САНКТ-ПЕТЕРБУРГСКИЙ НАЦИОНАЛЬНЫЙ
ИССЛЕДРОВАТЕЛЬСКИЙ
УНИВЕРСИТЕТ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ,
МЕХАНИКИ И ОПТИКИ
Факультет программной инженерии и компьютерной техники
Направление подготовки 09.03.01 Программная инженерия

Дисциплина «Программирование»

Отчет

По лабораторной работе №2

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Санкт-Петербург, 2023 г.

Текст задания:

На основе базового класса написать свои классы для заданных видов покемонов. Каждый вид покемона должен иметь один или два типа и стандартные базовые характеристики:`Pokemon`

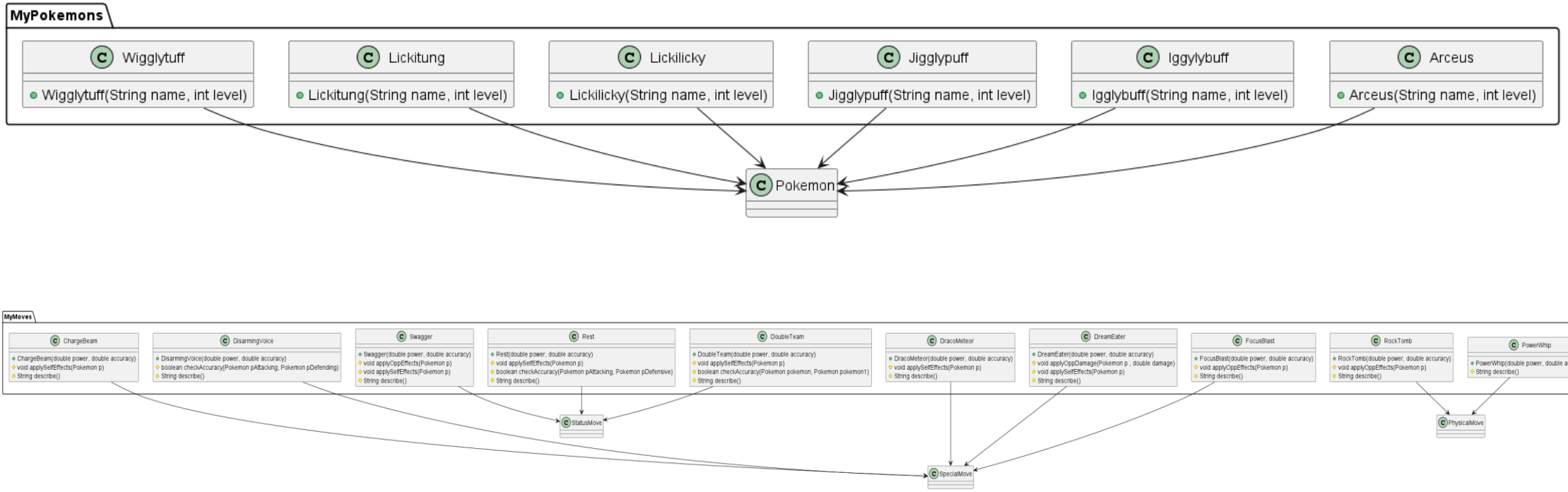
- очки здоровья (HP)
- атака (attack)
- защита (defense)
- специальная атака (special attack)
- специальная защита (special defense)
- скорость (speed)

Классы покемонов должны наследоваться в соответствии с цепочкой эволюции покемонов. На основе базовых
классов PhysicalMove, SpecialMove и StatusMove реализовать свои классы для заданных видов атак.

Атака должна иметь стандартные тип, силу (power) и точность (accuracy). Должны быть реализованы стандартные эффекты атаки. Назначить каждому виду покемонов атаки в соответствии с вариантом. Уровень покемона выбирается минимально необходимым для всех реализованных атак.

Используя класс симуляции боя Battle, создать 2 команды покемонов (каждый покемон должен иметь имя) и запустить бой.

UML-диаграмма классов



Код программы:

Атаки:

1. ChargeBeam

```
package MyMoves;

import ru.ifmo.se.pokemon.*;

public class    ChargeBeam extends SpecialMove {

    public ChargeBeam(double power, double accuracy){
        super(Type.ELECTRIC, power, accuracy);
    }


    @Override
    protected void applySelfEffects(Pokemon p){
        super.applySelfEffects(p);

        Effect effect = new
Effect().chance(0.7).stat(Stat.SPECIAL_ATTACK, 1);
        p.addEffect(effect);

    }


    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "is doing " + pieces[pieces.length - 1];
    }

}
```

