



**PES University, Bengaluru**

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**Department of Computer Science & Engineering**  
**Session: Jan - May 2022**

**UE19CS353 – Object Oriented Analysis and Design with Java**  
**Theory ISA (Mini Project)**

Report on

**Turn based strategy console game**

**By:**

**Chandradhar Rao - PES1UG19CS123**

**B R Pratheek - PES1UG19CS101**

**Darshan Madesh - PES1UG19CS130**

**6<sup>th</sup> Semester B**

## 1. Project Description

**GitHubLink :**

<https://github.com/chandradharrao/Turn-Based-Console-Game-Using-Java>

Players advance through many battles, for which their character or party of characters gain experience that improves various attributes and abilities.

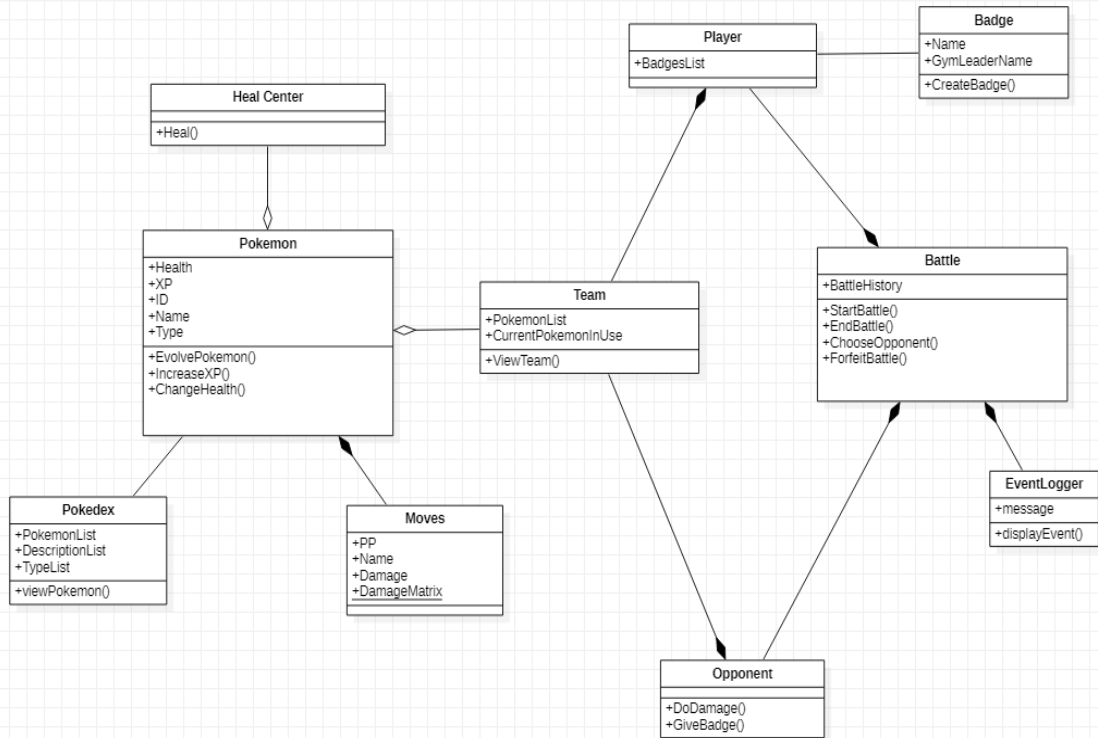
A trainer is given a choice of six pokemons to battle it all out and emerge as the pokemon champion.

Pokémon are divided into types, such as water and fire, each with different strengths.

