Database Beavers, Inc.

Chase Nairn-Howard and Josiah Humber

Link: http://flip1.engr.oregonstate.edu:4221/

Feedback:

* Though we got 4 reviews in total, only 3 of them made suggestions on things to change.

Paul Lipp

> The UI is very good and intuitive, I don't have any suggestions at the moment, other than adding a panel or a list of sorts that contains links to jump between pages easier. For UX sakes it would be best to not have to go to the index page, or home page, everytime one wants to visit another tables page.

Nash Bernhart

> The UI looks really nice! I can appreciate the effort that went into creating a whole express app instead of just a static HTML page. My only suggestion for the UI would be to include some kind of navigation buttons that are persistent across all pages so that the user doesn't have to rely on the browser back button to navigate

Henry Jarrett

> Consider implementing forms to update. Or making it clearer how a user can make an update. The UI looks really good.

Actions based on Feedback:

Having a way to navigate between pages with a constant navigation bar is a good idea and would add to the user experience.

Currently, there is a way to update the data by double clicking the cells in the table. Currently, there is a small visual cue for the user by highlighting the editable box when the user hovers over them. Having a clearer cue to the user on when they can edit is a good idea.

Changes made:

- Added a nav bar to the page header.
- Added a pencil icon when a user hovers over editable cells.

Upgrades to the Draft Version:

- Added a query that returns the number of active employees of each role. The use case for this would be to check which departments/areas the company is strong in and which departments/areas the company needs to work on (in regards to the quantity of employees in a particular role).
- Added a way to filter columns in the table with some new visual features to be implemented in the next step.

Overview:

The following proposal is for a database that will be used by the company “Beavers for Better” or BB. Beavers for Better is a company of 230 employees that focuses on creating custom-made, state-of-the-art robotic solutions for their clients. Though they are exceptional at creating these solutions, they have found that their current organization methods are causing problems; namely, projects are being completed late due to misunderstandings about who is, or will be, working on a project.
Additionally, as the company continues to grow, managers want a system that tracks how many hours each employee is working and what projects they are working on; they hope such a system can help them keep track of employees, give them insights into their workflow, and provide better estimates to clients regarding how long a project will take.

All-in-all, Beavers for Better wants a database that will track employees, the projects employees are working on and how long they are working on them, and each employee’s payroll.