2. DisarmingVoice

```
package MyMoves;

import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.SpecialMove;
import ru.ifmo.se.pokemon.Type;

public class DisarmingVoice extends SpecialMove {

    public DisarmingVoice(double power, double accuracy){
        super(Type.FAIRY,power,accuracy);
    }


    @Override
    protected boolean checkAccuracy(Pokemon pAttacking, Pokemon
pDefending){
        return true;
    }

    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "is doing " +pieces[pieces.length - 1] ;
```

```
    }

}
```

3. DoubleTeam

```
package MyMoves;

import ru.ifmo.se.pokemon.*;

public class DoubleTeam extends StatusMove {

    public DoubleTeam(double power, double accuracy){
        super(Type.NORMAL, power, accuracy);
    }

    protected void applySelfEffects(Pokemon p){

        super.applySelfEffects(p);

        Effect effect = new Effect().stat(Stat.EVASION, 1);
        p.addEffect(effect);
    }

    @Override
    protected boolean checkAccuracy(Pokemon pokemon, Pokemon pokemon1)
{
        return super.checkAccuracy(pokemon, pokemon1);
    }

    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "does " + pieces[pieces.length-1] + " Now Evasiveness is
raised by one stage";
    }

}
```

4. DracoMeteor

```
package MyMoves;


import ru.ifmo.se.pokemon.*;

public class DracoMeteor extends SpecialMove {

    public DracoMeteor(double power, double accuracy){
        super(Type.DRAGON, power, accuracy);
    }

    @Override
    protected void applySelfEffects(Pokemon p){

        super.applySelfEffects(p);

        Effect effect = new Effect().stat(Stat.SPECIAL_ATTACK, -2);
        p.addEffect(effect);
    }
```

```
    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "does " + pieces[pieces.length-1] ;
    }

}
```

5. DreamEater

```
package MyMoves;

import ru.ifmo.se.pokemon.*;

public class DreamEater extends SpecialMove {

    public DreamEater(double power, double accuracy){
        super(Type.PSYCHIC ,power, accuracy);
    }

    @Override
    protected void applyOppDamage(Pokemon p , double damage){
        super.applyOppDamage(p, damage);
        if (p.getCondition() == Status.SLEEP){
            super.applyOppDamage(p, damage);
        }
    }

    @Override
    protected void applySelfEffects(Pokemon p){
        super.applySelfEffects(p);

        double amountToRecoverBack =  (p.getStat(Stat.HP) - p.getHP())
/ 2;

        p.setMod(Stat.HP, (int)amountToRecoverBack);
    }

    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "does " + pieces[pieces.length-1];
    }

}
```

6. FocusBlast

```
package MyMoves;

import ru.ifmo.se.pokemon.*;

public class FocusBlast extends SpecialMove {

    public FocusBlast(double power, double accuracy){

        super(Type.FIGHTING, power, accuracy);

    }
```

```
    @Override
    protected void applyOppEffects(Pokemon p){
        super.applyOppEffects(p);

        Effect effect = new
Effect().chance(0.1).stat(Stat.SPECIAL_DEFENSE, -1);

        p.addEffect(effect);
    }

    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "is doing " + pieces[pieces.length - 1];
    }

}
```

7. PowerWhip

```
package MyMoves;

import ru.ifmo.se.pokemon.PhysicalMove;
import ru.ifmo.se.pokemon.Type;

public class PowerWhip extends PhysicalMove {
    public PowerWhip(double power, double accuracy){
        super(Type.GRASS, power, accuracy);
    }


    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "does " + pieces[pieces.length-1];
    }
}
```

8. Rest

```
package MyMoves;


import ru.ifmo.se.pokemon.*;

public class Rest extends StatusMove {

    public Rest(double power, double accuracy){
        super(Type.PSYCHIC, power, accuracy);
    }

    @Override
    protected void applySelfEffects(Pokemon p) {

        super.applySelfEffects(p);

        Effect effect = new Effect().turns(2).condition(Status.SLEEP);
        p.restore();
        p.addEffect(effect);

    }

    @Override
    protected boolean checkAccuracy(Pokemon pAttacking, Pokemon
pDefensive){
        return true;
```

```
    }

    @Override
    protected String describe(){
        String[] pieces = this.getClass().toString().split("\\.");
        return "does " + pieces[pieces.length-1] + " and restored";
    }

}
```

9. RockTomb

```
package MyMoves;

import ru.ifmo.se.pokemon.*;

public class RockTomb extends PhysicalMove {

    public RockTomb(double power, double accuracy) {
        super(Type.ROCK, power, accuracy);
    }

    @Override
    protected void applyOppEffects(Pokemon p){
        super.applyOppEffects(p);

        Effect effect = new Effect().stat(Stat.SPEED, -1);
        p.addEffect(effect);

    }



    @Override
    protected String describe() {
        String[] pieces = this.getClass().toString().split("\\.");
        return "does " + pieces[pieces.length - 1] + " Damage to target
and lowering it's speed by one stage";

    }
}
```

