Database tables and models:

**CREATE EXTENSION IF NOT EXISTS "uuid-ossp";**

***-- Users table***

**CREATE TABLE users (**

**id SERIAL PRIMARY KEY,**

**email VARCHAR(255) UNIQUE NOT NULL,**

**password\_hash VARCHAR(255) NOT NULL,**

**first\_name VARCHAR(100) NOT NULL,**

**last\_name VARCHAR(100) NOT NULL,**

**date\_of\_birth DATE NOT NULL,**

**gender VARCHAR(20) NOT NULL,**

**height DECIMAL(5,2) NOT NULL,**

**weight DECIMAL(5,2) NOT NULL,**

**activity\_level VARCHAR(50) NOT NULL,**

**dietary\_preferences VARCHAR(100) NOT NULL,**

**allergies TEXT[] NOT NULL,**

**profile\_image\_url VARCHAR(255),**

**target\_weight DECIMAL(5,2),**

**goal VARCHAR(50),**

**created\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP,**

**updated\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP**

**);**

***-- Foods table***

**CREATE TABLE foods (**

**id SERIAL PRIMARY KEY,**

**name VARCHAR(255) NOT NULL,**

**description TEXT,**

**category VARCHAR(100) NOT NULL,**

**image\_url VARCHAR(255),**

**serving\_size DECIMAL(10,2) NOT NULL,**

**serving\_unit VARCHAR(20) NOT NULL,**

**calories DECIMAL(10,2) NOT NULL,**

**protein DECIMAL(10,2) NOT NULL,**

**carbohydrates DECIMAL(10,2) NOT NULL,**

**fats DECIMAL(10,2) NOT NULL,**

**fiber DECIMAL(10,2) NOT NULL,**

**sugar DECIMAL(10,2) NOT NULL,**

**sodium DECIMAL(10,2) NOT NULL,**

**nutrients TEXT[] NOT NULL,**

**is\_verified BOOLEAN DEFAULT FALSE,**

**created\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP,**

**updated\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP**

**);**

***-- Recipes table***

**CREATE TABLE recipes (**

**id SERIAL PRIMARY KEY,**

**name VARCHAR(255) NOT NULL,**

**description TEXT,**

**instructions TEXT NOT NULL,**

**image\_url VARCHAR(255),**

**preparation\_time INTEGER NOT NULL,**

**cooking\_time INTEGER NOT NULL,**

**servings INTEGER NOT NULL,**

**difficulty VARCHAR(20) NOT NULL,**

**categories TEXT[] NOT NULL,**

**tags TEXT[] NOT NULL,**

**total\_calories DECIMAL(10,2) NOT NULL,**

**total\_protein DECIMAL(10,2) NOT NULL,**

**total\_carbohydrates DECIMAL(10,2) NOT NULL,**

**total\_fats DECIMAL(10,2) NOT NULL,**

**created\_by INTEGER REFERENCES users(id),**

**is\_public BOOLEAN DEFAULT TRUE,**

**rating DECIMAL(3,2) DEFAULT 0,**

**number\_of\_ratings INTEGER DEFAULT 0,**

**created\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP,**

**updated\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP**

**);**

***-- Recipe ingredients table***

**CREATE TABLE recipe\_ingredients (**

**id SERIAL PRIMARY KEY,**

**recipe\_id INTEGER REFERENCES recipes(id) ON DELETE CASCADE,**

**food\_id INTEGER REFERENCES foods(id),**

**amount DECIMAL(10,2) NOT NULL,**

**unit VARCHAR(20) NOT NULL,**

**notes TEXT,**

**created\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP,**

**updated\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP**

**);**

***-- User progress table***

**CREATE TABLE user\_progress (**

**id SERIAL PRIMARY KEY,**

**user\_id INTEGER REFERENCES users(id) ON DELETE CASCADE,**

**date DATE NOT NULL,**

**weight DECIMAL(5,2) NOT NULL,**

**target\_weight DECIMAL(5,2),**

**calories\_consumed INTEGER NOT NULL,**

**calories\_burned INTEGER NOT NULL,**

**water\_intake INTEGER NOT NULL,**

**steps INTEGER NOT NULL,**

**sleep\_hours INTEGER NOT NULL,**

**bmi DECIMAL(4,2),**

**measurements JSONB NOT NULL,**

**achievements TEXT[] NOT NULL,**