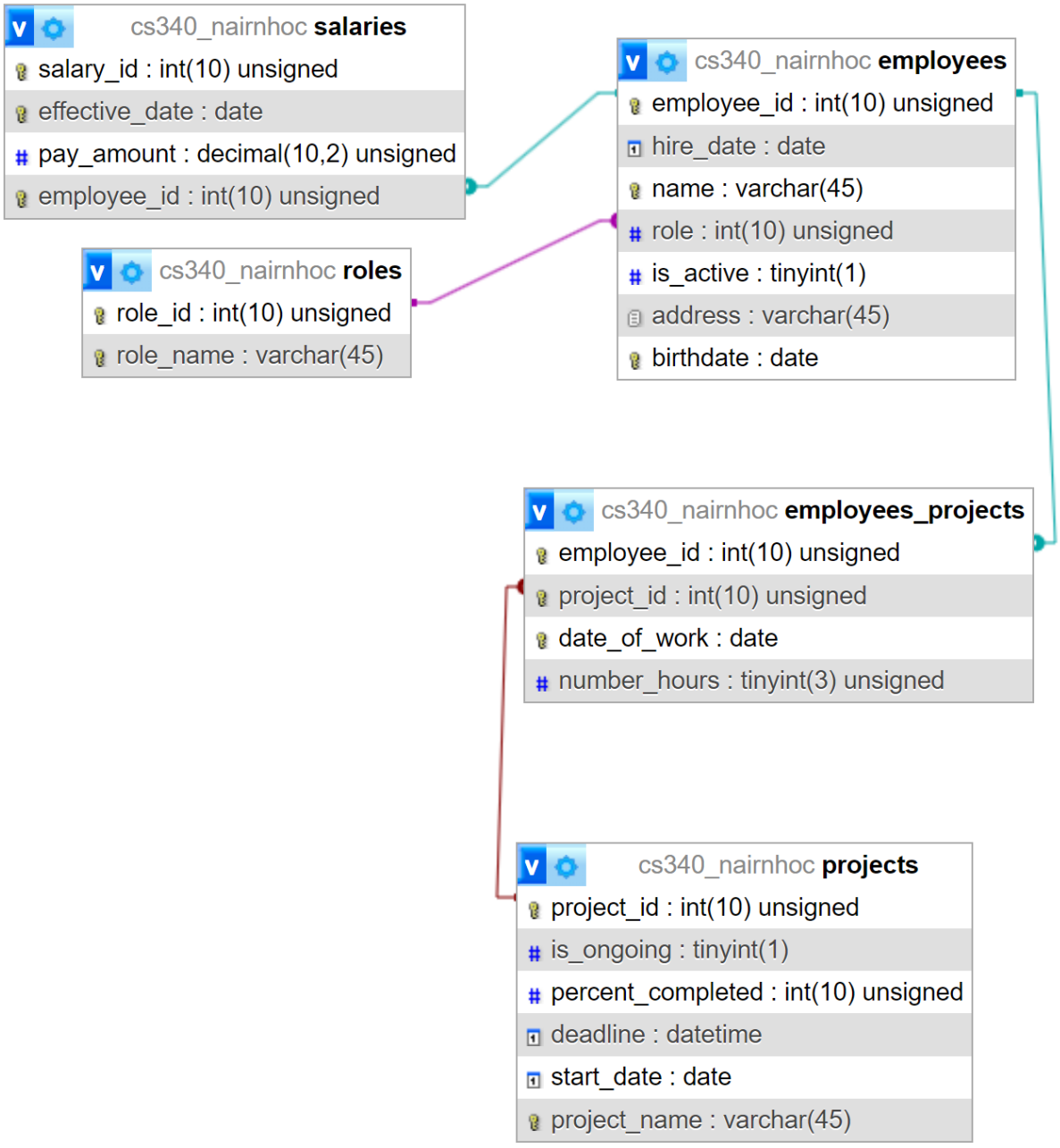
Database Outline:

- **employees:** The records and employment data of those employed past and present
  - *employee_id*: int, unsigned, PK, NN, UQ, AI
  - *hire_date*: date, NN
  - *is_active*: tinyint, unsigned, NN
  - *name*: varchar, NN
  - *address*: varchar
  - *birthdate*: date, NN
  - Relationships with
    - **roles**
      - Cardinality: 1:M implemented with *role_id* as a foreign key in **employees** table
      - Participation: Mandatory for **roles**, not mandatory for **employees**
    - **salaries**
      - Cardinality: 1:1 implemented with *employee_id* as a foreign key in **salaries**
      - Participation: Mandatory for **salaries**, not mandatory for **employees**
    - **projects**
      - Cardinality: M:N implemented with *employee_id* and *project_id* as foreign keys of a composite entity **employees_projects**
      - Participation: Not mandatory for **employees**, not mandatory for **projects**

- **roles:** The job type employees are hired to fill
  - *role_id*: int, unsigned, PK, NN, UQ, AI
  - *role_name*: varchar, NN
  - Relationships with

        - **employees**
            - Cardinality: 1:M implemented with *role_id* as a foreign key in **employees** table
            - Participation: Not mandatory for **employees**, mandatory for **roles**
- **projects:** All projects the company has ever assigned an employee to
    - *project_id*: int, unsigned, PK, NN, UQ, AI
    - *project_name*: varchar(255), NN
    - *start_date:* date, NN
    - *deadline:* date, NN
    - *is_ongoing*: tinyint, NN
    - *perecent_completed*: int, unsigned
    - Relationships with
        - **employees**
            - Cardinality: M:N implemented with *employee_id* and *project_id* as foreign keys of a composite entity **employees_projects**
            - Participation: Mandatory for **projects**, not mandatory for **employees**
- **salaries:** All pay rates an employee has ever had
    - *salary_id*: int, PK, NN, UQ, AI
    - *effective_date*: date, NN
    - *pay_amount*: decimal(10,2), NN
    - employee_id: int, unsigned, NN
    - Relationships with
        - **employees**
            - Cardinality: 1:1 implemented with *employee_id* as a foreign key in **salaries**
            - Participation: Not mandatory for **employees**, mandatory for **salaries**
- **employees_projects:** A composite entity used to track employee and project relationships as well as employee hours spent on a project
    - *employee_id*: int, PK, NN
    - *project_id*: int, PK, NN
    - *date_of_work*: date, PK, NN
    - *number_hours*: tinyint, unsigned, NN
    - Relationships with
        - **employees**
            - Cardinality: 1:M implemented with *employee_id* as a foreign key in composite entity **employees_projects**
            - Participation: Mandatory for **employees**, not mandatory for **employees_projects**
        - **projects**
            - Cardinality: 1:M implemented with *project_id* as a foreign key in composite entity **employees_projects**
            - Participation: Mandatory for **projects**, not mandatory for **employees_projects**

