4. **Employer:** Posts job descriptions, views anonymized/matched profiles (no direct access to ND Adult data).
 5. **Admin:** Full system oversight, user management, content moderation, system configuration.
 6. **Manager (Platform Staff):** Manages job postings, assists employers, handles user support, oversees matching process.
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Tables and Attributes

1. Users Table (for Authentication & Authorization)

This is the central table for all system users/actors.

- **UserID** (Primary Key, UUID/INT): Unique identifier for each user.
- **Username** (VARCHAR): Unique username for login.
- **Email** (VARCHAR): User's email, unique.
- **PasswordHash** (VARCHAR): Hashed password.
- **UserRole** (ENUM 'ND_Adult', 'Employer', 'Mentor', 'Guardian', 'Admin', 'Manager'): Defines the user's role.
- **IsActive** (BOOLEAN): Account status.
- **LastLogin** (DATETIME): Timestamp of last login.
- **CreatedAt** (DATETIME): Timestamp of account creation.

- **UpdatedAt** (DATETIME): Timestamp of last update.

2. Profiles_NDAdults Table (Job Seeker Specific Data)

- **NDAdultID** (Primary Key, UUID/INT): References `Users.UserID` (One-to-one with Users).
- **FirstName** (VARCHAR): ND Adult's first name.
- **LastName** (VARCHAR): ND Adult's last name.
- **DateOfBirth** (DATE): For age-based matching/analytics (e.g., internship vs. senior roles).
- **ContactPreference** (VARCHAR): How they prefer to be contacted (e.g., "Email", "Platform Message").
- **PublicProfileConsent** (BOOLEAN): Consent to share anonymized/aggregated data for research/improvement.
- **MatchConsent** (BOOLEAN): Crucial consent for AI-powered job matching.
- **Location** (VARCHAR): For location-based job matching.
- **PreferredWorkEnvironment** (TEXT): Open text or structured data for environment preferences (e.g., "Quiet", "Remote", "Collaborative").
- **AvailabilityStatus** (ENUM 'Actively Looking', 'Passively Looking', 'Not Looking'): Job search status.

3. Traits Table (Master List of Traits)

- **TraitID** (Primary Key, INT): Unique identifier for each trait.
- **TraitName** (VARCHAR): Name of the trait (e.g., "Attention to Detail", "Sensory Sensitivity", "Direct Communication", "Time Blindness", "High Empathy").
- **TraitCategory** (VARCHAR): Broad category (e.g., "Cognitive", "Social", "Sensory", "Communication", "Executive Function").
- **Description** (TEXT): A neutral, descriptive explanation of the trait.
- **IsStrengthConsidered** (BOOLEAN): Can this trait be framed as a strength in certain contexts? (Useful for AI and matching logic)

4. Strengths Table (Master List of Strengths)

- **StrengthID** (Primary Key, INT): Unique identifier for each strength.
- **StrengthName** (VARCHAR): Name of the strength (e.g., "Pattern Recognition", "Hyperfocus", "Creative Thinking", "Integrity", "Problem Solving").
- **StrengthCategory** (VARCHAR): Broad category (e.g., "Cognitive", "Interpersonal", "Work Ethic", "Innovation").
- **Description** (TEXT): A neutral, descriptive explanation of the strength.

5. Individual_Traits Table (ND Adult's Self-Identified Traits)

- **IndividualTraitID** (Primary Key, UUID/INT)
- **NDAdultID** (Foreign Key, UUID/INT): References `Profiles_NDAdults.NDAdultID`.
- **TraitID** (Foreign Key, INT): References `Traits.TraitID`.
- **LevelOfExperience** (ENUM 'Low', 'Moderate', 'High'): How strongly they identify with this trait (or its intensity, if applicable).
- **SelfDescription** (TEXT): Optional free-text elaboration by the ND Adult on how this trait manifests for them.
- **ProvidedByAI** (BOOLEAN): Flag if this trait was suggested/identified by the AI.
- **VerifiedByMentor** (BOOLEAN): Flag if a mentor has reviewed this. (Requires `Mentor_Individual_Access` permissions).
- **IsPublic** (BOOLEAN): Whether this specific trait is visible to employers in matched profiles (anonymized).