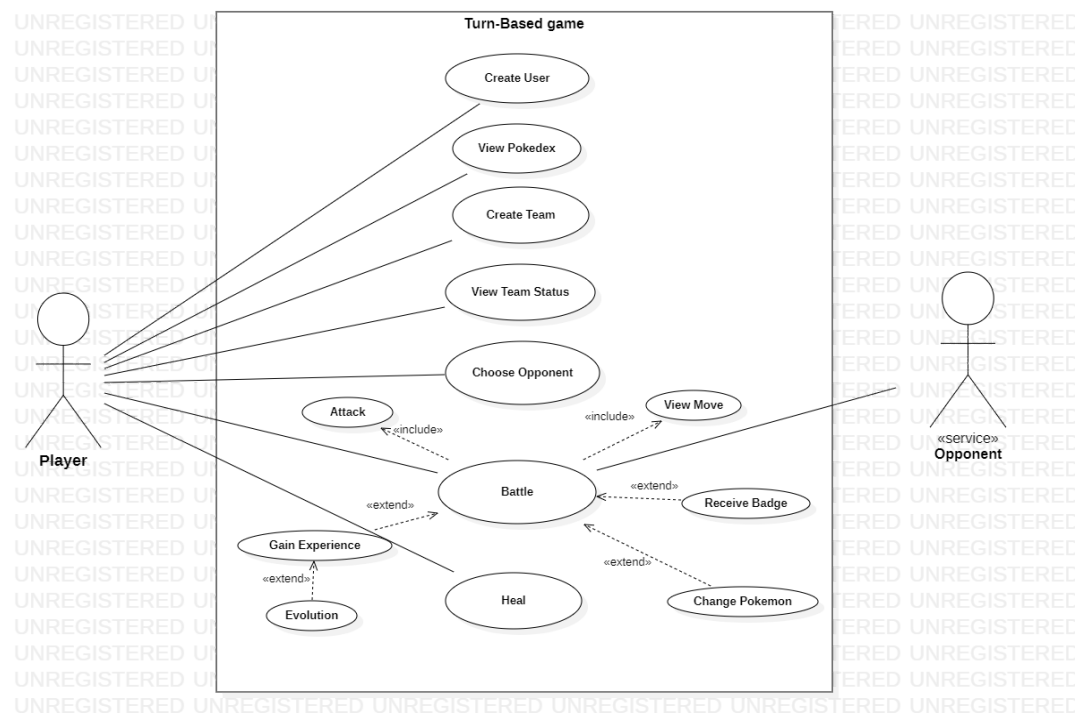
Battles between them can be likened to the simple hand game rock-paper-scissors. For example, to gain an advantage over a Pokémon that cannot beat an opponent's Charizard character because of a weakness to fire, a player might substitute a water-based Pokémon. With experience, Pokémon grow stronger, gaining new abilities. By defeating Gym Leaders and obtaining Gym Badges, trainers garner acclaim.

