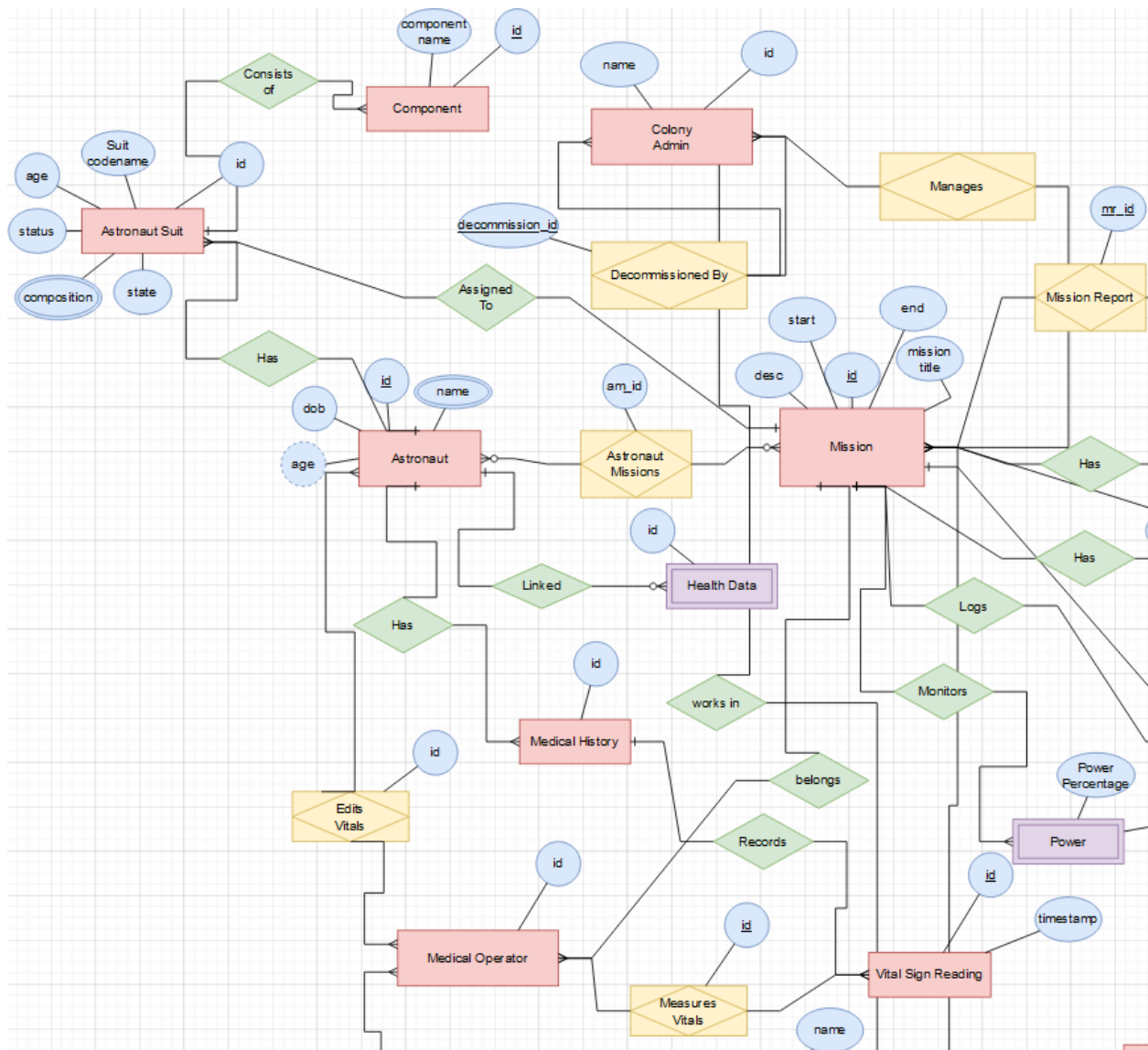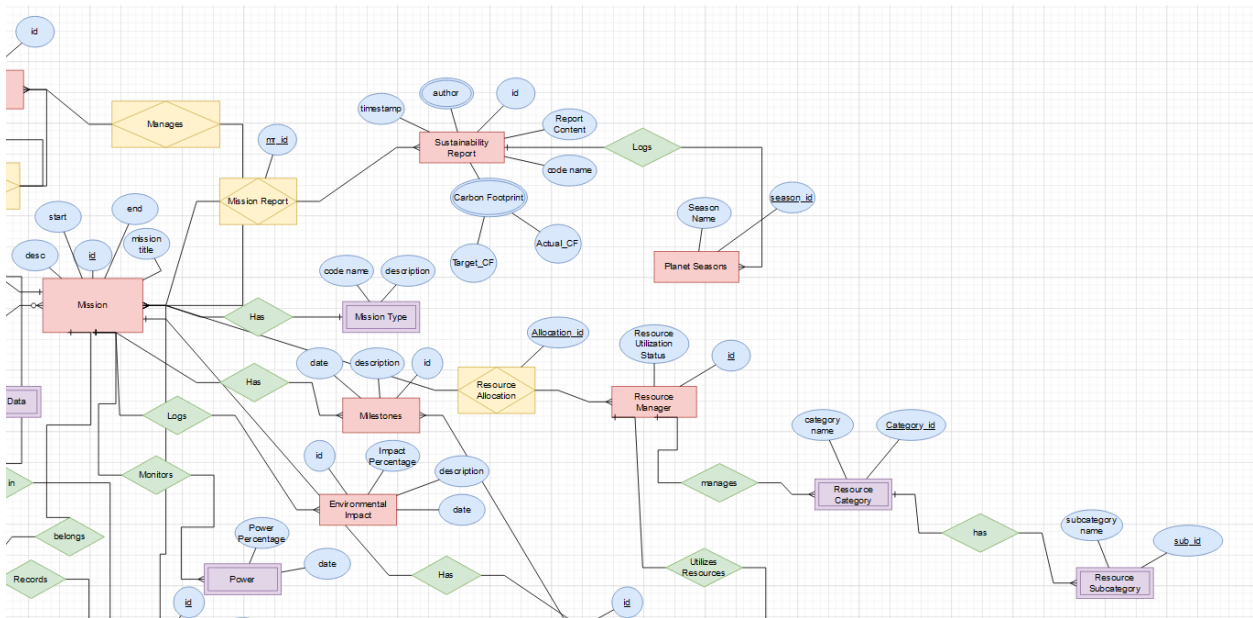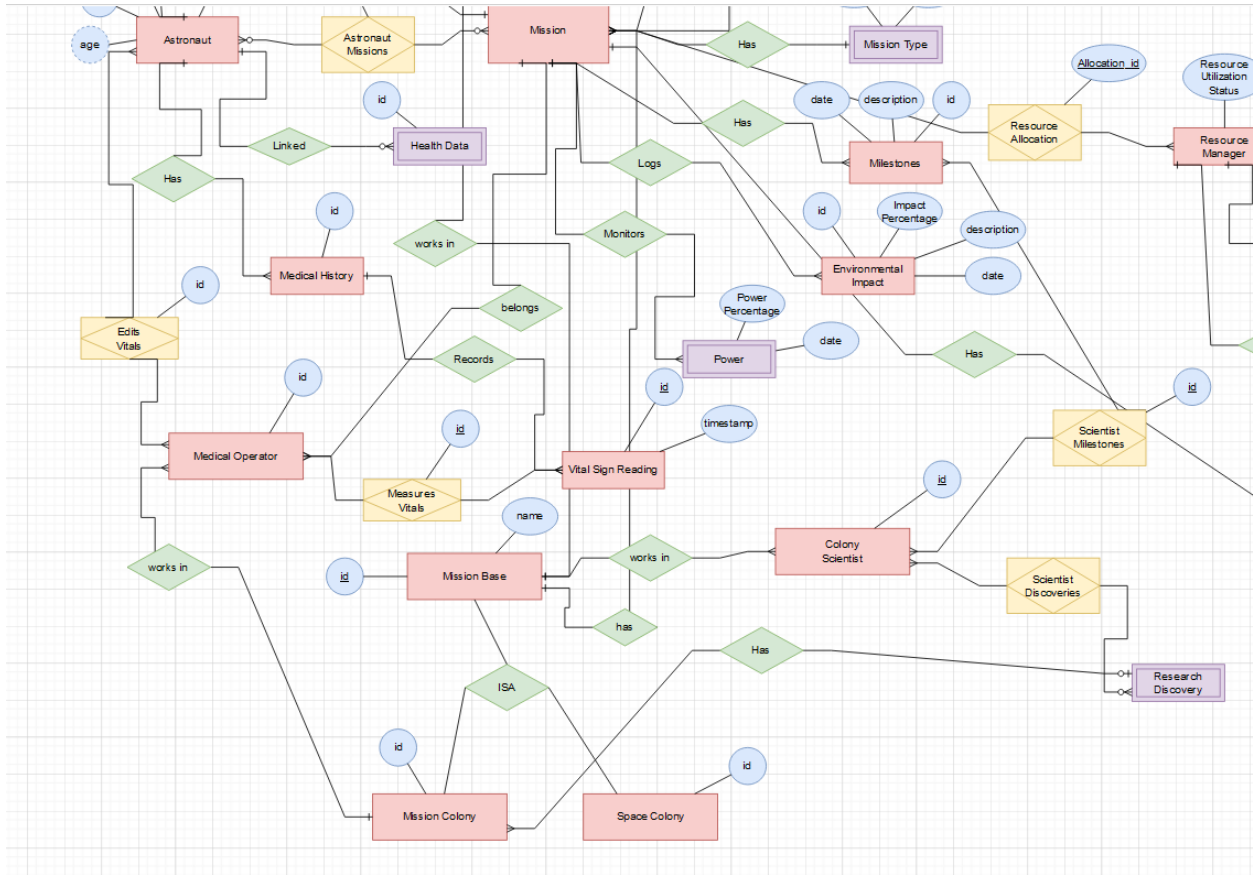