6. Individual_Strengths Table (ND Adult's Self-Identified Strengths)

- **IndividualStrengthID** (Primary Key, UUID/INT)
- **NDAdultID** (Foreign Key, UUID/INT): References `Profiles_NDAdults.NDAdultID`.
- **StrengthID** (Foreign Key, INT): References `Strengths.StrengthID`.
- **LevelOfProficiency** (ENUM 'Developing', 'Proficient', 'Expert'): How proficient they are in this strength.
- **SelfDescription** (TEXT): Optional free-text elaboration.
- **ProvidedByAI** (BOOLEAN): Flag if this strength was suggested/identified by the AI.
- **VerifiedByMentor** (BOOLEAN): Flag if a mentor has reviewed this.
- **IsPublic** (BOOLEAN): Whether this specific strength is visible to employers in matched profiles (anonymized).

7. JobPostings Table (Employer Curated Jobs)

- **JobID** (Primary Key, UUID/INT): Unique identifier for job posting.
- **EmployerID** (Foreign Key, UUID/INT): References `Users.UserID` (Role 'Employer').
- **JobTitle** (VARCHAR): Title of the job.
- **JobDescription** (TEXT): Detailed description of the job.
- **RequiredSkills** (TEXT): Keywords or parsed skills from JD.
- **DesiredTraits** (TEXT): Specific traits the employer is looking for (curated by them, or inferred by AI).

- **JobBenefits** (TEXT): General benefits.
- **Location** (VARCHAR): Job location.
- **EmploymentType** (ENUM 'Full-time', 'Part-time', 'Contract', 'Internship').
- **PublishedDate** (DATETIME).
- **ApplicationDeadline** (DATETIME).
- **IsActive** (BOOLEAN): Job posting status.

8. Job_RequiredTraits (Junction for Job <-> Traits)

- **JobRequiredTraitID** (Primary Key, UUID/INT)
- **JobID** (Foreign Key, UUID/INT): References `JobPostings.JobID`.
- **TraitID** (Foreign Key, INT): References `Traits.TraitID`.
- **ImportanceLevel** (ENUM 'Required', 'Desired', 'NiceToHave'): How important this trait is for the job.

9. Job_RequiredStrengths (Junction for Job <-> Strengths)

- **JobRequiredStrengthID** (Primary Key, UUID/INT)
- **JobID** (Foreign Key, UUID/INT): References `JobPostings.JobID`.
- **StrengthID** (Foreign Key, INT): References `Strengths.StrengthID`.
- **ImportanceLevel** (ENUM 'Required', 'Desired', 'NiceToHave'): How important this strength is for the job.

10. Job_Matches Table (AI-Generated Matches)

- **MatchID** (Primary Key, UUID/INT)
- **NDAdultID** (Foreign Key, UUID/INT): References `Profiles_NDAdults.NDAdultID`.
- **JobID** (Foreign Key, UUID/INT): References `JobPostings.JobID`.
- **MatchScore** (DECIMAL(5,2)): AI-generated score (0-100) indicating fit.
- **MatchReasoning** (TEXT): Brief explanation from AI on why it's a good match (e.g., "Strong match on Pattern Recognition and Attention to Detail; job requires data analysis").
- **MatchDate** (DATETIME).
- **IsRecommendedToAdult** (BOOLEAN): Has this match been recommended to the ND Adult?
- **IsViewedByAdult** (BOOLEAN): Has the ND Adult seen this match?
- **IsLikedByAdult** (BOOLEAN): Did the ND Adult express interest?
- **IsLikedByEmployer** (BOOLEAN): Did the employer express interest (based on anonymized profile)?

11. SupportRelationships Table (Mentor/Guardian relationships)

- **RelationshipID** (Primary Key, UUID/INT)
- **NDAdultID** (Foreign Key, UUID/INT): References Profiles_NDAdults.NDAdultID.
- **SupporterID** (Foreign Key, UUID/INT): References Users.UserID (Role 'Mentor' or 'Guardian').
- **RelationshipType** (ENUM 'Mentor', 'Guardian').
- **StartDate** (DATE).
- **EndDate** (DATE): Null if ongoing.
- **AccessScope** (JSON/TEXT): Defines what data the supporter can see (e.g., "view_profile_basic", "view_traits", "verify_traits"). This is crucial for granular authorization.
- **ConsentForAccess** (BOOLEAN): Explicit consent from ND Adult for this supporter's access.

12. AuditLog Table (For Security and Compliance)

- **LogID** (Primary Key, UUID/INT)
- **UserID** (Foreign Key, UUID/INT): References Users.UserID (who performed the action).
- **ActionType** (VARCHAR): e.g., 'LOGIN', 'PROFILE_UPDATE', 'JOB_POST_CREATE', 'DATA_ACCESS'.
- **Timestamp** (DATETIME).
- **Details** (TEXT): Specifics of the action (e.g., "Updated LastName from X to Y", "Accessed ND Adult profile Y").
- **IPAddress** (VARCHAR): IP address from which the action originated.

