

DESARROLLO DE PROGRAMAS (2019/20)

Simulacro de defensa 3 (jueves)

Partiendo del código necesario para la entrega final del proyecto de programación y de los datos de inicio facilitado (initData2.txt), desarrollar las siguientes modificaciones al código desarrollado:

1. Siguiendo las especificaciones de **herencia y polimorfismo**, realizar los siguientes cambios en el proyecto:
 - a. crear un nuevo tipo de varita "*ElderWand*" que se caracteriza por ser una varita orientada al potenciar al personaje que la usa, de manera que, cuando un personaje utiliza esta varita:
 - i. cuando es utilizada de forma ofensiva, los puntos de ataque devueltos (*attack points*) por esta varita serán: 10 veces sus puntos de energía (*energy*);
 - ii. cuando es utilizada de forma defensiva, los puntos de resistencia devueltos (*resistance points*) por esta varita serán: 10 veces sus puntos de energía (*energy*);
 - b. crear un nuevo tipo de personaje "*UltraSport*". Este personaje se caracteriza porque incrementa en 10 puntos el valor de su energía inicial. Además, se caracteriza porque en el momento de ir a pelear en el duelo contra un oponente:
 - i. Comprueba si su energía es mayor que la del contrincante. Si es así, ambos intercambian el valor de su energía
 - ii. Recibe una varita de tipo *ElderWand* (con el atributo nombre = "*ElderW*") independientemente de la varita que tuviera asignada antes.
 - iii. Ataca al oponente (si se cumplen los requisitos del proyecto y de la manera indicada en dichos requisitos)
 - iv. Al final de su duelo, el personaje de tipo *UltraSport* recupera la varita que tenía originalmente.

Tiempo: estrictamente 60 minutos

Para superar la modificación es necesario que **compile y ejecute correctamente** en el tiempo dado para realizarla.

Entrega:

Se entregará a través del aula virtual en la tarea definida para tal efecto.

Prueba:

Para probar la defensa:

- Se utilizará el fichero de datos "initData2.txt" con los siguientes cambios en la casa llamada "Slytherin":

```
//Slytherin's characters
//-----
House slytherin = new House("Slytherin" ... );
Character draco = new UltraSportCharacter("Draco Malfoy" ... );
->assign Wand (name: "DracoW", type: "HollyWandBehavior") to draco
slytherin.addMember(draco);
hogwarts.newHouse(slytherin);
```

Teacher's output:

houses:

```
house:<Gryffindor>
character:<Ron Weasley> <e: 20.0> <o: 32.5> <d: 20.0> <wand: RonW (HollyWandBehavior)>
character:<Harry Potter> <e: 20.0> <o: 32.5> <d: 28.0> <wand: HarryW (HollyWandBehavior)>
character:<Hermione Granger> <e: 20.0> <o: 32.5> <d: 28.0> <wand: HermioneW (HollyWandBehavior)>

house:<Hufflepuff>
character:<Cedric Diggory> <e: 20.0> <o: 20.0> <d: 35.0> <wand: CedricW (HawthornWandBehavior)>
character:<Newton Scamander> <e: 20.0> <o: 20.0> <d: 25.0> <wand: NewtonW (HawthornWandBehavior)>
character:<Nymphadora Tonks> <e: 20.0> <o: 20.0> <d: 25.0> <wand: NymphadoraW (HawthornWandBehavior)>
character:<Rolf Scamander> <e: 20.0> <o: 20.0> <d: 25.0> <wand: RolfW (HawthornWandBehavior)>
character:<Susan Bones> <e: 20.0> <o: 20.0> <d: 25.0> <wand: SusanW (HawthornWandBehavior)>
character:<Hannah Abbott> <e: 20.0> <o: 26.0> <d: 25.0> <wand: HannahW (HawthornWandBehavior)>
character:<Pomona Sprout> <e: 20.0> <o: 26.0> <d: 25.0> <wand: PomonaW (HawthornWandBehavior)>
character:<Silvanus Kettleburn> <e: 20.0> <o: 26.0> <d: 25.0> <wand: SilvanusW (HawthornWandBehavior)>
```

```
house:<Slytherin>
character:<Draco Malfoy> <e: 30.0> <o: 20.0> <d: 20.0> <wand: DracoW (HollyWandBehavior)>
```