## 2. Analysis and Design Models

### Create Team:

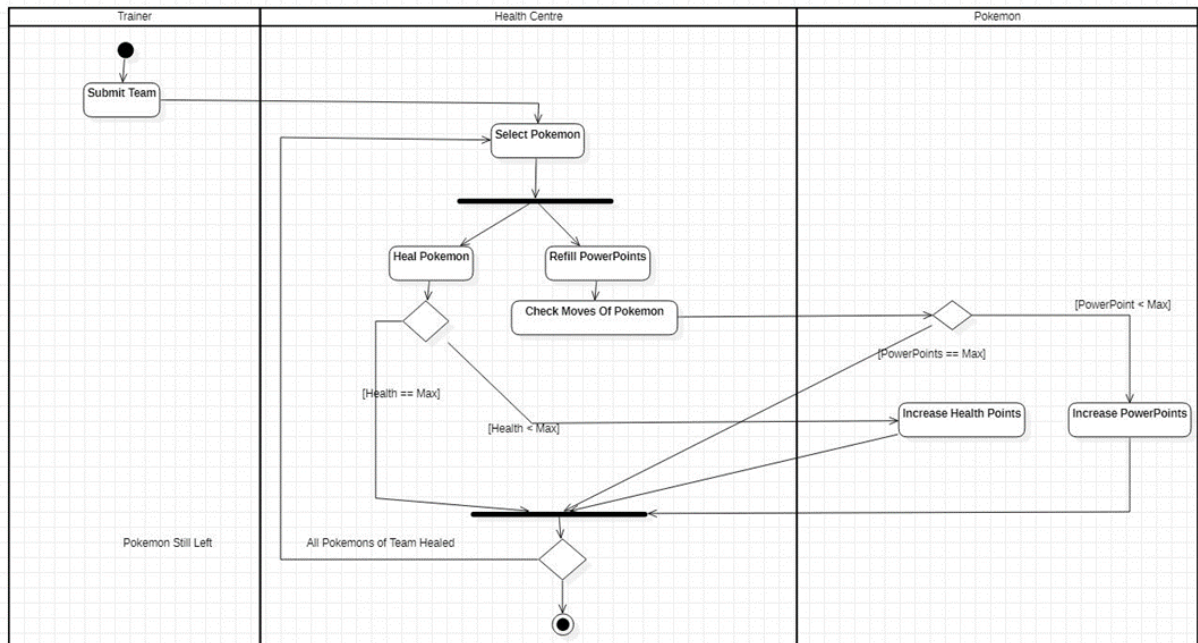


### Use Case

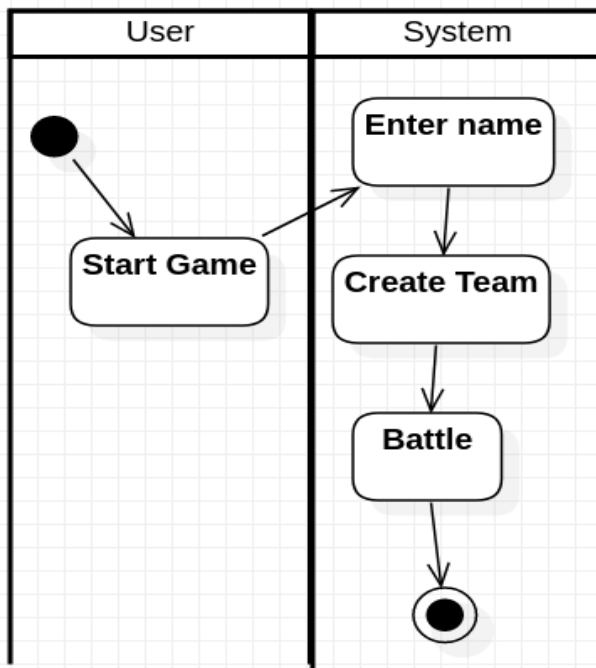


## Activity Diagram:

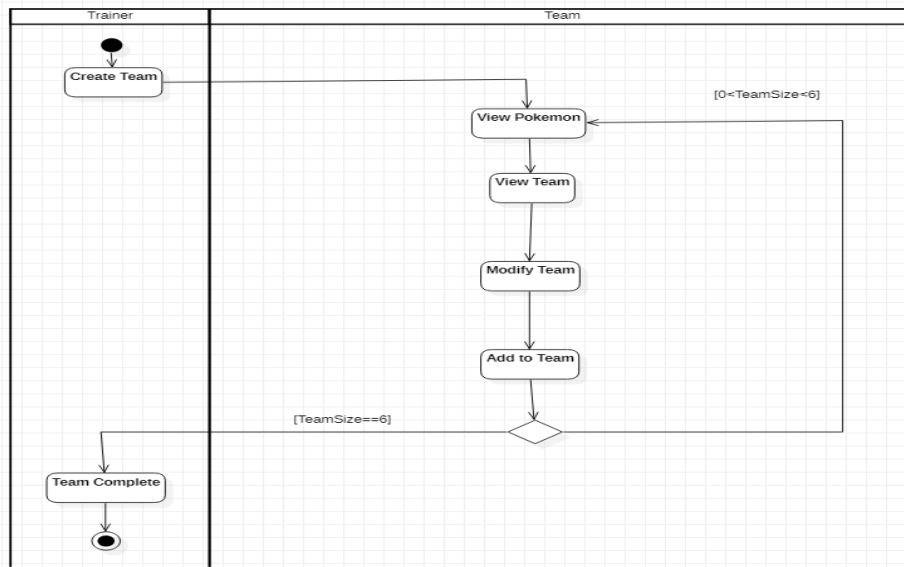
### Heal Pokemon



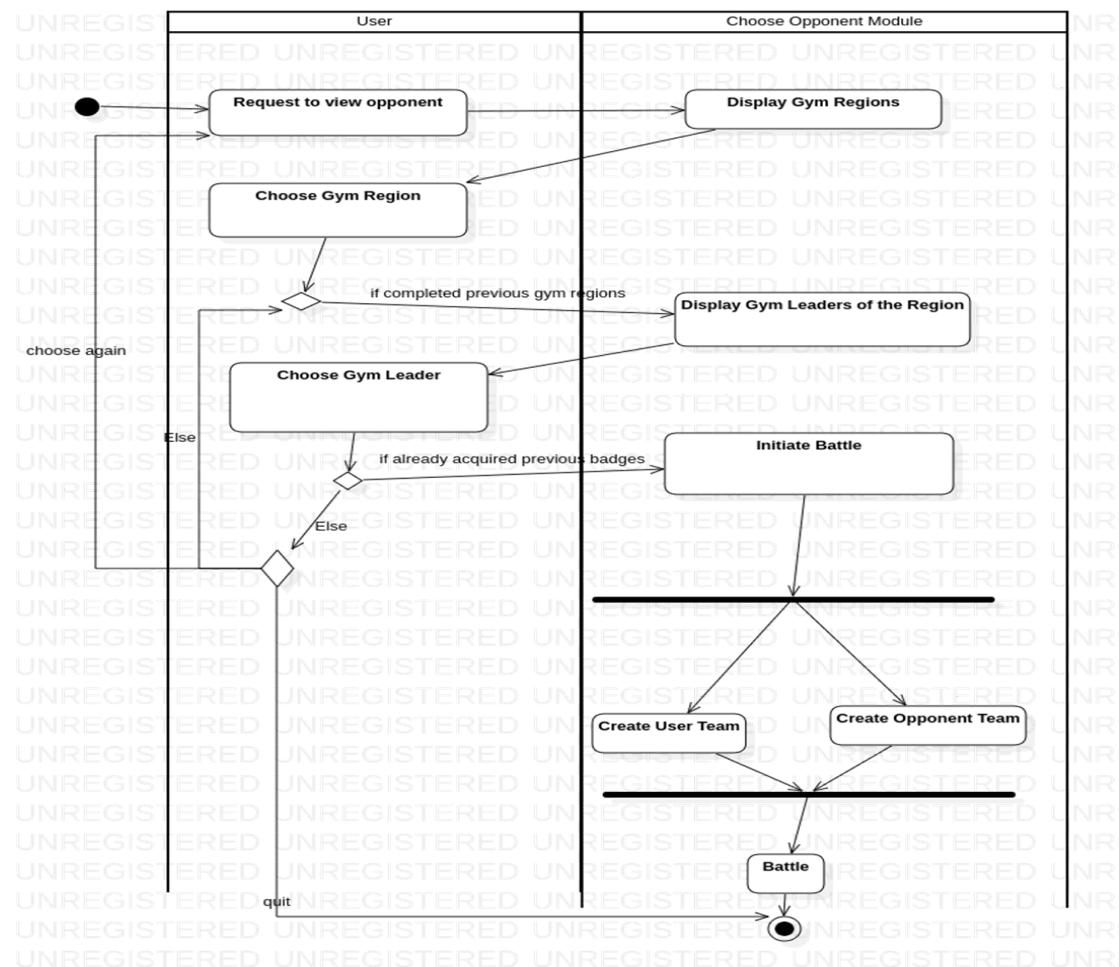
### Create User



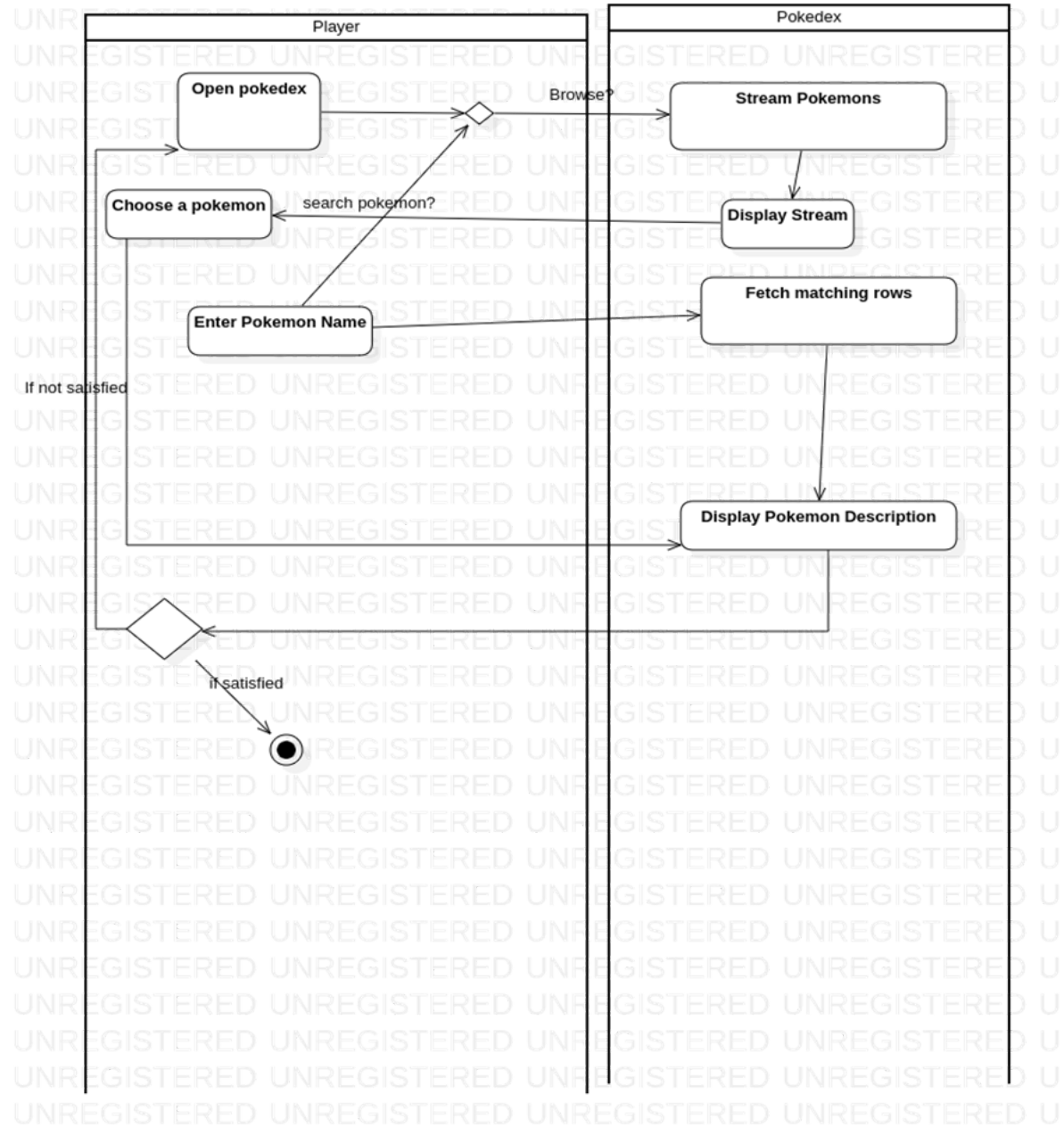
## Create Team



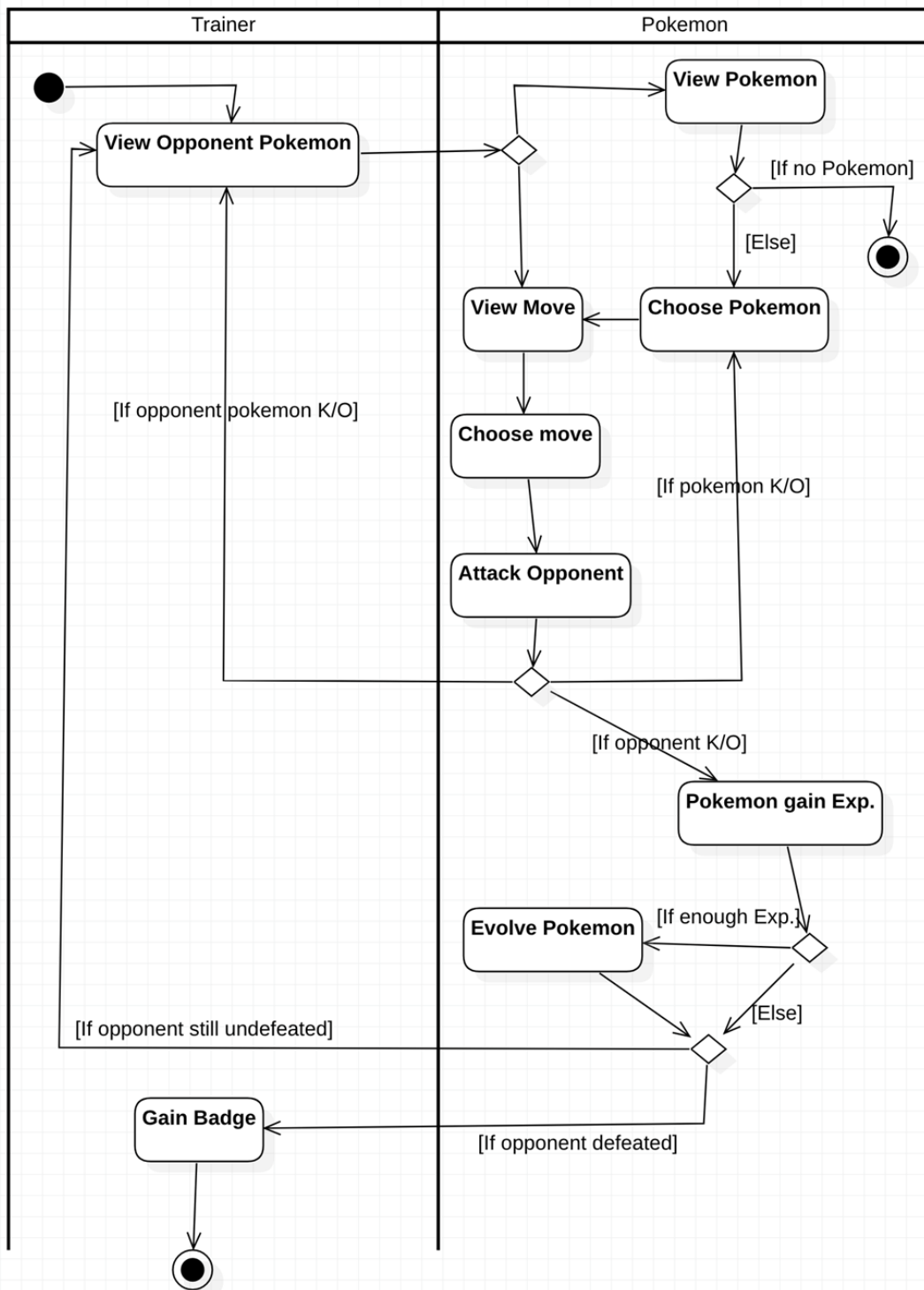
## Choose Opponent



## Pokedex

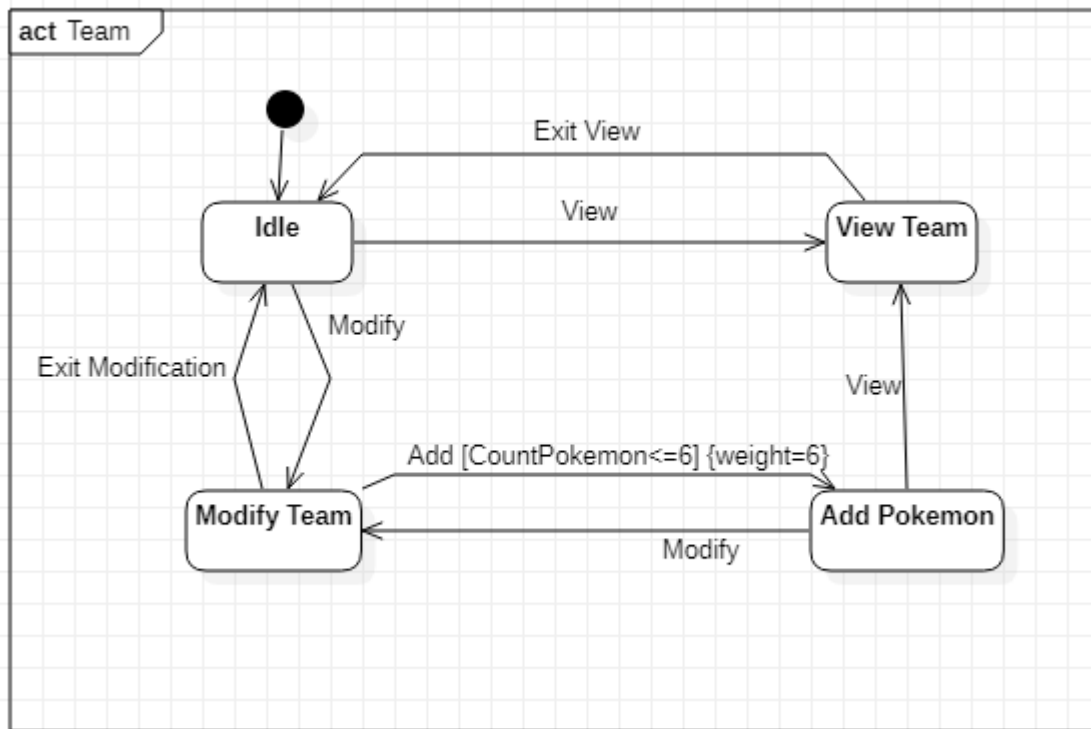


## Battle

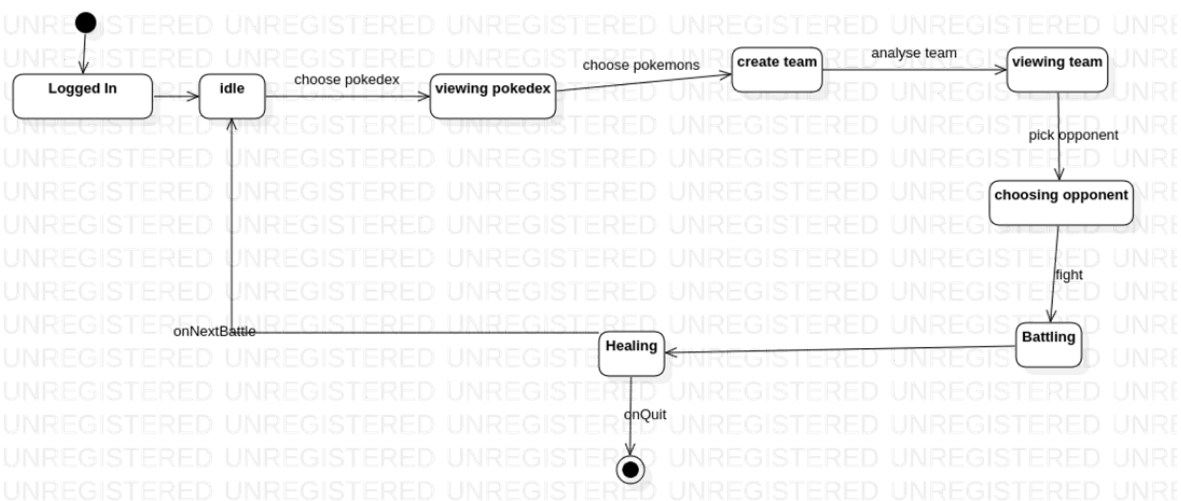


## State Diagrams:

### Team

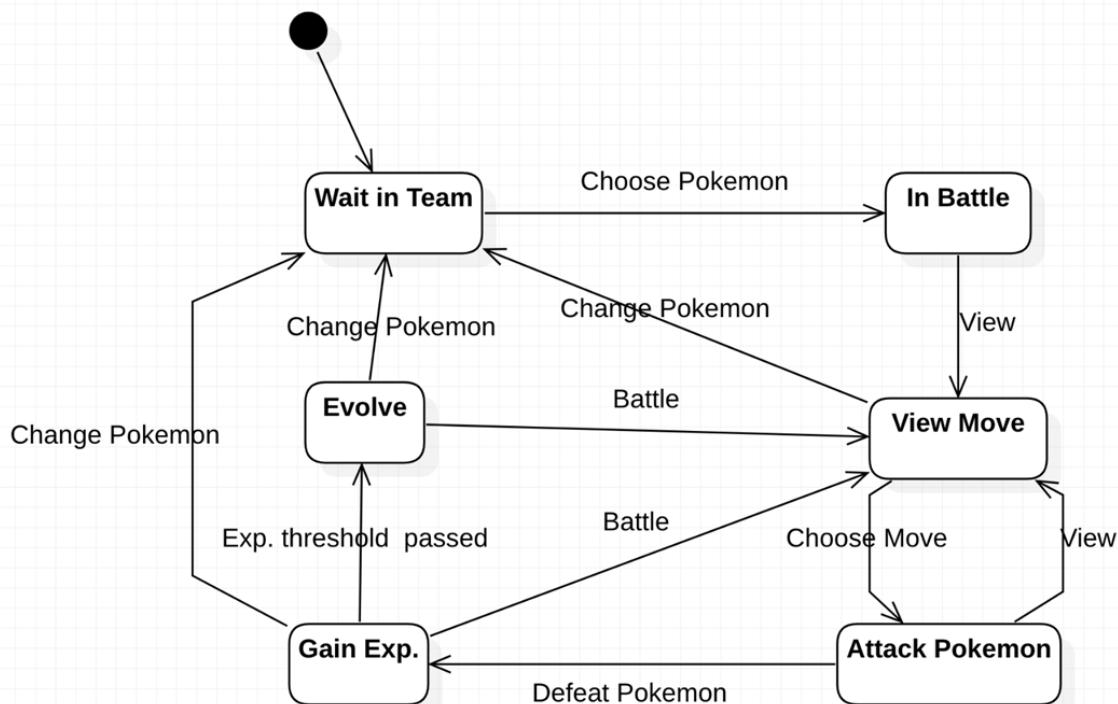


### Choose Opponent:





Pokemon:



## 2. Tools and Frameworks Used:

Model View Framework (2-Tier Architecture):