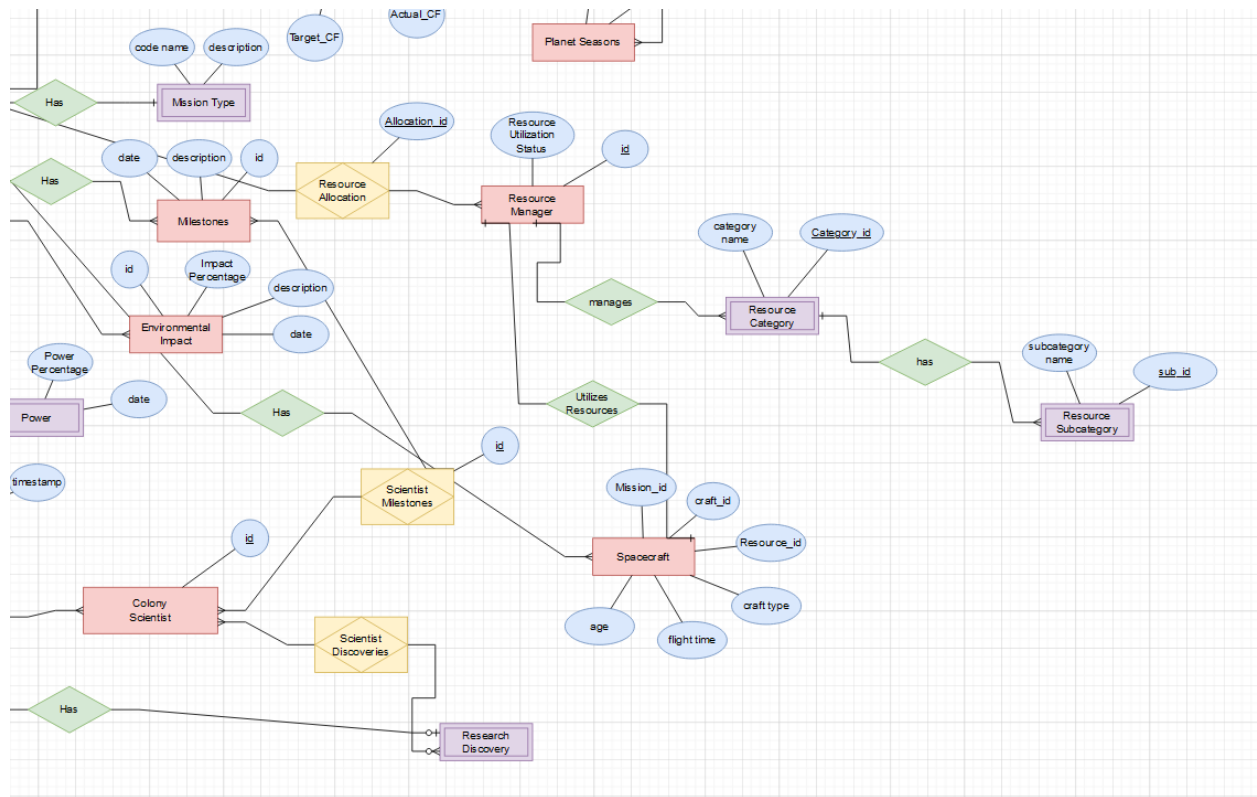Because of the size of the graph, I took (in order) top left -> bottom left -> top right -> bottom right screenshots of the graph. If this is not efficient enough I will attach a PDF of the whole diagram.

