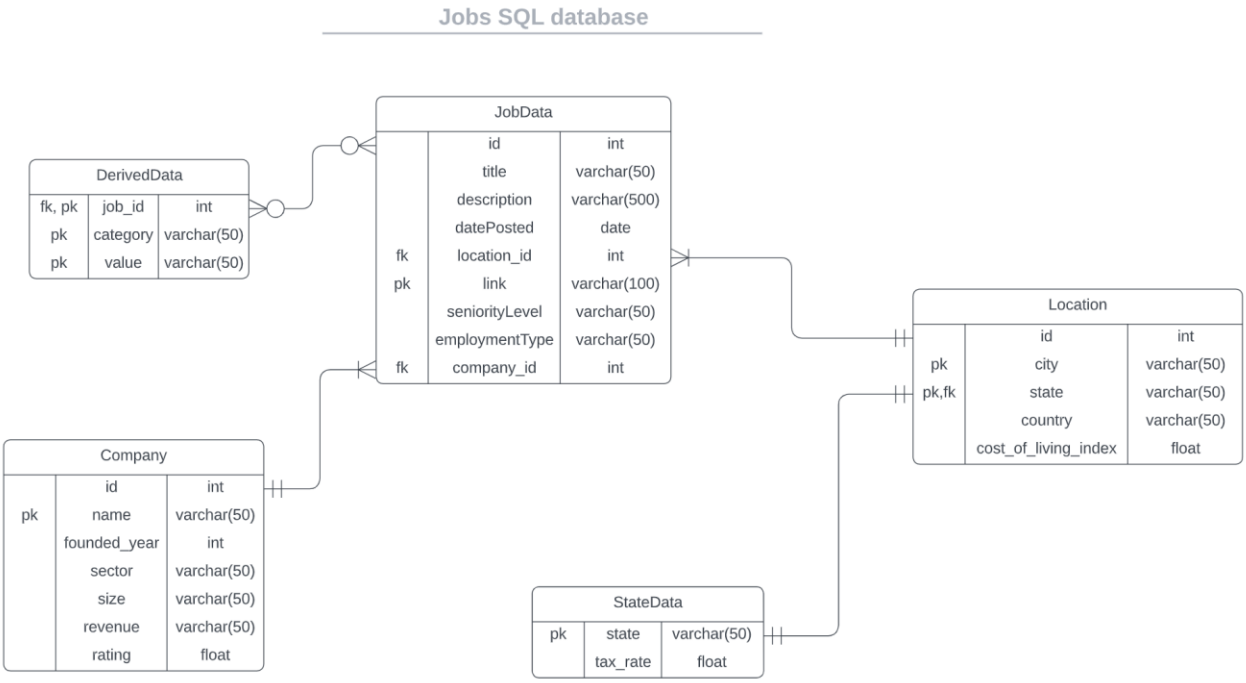
# DMDD Assignment 3

**Physical Model**:



**Use Cases** -

1. Select jobs based in Boston

   **Description: Searching for Jobs in the AI (Artificial Intelligence) domain in the Boston area.**

   **Actor:** User

   **Precondition: Needs to check if Jobs in AI Domain around Boston area are present in our database.**

   **Steps:**

   **Actor action:** Search for AI Jobs with City value as Boston and Skills value as AI.

   **System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

   **Post Condition: The user can view the query result.**

   **Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

   **Error: Search query is invalid, or data is not present.**

   **SQL:**

   **SELECT title, description, date_posted, link FROM JobData**

   **WHERE location_id = (SELECT id FROM Location WHERE city='Boston');**

2. Select jobs based in Massachusetts.

   **Description: Searching for Jobs in Massachusetts**

   **Actor:** User

   **Precondition: Needs to check if Jobs where state value is Massachusetts are present in our database.**

   **Steps:**

   **Actor action:** Search for AI Jobs with state value Massachusetts.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL**:

**SELECT title, description, date_posted, link FROM JobData**

**WHERE location_id IN (SELECT id FROM Location WHERE state='Massachusetts');**

3. Select Remote jobs.

**Description: Searching for Jobs where the workplace is remote.**

**Actor:** User

**Precondition: Needs to check if Jobs where location type is remote are present in our database.**

**Steps:**

**Actor action:** Search for AI Jobs with location value as Remote.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE location_id IN (SELECT id FROM Location WHERE city='Remote');**