new wands:

```
wand: <Aspen (HollyWandBehavior)>
wand: <Cypress (HollyWandBehavior)>
wand: <Ebony (HollyWandBehavior)>
wand: <Hazel (HawthornWandBehavior)>
wand: <Ivy (HawthornWandBehavior)>
wand: <Larch (HawthornWandBehavior)>
wand: <Laurel (HawthornWandBehavior)>
wand: <Pear (HawthornWandBehavior)>
wand: <Pine (HawthornWandBehavior)>
wand: <Reed (HawthornWandBehavior)>
wand: <Rowan (HollyWandBehavior)>
wand: <Spruce (HawthornWandBehavior)>
wand: <Tamarack (HollyWandBehavior)>
```

wand: <Walnut (HawthornWandBehavior)>
wand: <Yew (HawthornWandBehavior)>

turn: <0>

characters who are going to duel:

character:<Cedric Diggory> <e: 20.0> <o: 20.0> <d: 35.0> <wand: CedricW (HawthornWandBehavior)>
character:<Ron Weasley> <e: 20.0> <o: 32.5> <d: 20.0> <wand: RonW (HollyWandBehavior)>
character:<Draco Malfoy> <e: 30.0> <o: 20.0> <d: 20.0> <wand: DracoW (HollyWandBehavior)>

duels:

<Cedric Diggory> is dueling against <Ron Weasley>
attack points of <Cedric Diggory> are: <40.0>
resistance points of <Ron Weasley> are: <40.0>
the remaining energy of <Ron Weasley> after the duel are: <20.0>

<Cedric Diggory> is dueling against <Draco Malfoy>
attack points of <Cedric Diggory> are: <40.0>
resistance points of <Draco Malfoy> are: <49.0>
the remaining energy of <Draco Malfoy> after the duel are: <30.0>

<Ron Weasley> is dueling against <Draco Malfoy>
attack points of <Ron Weasley> are: <23.75>
resistance points of <Draco Malfoy> are: <49.0>
the remaining energy of <Draco Malfoy> after the duel are: <30.0>

<Ron Weasley> is dueling against <Cedric Diggory>
attack points of <Ron Weasley> are: <23.75>
resistance points of <Cedric Diggory> are: <23.0>
the remaining energy of <Cedric Diggory> after the duel are: <19.25>

<Draco Malfoy> is dueling against <Cedric Diggory>
attack points of <Draco Malfoy> are: <192.5>
resistance points of <Cedric Diggory> are: <31.0>
the remaining energy of <Cedric Diggory> after the duel are: <0.0>

<Draco Malfoy> is dueling against <Ron Weasley>
attack points of <Draco Malfoy> are: <192.5>
resistance points of <Ron Weasley> are: <40.0>
the remaining energy of <Ron Weasley> after the duel are: <0.0>

duel results:

character:<Cedric Diggory> <e: 0.0> <o: 20.0> <d: 35.0> <wand: CedricW (HawthornWandBehavior)> goes to dungeon
character:<Ron Weasley> <e: 0.0> <o: 32.5> <d: 20.0> <wand: RonW (HollyWandBehavior)> goes to dungeon
character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: DracoW (HollyWandBehavior)> returns to the house
new wand assigned: <Aspen (class HollyWandBehavior)>

turn: <1>

characters who are going to duel:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Aspen (HollyWandBehavior)>
character:<Harry Potter> <e: 20.0> <o: 32.5> <d: 28.0> <wand: HarryW (HollyWandBehavior)>
character:<Newton Scamander> <e: 20.0> <o: 20.0> <d: 25.0> <wand: NewtonW (HawthornWandBehavior)>

duels:

<Draco Malfoy> is dueling against <Harry Potter>
attack points of <Draco Malfoy> are: <192.5>
resistance points of <Harry Potter> are: <48.8>
the remaining energy of <Harry Potter> after the duel are: <0.0>

<Draco Malfoy> is dueling against <Newton Scamander>
attack points of <Draco Malfoy> are: <192.5>
resistance points of <Newton Scamander> are: <21.0>
the remaining energy of <Newton Scamander> after the duel are: <0.0>