13. SystemSettings Table (Admin-Configurable)

- **SettingName** (VARCHAR): Name of the setting (e.g., 'AI_MATCH_THRESHOLD', 'DEFAULT_PUBLIC_CONSENT').
- **SettingValue** (TEXT): Value of the setting.
- **DataType** (VARCHAR): e.g., 'INT', 'BOOLEAN', 'STRING'.

Connections (Relationships)

- Users (1) --- (1) Profiles_NDAdults
- Users (1) --- (Many) JobPostings (Employer)
- Profiles_NDAdults (1) --- (Many) Individual_Traits

- Traits (1) --- (Many) Individual_Traits
- Profiles_NDAdults (1) --- (Many) Individual_Strengths
- Strengths (1) --- (Many) Individual_Strengths
- JobPostings (1) --- (Many) Job_RequiredTraits
- Traits (1) --- (Many) Job_RequiredTraits
- JobPostings (1) --- (Many) Job_RequiredStrengths
- Strengths (1) --- (Many) Job_RequiredStrengths
- Profiles_NDAdults (1) --- (Many) Job_Matches
- JobPostings (1) --- (Many) Job_Matches
- Profiles_NDAdults (1) --- (Many) SupportRelationships
- Users (1) --- (Many) SupportRelationships (Supporter side)
- Users (1) --- (Many) AuditLog

Authentication and Authorization (RBAC Implementation)

1. Authentication:

- Users table stores hashed passwords.
- Standard login flow (username/email + password).
- Multi-factor authentication (MFA) recommended.

2. Authorization:

- **UserRole in Users table:** This is the primary determinant of permissions.
- **AccessScope in SupportRelationships:** Provides fine-grained control for Mentors/Guardians over what specific ND Adult data they can view.
- **Backend Logic:** Application logic will enforce permissions based on the UserRole and AccessScope.
 - **ND Adult:** Can create/edit their own Profiles_NDAdults data, Individual_Traits, Individual_Strengths. Can view their Job_Matches. Cannot view other ND Adults' detailed profiles or employer data.
 - **Employer:** Can create/edit their own JobPostings, Job_RequiredTraits, Job_RequiredStrengths. Can view *anonymized* matched ND Adult profiles and their publicly marked traits/strengths. Cannot view ND Adult names or direct contact info.
 - **Mentor/Guardian:** Can view specified portions of the associated ND Adult's profile (e.g., traits, strengths, job matches) as defined by AccessScope and

explicit consent. Cannot edit ND Adult data unless explicitly granted (e.g., for guardian of a young adult setting up profile).

- **Admin:** Full read/write access to all tables. Can manage all users, jobs, traits, strengths.
- **Manager:** Can manage JobPostings, Job_RequiredTraits, Job_RequiredStrengths, and oversee Job_Matches. May have limited access to Profiles_NDAdults for support purposes (e.g., viewing public profile data for troubleshooting) but not sensitive data.

AI Integration Points

1. Trait/Strength Identification:

- ND Adult inputs free-text descriptions of themselves or completes structured self-assessment questionnaires.
- **AI (NLP/ML):** Processes this input against a training dataset of neurodivergent narratives/questionnaire responses and the Traits and Strengths master lists.
- **Output:** Suggests TraitID and StrengthID values with confidence scores, which are then stored in Individual_Traits and Individual_Strengths with ProvidedByAI = TRUE.

2. Job Description Analysis:

- Employer inputs JobDescription.
- **AI (NLP):** Parses JobDescription to extract RequiredSkills and infer DesiredTraits and RequiredStrengths from the text.
- **Output:** Populates Job_RequiredTraits and Job_RequiredStrengths with inferred importance levels.

3. Job Matching:

- **AI (ML/Recommendation Engine):** Compares Individual_Traits and Individual_Strengths (from ND Adult profiles) with Job_RequiredTraits and Job_RequiredStrengths (from Job Postings).
- **Factors:** Considers LevelOfExperience/Proficiency, ImportanceLevel of job requirements, PreferredWorkEnvironment of ND Adult, and potentially geographic proximity.
- **Output:** Generates MatchScore and MatchReasoning for each potential match, stored in Job_Matches.