4. Select the top 3 locations with low tax rates.

**Description: Searching for Top 3 Job Location which has low tax rate.**

**Actor:** User

**Precondition: Needs to check if tax rate values are present in our database for Job locations in the US (United States).**

**Steps:**

**Actor action:** Search for Top 3 Job Location with low tax rate.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

```
SELECT city FROM Location
WHERE state IN (SELECT state FROM StateData ORDER BY tax_rate  ASC LIMIT 3);
```

5. Select jobs at a location with the lowest tax rate.

**Description: Searching for a Job Location which has the lowest tax rate.**

**Actor:** User

**Precondition: Needs to check if tax rate values are present in our database for Job locations in the US (United States).**

**Steps:**

**Actor action:** Search for the Job Location with lowest tax rate.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

```
SELECT title, description, date_posted, link
```

**FROM JobData WHERE location_id IN (SELECT id FROM Location WHERE state IN (SELECT state FROM StateData ORDER BY tax_rate ASC LIMIT 1));**

6. Select jobs at top 3 locations with low cost of living.

**Description: Searching for Top 3 Job Location which has low cost of living index.**

**Actor:** User

**Precondition: Needs to check if cost of living index values are present in our database for Job locations in the US (United States).**

**Steps:**

**Actor action:** Search for Top 3 Job Location with low cost of living index.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL**:

**SELECT title, description, date_posted, link FROM JobData WHERE location_id IN (SELECT id FROM Location ORDER BY cost_of_living_index ASC LIMIT 3);**

7. Select jobs from companies with size -> 51 to 200 Employees

**Description: Searching for Jobs where company size equals 51-200 employees.**

**Actor:** User

**Precondition: Needs to check if company size value range is present in our database for the Companies in the US (United States).**

**Steps:**

**Actor action:** Search for Jobs with company size range as 51-200 employees.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

SQL:

**SELECT title, description, date_posted, link FROM JobData WHERE company_id IN (SELECT id FROM Company WHERE size='51 to 200 Employees');**

8. Select jobs from Amazon.

**Description: Searching for jobs where company value is Amazon.**

**Actor:** User

**Precondition: Needs to check if jobs with company name value as Amazon.**

**Steps:**

**Actor action:** Search for Jobs where company name value is Amazon.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

SQL:

**SELECT title, description, date_posted, link FROM JobData WHERE company_id IN (SELECT id FROM Company WHERE name='Amazon');**

9. Select internships based in Texas.

**Description: Searching for Jobs where employment type is Internships and state is Texas.**

**Actor:** User

**Precondition: Needs to check if database contains Jobs where employment type consists of Internship opportunities and State Texas**

**Steps:**

**Actor action:** Search for Internships in Texas State.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link FROM JobData**

**WHERE employmentType = 'Internship' AND**

**location_id IN (SELECT id FROM Location WHERE state='Texas');**

10. Select jobs from companies with revenue -> $1 to $5 million

**Description: Searching for Jobs where company revenue falls in the $1 - $5 Million range.**

**Actor:** User

**Precondition: Needs to check if database contains company revenue value for all the companies present in the database.**

**Steps:**

**Actor action:** Search for Jobs where company revenue comes under $1-$5 million range.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

SQL:

**SELECT title, description, date_posted, link FROM JobData WHERE company_id IN (SELECT id FROM Company WHERE revenue='$1 to $5 million');**

11. Select jobs from companies with ratings >= 4.0

    **Description: Searching for Jobs where company ratings equal 4.0**

    **Actor:** User

    **Precondition: Needs to check if database contains company ratings values.**

    **Steps:**

    **Actor action:** Search for Jobs where company ratings equal 4.0

    **System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

    **Post Condition: The user can view the query result.**

    **Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

    **Error: Search query is invalid, or data is not present.**

**SQL:**

```
SELECT title, description, date_posted, link

FROM JobData WHERE company_id IN (SELECT id   FROM Company WHERE rating>=4.0);
```

12. Select jobs with salary > 100000

    **Description: Searching for Jobs where salary is greater than 100000**

    **Actor:** User

    **Precondition: Needs to check if Jobs contains**

    **Steps:**

    **Actor action:** Search for Top 3 Job Location with low tax rate.

    **System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

    **Post Condition: The user can view the query result.**

    **Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

    **Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE company_id IN (SELECT id FROM Company WHERE rating>=100000);**

13. Select jobs where skill = Python

**Description: Searching for Jobs where python skills are needed.**

**Actor:** User

**Precondition: Needs to check if database contains Jobs where derived tag category is skill and skill value is Python.**