Diagram 1 (top)

age — Astronaut — Astronaut Missions — Mission — Has — Mission Type

id — Health Data — Linked — Has — date — description — id — Resource Allocation — Allocation_id — Resource Utilization Status

Has — Milestones — Resource Manager

id — works in — Logs — Monitors — belongs — Impact Percentage — description — Environmental Impact — date

id — Medical History — Records — Power Percentage — Power — date — Has — id — Scientist Milestones

Edits Vitals — id

id — Medical Operator — id — Vital Sign Reading — timestamp — id

Measures Vitals — name — works in — Colony Scientist — id

works in — Mission Base — works in — Scientist Discoveries

id — has — Has — Research Discovery

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id — Mission Colony — Space Colony — id

Diagram 2 (bottom)

id — Manages — timestamp — author — id — Report Content — Logs

rr_id — Sustainability Report — code name — season_id

Mission Report — Carbon Footprint — Season Name — Planet Seasons

end — Actual_CF

start — mission title — code name — description — Mission Type — Allocation_id — Resource Utilization Status — id

desc — id — Mission — Has — date — description — id — Resource Allocation — Resource Manager

Data — Has — Milestones — category name — Category_id

Logs — id — Impact Percentage — description — manages — Resource Category

in — Monitors — Environmental Impact — date — subcategory name — sub_id

belongs — Power Percentage — Power — date — Has — has — Resource Subcategory

Records — Utilizes Resources — id

id

Entity-Relationship Diagram

- Mission Type (attributes: code name, description)
- Target_CF
- Actual_CF
- Planet Seasons
- Has (Mission Type)
- Has (Milestones): date, description, id
- Resource Allocation (Allocation_id)
- Resource Manager (Resource Utilization Status, id)
- Milestones
- Resource Category (category name, Category_id)
- manages (Resource Manager — Resource Category)
- has (Resource Category — Resource Subcategory)
- Resource Subcategory (subcategory name, sub_id)
- Environmental Impact (id, Impact Percentage, description, date)
- Power (Power Percentage, date)
- Has (Power)
- timestamp
- Scientist Milestones (id)
- Utilizes Resources
- Spacecraft (Mission_id, craft_id, Resource_id, craft type, flight time, age)
- Colony Scientist (id)
- Scientist Discoveries
- Has
- Research Discovery

