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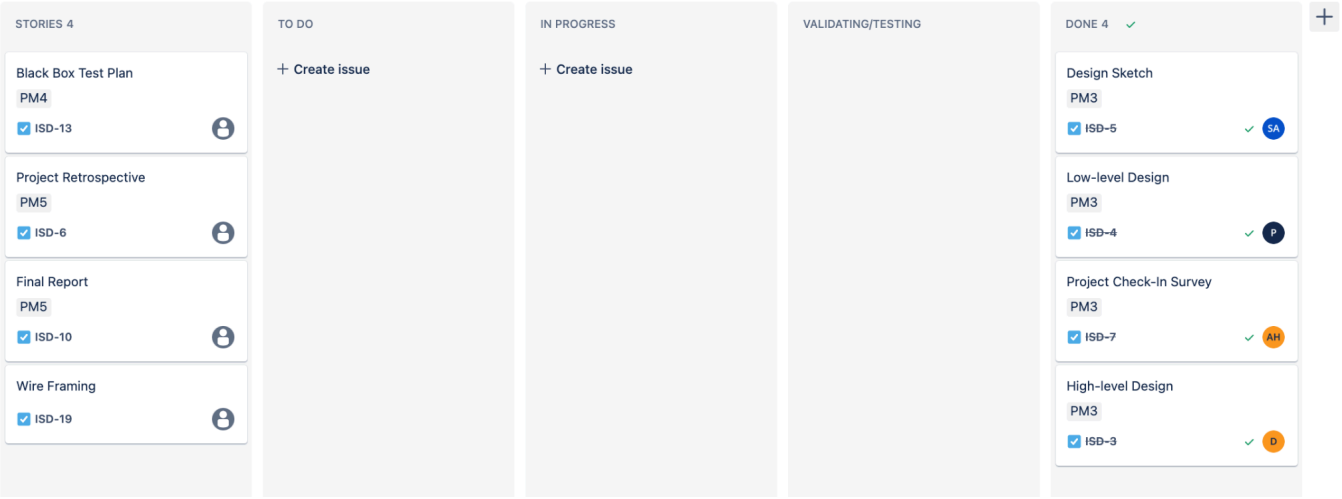
Kanban Board

Process Deliverable II

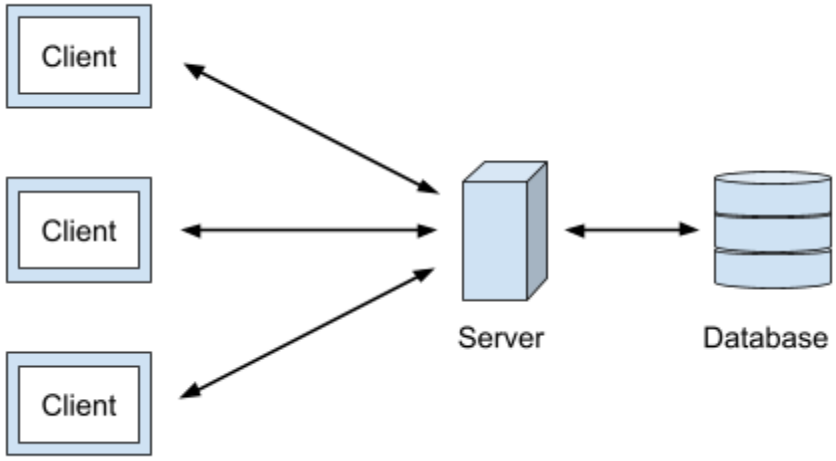


High-Level Design

We will use the client-server architecture pattern for our application. Our client side will contain the UIs for the Project Managers and Developers. The server side will store all of the data needed to run the application and generate the UI displays. When a client adds a task through their UI it will be sent to the server which will store the task and automatically assign a user to complete that task. When a task's data or status is updated in a user's UI it will be sent to the server and stored.

Justification: We choose this architecture pattern because it easily allows for collaboration between users. Using this pattern it will be easy to synchronize the data of each user's local kanban board containing their tasks as well as the global kanban board (contains all tasks). Any tasks added to the global board can also be easily assigned by the server which will have access to a database of user information and profiles.