**Steps:**

**Actor action:** Search for Jobs where Python is needed skill.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE id IN (SELECT id FROM DerivedData WHERE category='skill' AND value='Python');**

14. Select jobs related to Finance industry

**Description: Searching for Jobs where industry sector is Finance Industry**

**Actor:** User

**Precondition: Needs to check if database contains Industry domain and sector related to Jobs is present.**

**Steps:**

**Actor action:** Search for Jobs related to Finance Industry.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE company_id IN (SELECT id FROM Company WHERE sector='Finance industry');**

15. Select jobs related to Finance industry and skill as Python

**Description: Searching for Jobs where industry sector is Finance Industry and python skills are needed.**

**Actor:** User

**Precondition: Needs to check if database contains Industry domain, sector related to Jobs and derived tag category is skill and skill value is Python.**

**is present.**

**Steps:**

**Actor action:** Search for Jobs related to Finance Industry and python skill is required.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE company_id IN (SELECT id FROM Company WHERE sector='Finance industry') AND id IN (SELECT id FROM DerivedData WHERE category='skill' AND value='Python');**

16. Select Apple jobs with title data scientist

    **Description: Searching for Jobs where company name is Apple and Job title is AI/ML - UI Engineer, AI/ML Data.**

    **Actor:** User

    **Precondition: Needs to check if database contains Jobs with company name value as Apple along with Job Title.**

    **Steps:**

    **Actor action:** Search for Jobs in Apple and Job title is AI/ML - UI Engineer, AI/ML Data.

    **System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

    **Post Condition: The user can view the query result.**

    **Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

    **Error: Search query is invalid, or data is not present.**

    **SQL:**

    **SELECT title, description, date_posted, link**

    **FROM JobData WHERE title LIKE '%data scientist%' AND company_id IN (SELECT id FROM Company WHERE name='Apple');**

17. Select Data Science Apple jobs in Seattle.

    **Description: Searching for Jobs related to Data Science at Apple – Seattle location.**

    **Actor:** User

    **Precondition: Needs to check if database contains Jobs with company name value as Apple and Data Science as skill value in derived tag table.**

    **Steps:**

    **Actor action:** Search for Data Science Jobs in Apple in Seattle City.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE title LIKE '%data scientist%' AND company_id IN (SELECT id FROM Company WHERE name='Apple') AND location_id = (SELECT id FROM Location WHERE city='Seattle')**

18. Select associate jobs in Boston

**Description: Searching for Jobs where seniority level is Associate in Boston Area.**

**Actor:** User

**Precondition: Needs to check if database contains Jobs with different Seniority Level for Boston City.**

**Steps:**

**Actor action:** Search for Jobs with Associate as Seniority level in Boston Area.

**System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

**Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE seniority_level='associate' AND location_id = (SELECT id FROM Location WHERE city='Boston');**

19. Select python associate jobs in Boston

    **Description: Searching for Jobs where seniority level is Associate and python skill is needed.**

    **Actor:** User

    **Precondition: Needs to check if database contains Jobs with different Seniority level and python skill is mentioned in the derived tag table.**

    **Steps:**

    **Actor action:** Search for Jobs with Associate Level and Python skill is needed.

    **System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

    **Post Condition: The user can view the query result.**

    **Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

    **Error: Search query is invalid, or data is not present.**

    **SQL:**

    **SELECT title, description, date_posted, link**

    **FROM JobData WHERE seniority_level='associate' AND location_id = (SELECT id FROM Location WHERE city='Boston');**

20. Select jobs from apple where job description contains H1B

    **Description: Searching for Jobs where company name is Apple and Job Description contains H1B.**

    **Actor:** User

    **Precondition: Needs to check if database contains Jobs with company name value as Apple along with Job Description.**

    **Steps:**

    **Actor action:** Search for Jobs in Apple and Job description contains H1B.

    **System Responses:** If there is a search match then the corresponding job data is retrieved from the database, and the use case ends.

    **Post Condition: The user can view the query result.**

**Alternate Path: If user** request is incorrect, system will throw an error and if data is not present in the database, then the system will return null

**Error: Search query is invalid, or data is not present.**

**SQL:**

**SELECT title, description, date_posted, link**

**FROM JobData WHERE description LIKE '%H1B%' AND company_id IN (SELECT id FROM Company WHERE name='Apple');**