Model-view-viewmodel (MVVM) is a software architectural pattern that facilitates the separation of the development of the graphical user interface (the view) from the development of the business logic or back-end logic (the model).

Java Database Connectivity (JDBC) is an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is a Java-based data access technology used for Java database connectivity.

Tools used: VsCode, JDBC (Connecting to PostgreSQL)

### 3. Design Principles and Design Patterns Applied

The **Singleton**'s purpose is to control object creation, limiting the number of objects to only one. Since there is only one Singleton instance, any instance fields of a Singleton will occur only once per class, just like static fields. Singletons often control access to resources, such as database connections or sockets.

We have used this pattern to establish a connection with the database, creation of the pokedex and also creating a battleManager instance which handles battle between the user and opponentUI.

A **Factory** Pattern defines an interface or abstract class for creating an object but let the subclasses decide which class to instantiate. In other words, subclasses are responsible for creating the instance of the class.

We have used this pattern for choosing the type of opponent the user wants to battle.

We also utilised the **state** design pattern. This design pattern allowed us to cycle through various states of the Battle class like the FightOpponent state, chooseOpponent state, CreateTeam state, EndGame state, StartBattle state. The states implement the BattleState class and the BattleManager is the context class responsible for changing the state upon user actions.

## 4. Application Screenshots (3-4 important pages)

### Game Start :

```
java -classpath Game
darshanmadesh@Darshan-2 ~/Desktop/Projects/00ADProject2 clear
darshanmadesh@Darshan-2 ~/Desktop/Projects/00ADProject2 java -classpath /Users/darshanmadesh/Desktop/JAR/postgresql-42.1
plementation/src Game
[MESSAGE]:GAME STARTED!
[MESSAGE]:Opened database successfully
[MESSAGE]:All Fire Moves loaded
[MESSAGE]:All Water Moves loaded
[MESSAGE]:All Grass Moves loaded
[MESSAGE]:All Pokemons loaded
Enter name
darshan
[MESSAGE]:Name is darshan
[MESSAGE]:The level is : 0
[MESSAGE]:[I@1b40d5f0
[MESSAGE]:Added a poke!!
[MESSAGE]:Added a poke!!
[MESSAGE]:Added a poke!!
[MESSAGE]:Added a poke!!
[MESSAGE]:Added a poke!!
[MESSAGE]:Added a poke!!
```

### Pokedex Information Printed :

```
Pokedex information of the available Pokemon are:
+-----+-----+-----+-----+
|ID      |Name      |Max Health|Type     |
+-----+-----+-----+-----+
|1       |Charmander|390       |Fire     |
+-----+-----+-----+-----+
|ID      |Name      |Max Health|Type     |
+-----+-----+-----+-----+
|4       |Vulpix    |380       |Fire     |
+-----+-----+-----+-----+
|ID      |Name      |Max Health|Type     |
+-----+-----+-----+-----+
|6       |Growlithe |550       |Fire     |
+-----+-----+-----+-----+
|ID      |Name      |Max Health|Type     |
+-----+-----+-----+-----+
|31      |Squirtle  |440       |Water    |
+-----+-----+-----+-----+
```