10. Swagger

```
11.  package MyMoves;

   import ru.ifmo.se.pokemon.*;

   public class Swagger extends StatusMove {

       public Swagger(double power, double accuracy){
           super(Type.NORMAL ,power ,accuracy);
       }


       @Override
       protected void applyOppEffects(Pokemon p){
           super.applyOppEffects(p);
           Effect.confuse(p);
       }


       @Override
       protected void applySelfEffects(Pokemon p){
           super.applySelfEffects(p);

           Effect effect = new Effect().stat(Stat.ATTACK, 2);
```

```
            p.addEffect(effect);
        }


        @Override
        protected String describe(){
            String[] pieces = this.getClass().toString().split("\\.");
            return "is doing " + pieces[pieces.length - 1];
        }

    }
```

Покемоны:

1. Arceus

```
package MyPokemons;

import MyMoves.DracoMeteor;
import MyMoves.Rest;
import MyMoves.DoubleTeam;
import MyMoves.RockTomb;

import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.Type;

public class Arceus extends Pokemon{

    public Arceus(String name, int level){
        super(name, level);

        super.setType(Type.NORMAL);

        super.setStats(120,120,120,120,120,120);


        super.setMove(
                new DracoMeteor(130,90),
                new Rest(0,100),
                new DoubleTeam(0,100),
                new RockTomb(   60, 95)
        );
    }

}
```

2. Igglybuff

```
package MyPokemons;

import MyMoves.DreamEater;
import MyMoves.Swagger;

import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.Type;

public class Igglybuff extends Pokemon {

    public Igglybuff(String name, int level){

        super(name ,level);
```

```
        super.setType(Type.NORMAL, Type.FAIRY);

        super.setStats(90, 30,15, 40, 20, 15);

        super.setMove(
                new DreamEater(100,100),
                new Swagger(0, 85)
        );

    }


}
```

3. Jigglypuff

```
package MyPokemons;

import MyMoves.DreamEater;
import MyMoves.Swagger;
import MyMoves.DisarmingVoice;


import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.Type;

public class Jigglypuff extends Pokemon {

    public Jigglypuff(String name, int level){

        super(name, level);

        super.setType(Type.NORMAL, Type.FAIRY);

        super.setStats(115, 45, 20, 45, 25, 20);

        super.setMove(
            new DreamEater(100, 100),
            new Swagger(0, 85),
            new DisarmingVoice(40, 100)
        );

    }

}
```

4. Lickilicky

```
package MyPokemons;

import MyMoves.Rest;
import MyMoves.PowerWhip;
import MyMoves.DreamEater;
import MyMoves.FocusBlast;

import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.Type;

public class Lickilicky extends Pokemon {

    public Lickilicky(String name, int level){

        super(name, level);
```

```
        super.setType(Type.NORMAL);

        super.setStats(110, 85, 95, 80, 95, 50);

        super.setMove(
                new Rest(0, 100),
                new PowerWhip(120, 85),
                new DreamEater(100, 100),
                new FocusBlast(120, 70)
        );


    }
}
```

5. Lickitung

```
package MyPokemons;

import MyMoves.Rest;
import MyMoves.PowerWhip;
import MyMoves.DreamEater;

import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.Type;

public class Lickitung extends Pokemon {

    public Lickitung(String name, int level){

        super(name, level);

        super.setType(Type.NORMAL);

        super.setStats(90,55,75,60,75,30);

        super.setMove(
                new Rest(0,100),
                new PowerWhip(120,85),
                new DreamEater(100, 100)
        );
    }

}
```

6. Wigglytuff

```
package MyPokemons;

import MyMoves.Swagger;
import MyMoves.DreamEater;
import MyMoves.DisarmingVoice;
import MyMoves.ChargeBeam;

import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.Type;

public class Wigglytuff extends Pokemon {

    public Wigglytuff(String name, int level){

        super(name,level);

        super.setType(Type.NORMAL, Type.FAIRY);
```

```
        super.setStats(140, 70, 45, 85, 50,45);

        super.setMove(
                new Swagger(0, 85),
                new DreamEater(100 , 100),
                new DisarmingVoice(40, 100),
                new ChargeBeam(50 , 90)
        );

    }


}
```