Space Colonization Attributes

1. Astronaut (Strong)
   * astro_id: primary key, numeric
   * name: composite, alphanumeric
   * dob: multivalue, timestamp
   * age: derived, Numeric

2. Astronaut Suit (Strong)
   - suit_id: primary Key, Numeric
   - astronaut_id: foreign Key, Numeric
   - suit_codename: alphanumeric
   - suit_status: alphanumeric
   - suit_age: numeric
   - suit_composition: multivalue, alphanumeric
   - suit_state: alphanumeric

3. Mission (Strong)
   * mission_id: key, numeric
   * description: alphanumeric
   * mission_type: alphanumeric
   * mission_title: alphanumeric
   * start_date: timestamp
   - end_date: timestamp
   - mission_base: foreign Key (refers to mission base)
   - mission_crew: Multivalue, Numeric (astro_ids)

4. Colony Admin (Strong)
   * admin_id: key, numeric
   * **colony_id: foreign key, numeric (references colony)**
   * name: alphanumeric
   - contact_email: alphanumeric or email
   - contact_phone: alphanumeric or phone number

5. Medical Operator (Strong)

- medical_id: key, numeric
- colony_id: foreign key, numeric (references colony)
- name: alphanumeric
- contact_email: alphanumeric
- contact_phone: alphanumeric
- astronaut_id: foreign key, numeric (references astronaut)
- vital_signs_id: foreign key, numeric (references vital signs)

6. Medical History (Strong)
    - MH_id: primary key, numeric
    - medical_condition: text
    - treatment: text
    - date_recorded: timestamp
    - astronaut_id: foreign key, numeric (references astronaut)
    - vital_sign_readings: multivalue, numeric OR id(?)

7. Colony Scientist (Strong)
    - colonyscientist_id: primary key, numeric
    - name: alphanumeric
    - contact_email: alphanumeric
    - contact_phone: alphanumeric
    - mission_base_id: foreign key, numeric
    - scientist_milestones: multivalue, alphanumeric
    - research_discoveries: multivalue, alphanumeric

8. Spacecraft (Strong)
    - craft_id: primary key, numeric
    - craft_name: alphanumeric
    - **resource_id: foreign key, numeric**
    - **mission_id: foreign key, numeric**
    - crew_capacity: numeric
    - status: alphanumeric

9. Sustainability Report(Strong)
    - sus_id: primary key, numeric
    - timestamp: timestamp
    - author: alphanumeric
    - report_content: text
    - code_name: alphanumeric
    - target_carbon_footprint: composite (numeric and unit)
    - actual_carbon_footprint: composite (numeric and unit)
    - **mission_id: foreign key, numeric (references Missions)**

10. Planet Seasons(Strong)

- season_id: primary key, numeric
- season_name: alphanumeric
- start_date: timestamp
- end_date: timestamp
- oxygen_level: numeric
- water_level: numeric
- **sustainability_report_id: foreign key, numeric (references Sustainability Report)**

11. Milestones(Strong)
   - milestone_id: primary key, numeric
   - date: timestamp
   - description: text

12. Mission Base(Strong)
   - base_id: primary key, numeric
   - base_name: alphanumeric
   - location: alphanumeric
   - capacity: numeric
   - status: alphanumeric (e.g., active, inactive)
   - founded_date: timestamp
   - mission_id: foreign key, numeric
   - colony_admin_id: foreign key, numeric

13. Vital Sign Reading(Strong)
   - reading_id: primary key, numeric
   - vital_type: alphanumeric (e.g., heart rate, blood pressure, oxygen levels)
   - value: numeric
   - timestamp: timestamp