## Pokemon Choice :

```
+-----+-----+-----+-----+
Choose From:
+---+-----+-----+-----+
|ID |Name      |Type |Health |XP  |
+---+-----+-----+-----+
|0  |Charmander|Fire |390    |0   |
|3  |Vulpix    |Fire |380    |0   |
|5  |Growlithe |Fire |550    |0   |
|30 |Squirtle  |Water|440    |0   |
|33 |Psyduck   |Water|500    |0   |
|35 |Poliwag   |Water|400    |0   |
|60 |Bulbasaur |Grass|450    |0   |
|63 |Oddish    |Grass|450    |0   |
|66 |Bellsprout|Grass|500    |0   |
+---+-----+-----+-----+
Enter the Pokemon number
0
[MESSAGE]:Added a poke!!
+---+-----+-----+-----+
|ID |Name      |Type |Health |XP  |
+---+-----+-----+-----+
|0  |Charmander |Fire |390    |0   |
+---+-----+-----+-----+
Enter the Pokemon number
3
```

Choose Opponent :

```
Choose your opponent:
+---+-----+-----+
|ID  |Name      |Difficulty|
+---+-----+-----+
|0   |Maylene   |Easy      |
|1   |Misty     |Medium    |
|2   |Brock     |Tough     |
+---+-----+-----+
0
Your team details:
+---+-----+-----+-----+-----+
|ID |Name      |Type |Health|XP  |
+---+-----+-----+-----+-----+
|0  |Charmander|Fire |390   |0   |
|1  |Vulpix    |Fire |380   |0   |
|2  |Squirtle  |Water|440   |0   |
|3  |Psyduck   |Water|500   |0   |
|4  |Bulbasaur |Grass|450   |0   |
|5  |Oddish    |Grass|450   |0   |
+---+-----+-----+-----+-----+
Maylene's team details:
+---+-----+-----+-----+-----+
|ID |Name      |Type |Health|XP  |
+---+-----+-----+-----+-----+
|0  |Combusken |Fire |600   |0   |
|1  |Magcargo  |Fire |600   |0   |
|2  |Tentacruel|Water|800   |0   |
|3  |Kingler   |Water|550   |0   |
|4  |Breloom   |Grass|600   |0   |
|5  |Grovyale  |Grass|500   |0   |
+---+-----+-----+-----+-----+
```

Battle :

Choose your current pokemon:

2

Moves of Squirtle are:

ID	Name	PP	Damage
0	Hydro Pump	5	110
1	Dive	10	80
2	Brine	10	65
3	Crabhammer	10	100

Choose a move:

0

[MESSAGE]:Increasing XP for Squirtle

[MESSAGE]:Added Pkemon: Wartortle

[MESSAGE]:PP successfully reduced

[MESSAGE]:Name Hydro Vortex

[MESSAGE]: Damage caused by move is : 125

[MESSAGE]:After player attacks,opponent health is: 475

Maylene is attacking you.....

[MESSAGE]:Usable pokemons in opponent : 6

[MESSAGE]:Poke using the move is : Combusken

Maylene 's current pokemon

ID	Name	Type	Health	XP
22	Combusken	0	475	0

Using Move: Fire Fang

[MESSAGE]:Increasing XP for Combusken

[MESSAGE]:Added Pkemon: Blaziken

[MESSAGE]:PP successfully reduced

[MESSAGE]:Name Flame Burst

[MESSAGE]: Damage caused by move is : 70

Pokemon Evolution, Damage Opponent, Opponent attack :

```
Choose a move:
2
[MESSAGE]:Increasing XP for Wartortle
[MESSAGE]:Added Pkemon: Blastoise
[MESSAGE]:PP successfully reduced
[MESSAGE]:Name Octazooka
[MESSAGE]: Damage caused by move is : 325
[MESSAGE]:After player attacks,opponent health is: 150
Maylene is attacking you.....
[MESSAGE]:Usable pokemons in opponent : 6
[MESSAGE]:Poke using the move is : Blaziken
```

Battle end, Heal pokemon, Receive Badge, Next Battle :

```
Maylene is attacking you.....
[MESSAGE]:Usable pokemons in opponent : 6
Maylene lost because he didnt have a pokemon with enough health and pp :)
+-----+
|You Win                               |
+-----+
You recived a badge from: Maylene !
Do you want to heal your pokemon before next battle?
Press Y or N
Y
Get Ready for your next battle...
```

## 5. Team member contributions

Each of us contributed equally in all aspects of the project.

<https://github.com/chandradharrao/Turn-Based-Console-Game-Using-Java> (refer commit history)