main.java

```
import ru.ifmo.se.pokemon.Pokemon;
import ru.ifmo.se.pokemon.Battle;
import MyPokemons.*;



public class Main {

    // https://pokemondb.net/pokedex/arceus
    // https://pokemondb.net/pokedex/lickitung
    // https://pokemondb.net/pokedex/lickilicky
    // https://pokemondb.net/pokedex/igglybuff
    // https://pokemondb.net/pokedex/jigglypuff
    // https://pokemondb.net/pokedex/wigglytuff

    public static void main(String[] args){
        Battle b = new Battle();
        Arceus arceus = new Arceus("ARCEUS", 1);
        Lickitung lickitung = new Lickitung("LICKITUNG", 1);
        Lickilicky lickilicky = new Lickilicky("LICKILICKY", 1);

        Igglybuff igglybuff = new Igglybuff("IGGLYBUFF", 1);
        Jigglypuff jigglypuff = new Jigglypuff("JIGGLYPUFF", 1);
        Wigglytuff wigglytuff = new Wigglytuff("WIGGLYTUFF", 1);

        b.addAlly(arceus);
        b.addAlly(lickitung);
        b.addAlly(lickilicky);

        b.addFoe(igglybuff);
        b.addFoe(jigglypuff);
        b.addFoe(wigglytuff);

        b.go();
    }
}
```

Результат работы программы:

Arceus ARCEUS from the team Black enters the battle!

Igglybuff IGGLYBUFF from the team Greren enters the battle!

Arceus ARCEUS does DoubleTeam Now Evasiveness is raised by one stage.

Igglybuff IGGLYBUFF is doing Swagger.

Arceus ARCEUS does DoubleTeam Now Evasiveness is raised by one stage.

Igglybuff IGGLYBUFF is doing Swagger.

Arceus ARCEUS does DracoMeteor.

Igglybuff IGGLYBUFF loses 1 hit points.

Igglybuff IGGLYBUFF isn't affected by DRAGON

Igglybuff IGGLYBUFF is doing Swagger.

Arceus ARCEUS does DoubleTeam Now Evasiveness is raised by one stage.

Igglybuff IGGLYBUFF does DreamEater.

Arceus ARCEUS loses 3 hit points.

Arceus ARCEUS does DoubleTeam Now Evasiveness is raised by one stage.

Igglybuff IGGLYBUFF is doing Swagger.

Arceus ARCEUS hits himself in confusion.

Arceus ARCEUS loses 4 hit points.

Igglybuff IGGLYBUFF does DreamEater.

Arceus ARCEUS loses 5 hit points.

Arceus ARCEUS does DracoMeteor.

Igglybuff IGGLYBUFF isn't affected by DRAGON

Igglybuff IGGLYBUFF does DreamEater.

Arceus ARCEUS loses 5 hit points.

Arceus ARCEUS faints.

Lickitung LICKITUNG from the team Black enters the battle!

Lickitung LICKITUNG does PowerWhip.

Igglybuff IGGLYBUFF loses 5 hit points.

Igglybuff IGGLYBUFF does DreamEater.

Lickitung LICKITUNG loses 4 hit points.

Igglybuff IGGLYBUFF loses 3 hit points.

Lickitung LICKITUNG does DreamEater.

Igglybuff IGGLYBUFF loses 4 hit points.

Lickitung LICKITUNG loses 2 hit points.

Igglybuff IGGLYBUFF faints.

Jigglypuff JIGGLYPUFF from the team Greren enters the battle!

Lickitung LICKITUNG does Rest and restored.

Lickitung LICKITUNG is sleeping

Jigglypuff JIGGLYPUFF does DreamEater.

Lickitung LICKITUNG loses 7 hit points.

Lickitung LICKITUNG loses 7 hit points.

Lickitung LICKITUNG faints.

Lickilicky LICKILICKY from the team Black enters the battle!

Lickilicky LICKILICKY does PowerWhip.

Jigglypuff JIGGLYPUFF loses 5 hit points.

Jigglypuff JIGGLYPUFF is doing Swagger.

Lickilicky LICKILICKY hits himself in confusion.

Lickilicky LICKILICKY loses 4 hit points.

Jigglypuff JIGGLYPUFF is doing DisarmingVoice.

Lickilicky LICKILICKY loses 7 hit points.

Lickilicky LICKILICKY is doing FocusBlast.

Jigglypuff JIGGLYPUFF loses 7 hit points.

Jigglypuff JIGGLYPUFF is doing DisarmingVoice.

Lickilicky LICKILICKY loses 7 hit points.

Lickilicky LICKILICKY faints.

Team Black loses its last Pokemon.

The team Greren wins the battle!

Выводы:

В процессе выполнения лабораторной работы я получил навыки использования объектно-ориентированного подхода программирования при использовании языка Java. Научился работать с классами, конструкторами, полями и модификаторами доступа.