14. Component (Strong)
   - component_id: primary key, numeric
   - component_name: alphanumeric
   - component_type: alphanumeric (helmet, gloves, visor, etc.)
   - status: alphanumeric (operational, in need of maintenance, etc.)
   - astrosuit_id: foreign key, numeric

15. Resource Manager(Strong)
   - manager_id: primary key, numeric
   - resource_utilization_status: alphanumeric (High, Medium, Low)
   - **category_id: foreign key, numeric**
   - **subcategory_id: foreign key, numeric**

16. Mission Colony (Strong)
   - colony_id: primary key, numeric

- colony_name: alphanumeric
   - colony_location: alphanumeric
   - colony_population: numeric
   - medical_operator_id: foreign key, numeric
   - colony_scientist_id: foreign key, numeric

17. Space Colony (Strong)
   - space_colony_id: primary key, numeric
   - space_colony_name: alphanumeric
   - space_colony_location: alphanumeric
   - space_colony_capacity: numeric
   - medical_operator_id: foreign key, numeric
   - colony_scientist_id: foreign key, numeric

18. Health Data (Weak):
   - health_data_id: primary key, numeric
   - reading_timestamp: timestamp
   - vital_sign: alphanumeric (e.g., heart rate, blood pressure)
   - value: numeric
   - **astronaut_id: foreign key, numeric "Astronaut" entity**

19. Power (Weak):
   - power_id: primary key, numeric
   - reading_timestamp: timestamp
   - power_percentage: numeric
   - **mission_id: foreign key, numeric "Mission" entity**

20. Mission Type (Weak):
   - mission_type_id: primary key, numeric
   - type_name: alphanumeric (e.g., Space, Sea, etc.)
   - **mission_id: foreign key, numeric "Mission" entity**

21. Resource Category (Weak):
   - resource_category_id: primary key, numeric
   - category_name: alphanumeric (e.g., Food, Water, etc.)
   - **manager_id: foreign key, numeric "Resource Manager" entity**

22. Resource Subcategory (Weak):
   - resource_subcategory_id: primary key, numeric
   - subcategory_name: alphanumeric
   - **category_id: foreign key, numeric "Resource Category" entity**

23. Research Discovery (Weak):
   - discovery_id: primary key, numeric

- description: alphanumeric
- date_discovered: timestamp
- **colony_id: foreign key, numeric "Mission Colony" entity**
- **scientist_id: foreign key, numeric "Colony Scientist" entity**

24. Decommissioned By (Weak):
   - decommission_id: primary key, numeric
   - colony_admin_id: FK, numeric
   - description: alphanumeric

25. Astronaut Missions(Weak)
   - astromission_id: primary key, numeric
   - astro_id: FK, numeric
   - mission_id: FK, numeric

26. Edits Vitals (Weak)
   - edit_vitals_id: primary key, numeric
   - astro_id: FK, numeric
   - medical_id: FK, numeric

27. Manages (Weak)
   - manage_id: primary key, numeric
   - admin_id: FK, numeric
   - mission_id: FK, numeric

28. Mission Report (Weak)
   - report_id: primary key, numeric
   - sus_id: FK, numeric
   - mission_id: FK, numeric

29. Resource Allocation (Weak)
   - allocation_id: primary key, numeric
   - manager_id: FK, numeric
   - mission_id: FK, numeric

30. Scientist Milestones (Weak)
   - sci_mi_id: primary key, numeric
   - colonyscientist_id: FK, numeric
   - milestone_id: FK, numeric

31. Scientist Discoveries (Weak)
   - sci_di_id: primary key, numeric
   - colonyscientist_id: FK, numeric
   - discovery_id: FK, numeric

32. Measure Vitals(Weak)
   - measure_vital_id: primary key, numeric
   - medical_id: FK, numeric
   - reading_id: FK, numeric