ER Diagram


cs340_nairnhoc salaries
salary_id : int(10) unsigned
effective_date : date
pay_amount : decimal(10,2) unsigned
employee_id : int(10) unsigned
cs340_nairnhoc employees
employee_id : int(10) unsigned
hire_date : date
name : varchar(45)
role : int(10) unsigned
is_active : tinyint(1)
address : varchar(45)
birthdate : date
cs340_nairnhoc roles
role_id : int(10) unsigned
role_name : varchar(45)
cs340_nairnhoc employees_projects
employee_id : int(10) unsigned
project_id : int(10) unsigned
date_of_work : date
number_hours : tinyint(3) unsigned
cs340_nairnhoc projects
project_id : int(10) unsigned
is_ongoing : tinyint(1)
percent_completed : int(10) unsigned
deadline : datetime
start_date : date
project_name : varchar(45)

Sample Tables

Employees Table

employee_id	hire_date	name	role	is_active	address	birthdate
1	12/31/2020	Benny Beaverton	1	1	5551 NW Harrison Blvd	10/6/1990
2	12/31/2020	Blaid Beaverton	2	1	5551 NW Harrison Blvd	11/4/1992
3	3/1/2021	Oregon Duck	5	0	2555 SE Portland Ave	10/6/1990
4	12/31/2021	Roger Smith	6	1	8750 Rocky Way	5/5/1995
5	2023-1-31	Tweedle Dee	7	1	1458 Wonderland Way	1895-5-5
6	2023-1-31	Tweedle Dum	7	1	1458 Wonderland Way	1895-5-5
7	2023-1-31	Knives Chau	7	1	555 Westward Way	2000-10-10
8	2023-1-31	Scott Pilgrim	5	1	8705 Scotty Blvd	1999-10-12
9	2023-1-31	Luke Skywalker	5	1	0000 Milky Way	2000-12-12

Employee Project (employee_project) Table

employee_id	project_id	date_of_work	number_hours
1	3	1/1/2020	7
1	3	1/2/2020	9
1	3	1/3/2020	8
2	3	1/1/2020	4
2	3	1/2/2020	9
2	3	1/3/2020	10
3	3	1/1/2020	1
3	3	1/3/2020	2

Projects Table

project_id	is_ongoing	percent_completed	deadline	start_date	project_name
1	1	85	2/12/2024 0:00	11/20/2022	OSURC Autonomous Mars Rover
2	1	10	10/19/2024 0:00	5/4/2023	Cryptic Technomancer
3	0	100	1/1/2023 0:00	1/1/2020	Wall-E

Roles Table

role_id	role_name
11	AI Systems Specialist
1	CEO of Beavers for Better
5	Electric Engineer
8	Head of Communications
10	Kinesthetics Specialist
3	Mechanical Engineer
4	Senior Electric Engineer
2	Senior Mechanical Engineer
6	Senior Software Engineer
7	Software Engineer
9	Technical Writer

Salary Table

salary_id	effective_date	pay_amount	employee_id
1	12/31/2020	18	1
2	12/31/2021	22	1
3	12/31/2022	30	1
4	12/31/2020	18	2
5	12/31/2021	23	2
6	12/31/2022	34	2
7	3/1/2021	18	3
8	3/1/2022	18.01	3
9	12/1/2022	18.02	3
10	12/31/2021	22	4
11	12/31/2022	32	4