Diagram:


Client
Client
Client
Server
Database

Low-Level Design

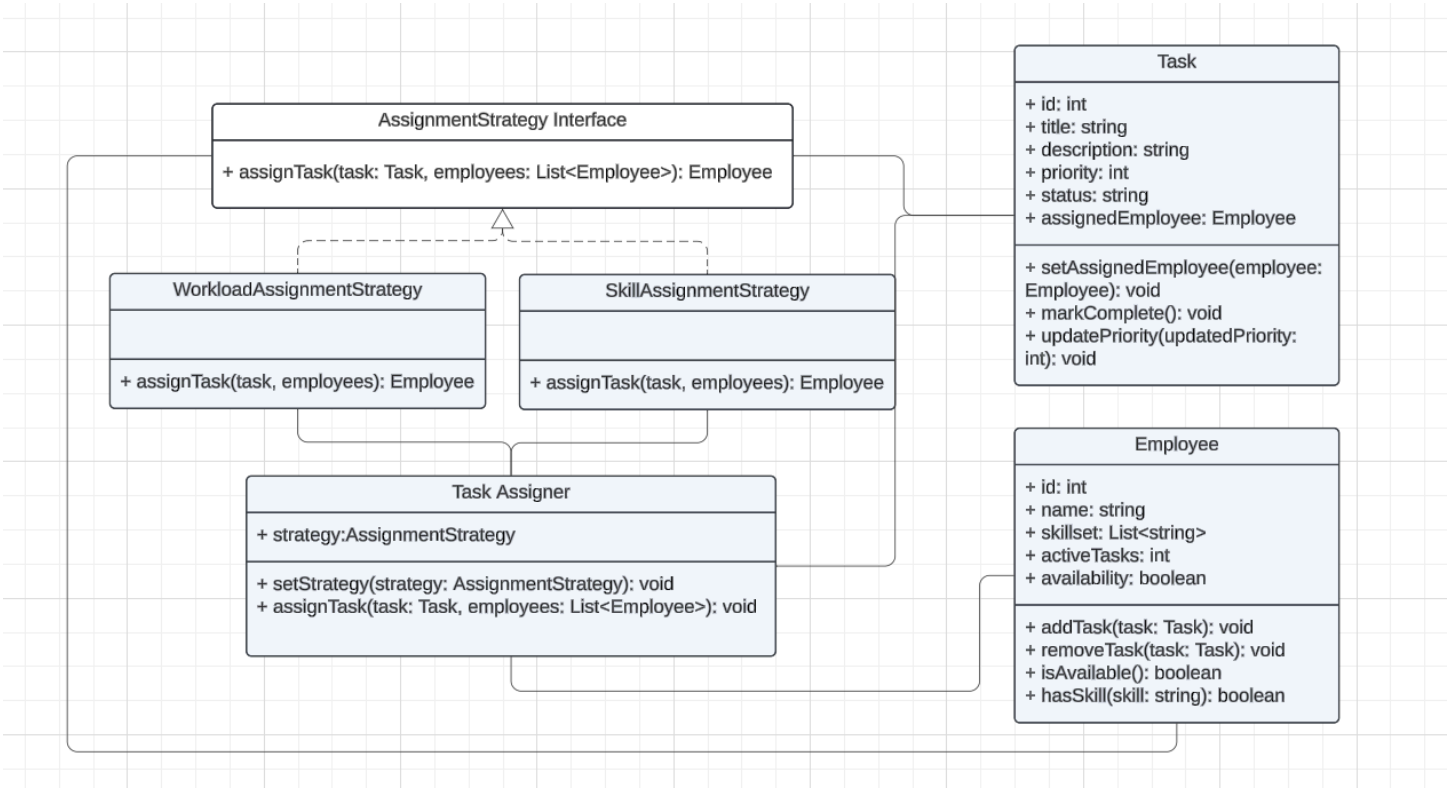
The focus for this section will be the specific subtask of task assignment, both automatic and manual from the project manager. The **behavioral** design pattern family would be the most well suited for this implementation. This is because the behavioral design pattern family characterizes the interactions between various classes and objects, including distributing responsibility. Assigning tasks requires much interaction between objects, such as interactions between classes for tasks, employees, and task assigner logic.

Pseudocode for this subtask:

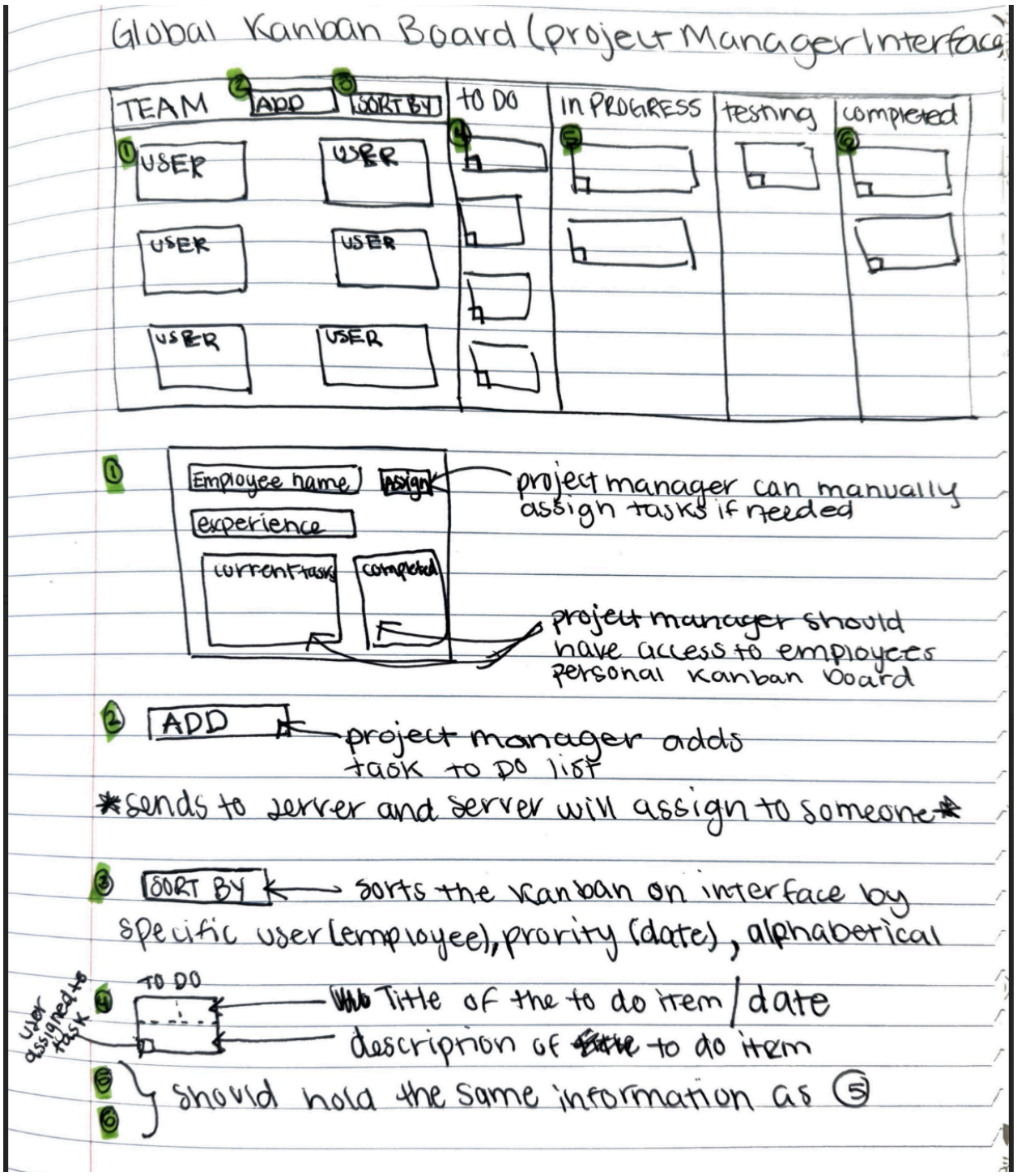
```
Employee

      public void addTask()
      {
            activeTasks += 1
      }

      public void removeTask()
      {
            activeTasks -= 1
      }

      boolean isAvailable()
      {
            return availability
      }

      public boolean hasSkill(String skill)
      {
            return if skill in skillSet
      }

Task

      public void setAssignedEmployee (employee Employee)
      {
            assignedEmployee = employee
            status = "assigned"
      }

      public void markComplete()
      {
            status = "completed"
```

```
            assignedEmployee = null
      }

      public void updatePriority(int updatedPriority)
      {
            priority = updatedPriority
      }

WorkloadAssignmentStrategy implements AssignmentStrategy
      public Employee assignTask(task, employees)
      {
            define available employees
            sort by least workload
            return employee with least workload
      }

SkillAssignmentStrategy implements AssignmentStrategy
      public Employee assignTask(task, employees)
      {
            define available employees
            sort by skill set
            compare workloads
            return employee
      }

TaskAssigner
      public void setStrategy(strat: AssignmentStrategy)
      {
            strategy = strat;
      }

      public void assignTask(Task task, List<Employee> employees)
      {
            Check if strategy is null
            Call assignTask on Strategy object
            If employee is not null, update the assignedEmployee in
the
            task object and the workload in the Employee object
      }
```

Class diagram for this subtask:



Design Sketch



local
~~employee~~ kanBan Board (employeeInterface)

① title of to do item / date complete by
description plus notes

② will be same as ① but also include complete date

③ Notification of new items added employee can accept or reject

④ ADD ~~keep more to person that~~ employee can add a task that needs to be added to project to do list.