**mood VARCHAR(50) NOT NULL,**

**notes TEXT,**

**created\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP,**

**updated\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP**

**);**

***-- Food logs table***

**CREATE TABLE food\_logs (**

**id SERIAL PRIMARY KEY,**

**user\_id INTEGER REFERENCES users(id) ON DELETE CASCADE,**

**food\_id INTEGER REFERENCES foods(id),**

**date\_time TIMESTAMP WITH TIME ZONE NOT NULL,**

**serving\_size DECIMAL(10,2) NOT NULL,**

**meal\_type VARCHAR(50) NOT NULL,**

**notes TEXT,**

**is\_favorite BOOLEAN DEFAULT FALSE,**

**image\_url VARCHAR(255),**

**created\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP,**

**updated\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP**

**);**

***-- Goals table***

**CREATE TABLE goals (**

**id SERIAL PRIMARY KEY,**

**user\_id INTEGER REFERENCES users(id) ON DELETE CASCADE,**

**title VARCHAR(255) NOT NULL,**

**description TEXT,**

**type VARCHAR(50) NOT NULL,**

**target\_value DECIMAL(10,2) NOT NULL,**

**current\_value DECIMAL(10,2) NOT NULL,**

**start\_date DATE NOT NULL,**

**target\_date DATE NOT NULL,**

**is\_completed BOOLEAN DEFAULT FALSE,**

**reward VARCHAR(255),**

**streak INTEGER DEFAULT 0,**

**milestones TEXT[] NOT NULL,**

**notes TEXT,**

**created\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP,**

**updated\_at TIMESTAMP WITH TIME ZONE DEFAULT CURRENT\_TIMESTAMP**

**);**

***-- Create indexes for better query performance***

**CREATE INDEX idx\_users\_email ON users(email);**

**CREATE INDEX idx\_foods\_name ON foods(name);**

**CREATE INDEX idx\_foods\_category ON foods(category);**

**CREATE INDEX idx\_recipes\_name ON recipes(name);**

**CREATE INDEX idx\_recipes\_categories ON recipes USING GIN(categories);**

**CREATE INDEX idx\_recipes\_tags ON recipes USING GIN(tags);**

**CREATE INDEX idx\_user\_progress\_user\_date ON user\_progress(user\_id, date);**

**CREATE INDEX idx\_food\_logs\_user\_date ON food\_logs(user\_id, date\_time);**

**CREATE INDEX idx\_goals\_user ON goals(user\_id);**

***-- Create function to update updated\_at timestamp***

**CREATE OR REPLACE FUNCTION update\_updated\_at\_column()**

**RETURNS TRIGGER AS $$**

**BEGIN**

**NEW.updated\_at = CURRENT\_TIMESTAMP;**

**RETURN NEW;**

**END;**

**$$ language 'plpgsql';**

***-- Create triggers for updated\_at***

**CREATE TRIGGER update\_users\_updated\_at**

**BEFORE UPDATE ON users**

**FOR EACH ROW**

**EXECUTE FUNCTION update\_updated\_at\_column();**

**CREATE TRIGGER update\_foods\_updated\_at**

**BEFORE UPDATE ON foods**

**FOR EACH ROW**

**EXECUTE FUNCTION update\_updated\_at\_column();**

**CREATE TRIGGER update\_recipes\_updated\_at**

**BEFORE UPDATE ON recipes**

**FOR EACH ROW**

**EXECUTE FUNCTION update\_updated\_at\_column();**

**CREATE TRIGGER update\_recipe\_ingredients\_updated\_at**

**BEFORE UPDATE ON recipe\_ingredients**

**FOR EACH ROW**

**EXECUTE FUNCTION update\_updated\_at\_column();**

**CREATE TRIGGER update\_user\_progress\_updated\_at**

**BEFORE UPDATE ON user\_progress**

**FOR EACH ROW**

**EXECUTE FUNCTION update\_updated\_at\_column();**

**CREATE TRIGGER update\_food\_logs\_updated\_at**

**BEFORE UPDATE ON food\_logs**

**FOR EACH ROW**

**EXECUTE FUNCTION update\_updated\_at\_column();**

**CREATE TRIGGER update\_goals\_updated\_at**

**BEFORE UPDATE ON goals**

**FOR EACH ROW**

**EXECUTE FUNCTION update\_updated\_at\_column();**