<Harry Potter> is dueling against <Newton Scamander>
<Harry Potter> is dueling against <Draco Malfoy>
<Newton Scamander> is dueling against <Draco Malfoy>
<Newton Scamander> is dueling against <Harry Potter>

duel results:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Aspen (HollyWandBehavior)> returns to the house
new wand assigned: <Cypress (class HollyWandBehavior)>
character:<Harry Potter> <e: 0.0> <o: 32.5> <d: 28.0> <wand: HarryW (HollyWandBehavior)> goes to dungeon
character:<Newton Scamander> <e: 0.0> <o: 20.0> <d: 25.0> <wand: NewtonW (HawthornWandBehavior)> goes to dungeon

turn: <2>

characters who are going to duel:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Cypress (HollyWandBehavior)>
character:<Hermione Granger> <e: 20.0> <o: 32.5> <d: 28.0> <wand: HermioneW (HollyWandBehavior)>
character:<Nymphadora Tonks> <e: 20.0> <o: 20.0> <d: 25.0> <wand: NymphadoraW (HawthornWandBehavior)>

duels:

<Draco Malfoy> is dueling against <Hermione Granger>
attack points of <Draco Malfoy> are: <192.5>
resistance points of <Hermione Granger> are: <48.8>
the remaining energy of <Hermione Granger> after the duel are: <0.0>

<Draco Malfoy> is dueling against <Nymphadora Tonks>
attack points of <Draco Malfoy> are: <192.5>
resistance points of <Nymphadora Tonks> are: <21.0>
the remaining energy of <Nymphadora Tonks> after the duel are: <0.0>

<Hermione Granger> is dueling against <Nymphadora Tonks>
<Hermione Granger> is dueling against <Draco Malfoy>
<Nymphadora Tonks> is dueling against <Draco Malfoy>
<Nymphadora Tonks> is dueling against <Hermione Granger>

duel results:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Cypress (HollyWandBehavior)> returns to the house
new wand assigned: <Ebony (class HollyWandBehavior)>
character:<Hermione Granger> <e: 0.0> <o: 32.5> <d: 28.0> <wand: HermioneW (HollyWandBehavior)> goes to dungeon
character:<Nymphadora Tonks> <e: 0.0> <o: 20.0> <d: 25.0> <wand: NymphadoraW (HawthornWandBehavior)> goes to dungeon

turn: <3>

characters who are going to duel:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Ebony (HollyWandBehavior)>

character:<Rolf Scamander> <e: 20.0> <o: 20.0> <d: 25.0> <wand: RolfW (HawthornWandBehavior)>

duels:

<Draco Malfoy> is dueling against <Rolf Scamander>

attack points of <Draco Malfoy> are: <192.5>

resistance points of <Rolf Scamander> are: <21.0>

the remaining energy of <Rolf Scamander> after the duel are: <0.0>

<Rolf Scamander> is dueling against <Draco Malfoy>

duel results:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Ebony (HollyWandBehavior)> returns to the house

new wand assigned: <Hazel (class HawthornWandBehavior)>

character:<Rolf Scamander> <e: 0.0> <o: 20.0> <d: 25.0> <wand: RolfW (HawthornWandBehavior)> goes to dungeon

turn: <4>

characters who are going to duel:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Hazel (HawthornWandBehavior)>

character:<Susan Bones> <e: 20.0> <o: 20.0> <d: 25.0> <wand: SusanW (HawthornWandBehavior)>

duels:

<Draco Malfoy> is dueling against <Susan Bones>

attack points of <Draco Malfoy> are: <192.5>

resistance points of <Susan Bones> are: <21.0>

the remaining energy of <Susan Bones> after the duel are: <0.0>

<Susan Bones> is dueling against <Draco Malfoy>

duel results:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Hazel (HawthornWandBehavior)> returns to the house

new wand assigned: <Ivy (class HawthornWandBehavior)>

character:<Susan Bones> <e: 0.0> <o: 20.0> <d: 25.0> <wand: SusanW (HawthornWandBehavior)> goes to dungeon

turn: <5>

characters who are going to duel:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Ivy (HawthornWandBehavior)>

character:<Hannah Abbott> <e: 20.0> <o: 26.0> <d: 25.0> <wand: HannahW (HawthornWandBehavior)>

duels:

<Draco Malfoy> is dueling against <Hannah Abbott>

attack points of <Draco Malfoy> are: <192.5>

resistance points of <Hannah Abbott> are: <21.0>

the remaining energy of <Hannah Abbott> after the duel are: <0.0>

<Hannah Abbott> is dueling against <Draco Malfoy>

duel results:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Ivy (HawthornWandBehavior)> returns to the house

new wand assigned: <Larch (class HawthornWandBehavior)>

character:<Hannah Abbott> <e: 0.0> <o: 26.0> <d: 25.0> <wand: HannahW (HawthornWandBehavior)> goes to dungeon

turn: <6>

characters who are going to duel:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Larch (HawthornWandBehavior)>

character:<Pomona Sprout> <e: 20.0> <o: 26.0> <d: 25.0> <wand: PomonaW (HawthornWandBehavior)>

duels:

<Draco Malfoy> is dueling against <Pomona Sprout>

attack points of <Draco Malfoy> are: <192.5>

resistance points of <Pomona Sprout> are: <21.0>

the remaining energy of <Pomona Sprout> after the duel are: <0.0>

<Pomona Sprout> is dueling against <Draco Malfoy>

duel results:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Larch (HawthornWandBehavior)> returns to the house

new wand assigned: <Laurel (class HawthornWandBehavior)>

character:<Pomona Sprout> <e: 0.0> <o: 26.0> <d: 25.0> <wand: PomonaW (HawthornWandBehavior)> goes to dungeon

turn: <7>

characters who are going to duel:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Laurel (HawthornWandBehavior)>

character:<Silvanus Kettleburn> <e: 20.0> <o: 26.0> <d: 25.0> <wand: SilvanusW (HawthornWandBehavior)>

duels:

<Draco Malfoy> is dueling against <Silvanus Kettleburn>

attack points of <Draco Malfoy> are: <192.5>

resistance points of <Silvanus Kettleburn> are: <21.0>

the remaining energy of <Silvanus Kettleburn> after the duel are: <0.0>

<Silvanus Kettleburn> is dueling against <Draco Malfoy>

duel results:

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Laurel (HawthornWandBehavior)> returns to the house

new wand assigned: <Pear (class HawthornWandBehavior)>

character:<Silvanus Kettleburn> <e: 0.0> <o: 26.0> <d: 25.0> <wand: SilvanusW (HawthornWandBehavior)> goes to dungeon

end of the simulation:

houses:

house:<Gryffindor>

house:<Hufflepuff>

house:<Slytherin>

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Pear (HawthornWandBehavior)>

new wands:

wand: <Pine (HawthornWandBehavior)>

wand: <Reed (HawthornWandBehavior)>

wand: <Rowan (HollyWandBehavior)>

wand: <Spruce (HawthornWandBehavior)>

wand: <Tamarack (HollyWandBehavior)>

wand: <Walnut (HawthornWandBehavior)>

wand: <Yew (HawthornWandBehavior)>

dungeon characters:

character:<Ron Weasley> <e: 0.0> <o: 32.5> <d: 20.0> <wand: RonW (HollyWandBehavior)>

character:<Cedric Diggory> <e: 0.0> <o: 20.0> <d: 35.0> <wand: CedricW (HawthornWandBehavior)>

character:<Harry Potter> <e: 0.0> <o: 32.5> <d: 28.0> <wand: HarryW (HollyWandBehavior)>

character:<Newton Scamander> <e: 0.0> <o: 20.0> <d: 25.0> <wand: NewtonW (HawthornWandBehavior)>

character:<Hermione Granger> <e: 0.0> <o: 32.5> <d: 28.0> <wand: HermioneW (HollyWandBehavior)>

character:<Nymphadora Tonks> <e: 0.0> <o: 20.0> <d: 25.0> <wand: NymphadoraW (HawthornWandBehavior)>

character:<Rolf Scamander> <e: 0.0> <o: 20.0> <d: 25.0> <wand: RolfW (HawthornWandBehavior)>

character:<Susan Bones> <e: 0.0> <o: 20.0> <d: 25.0> <wand: SusanW (HawthornWandBehavior)>

character:<Hannah Abbott> <e: 0.0> <o: 26.0> <d: 25.0> <wand: HannahW (HawthornWandBehavior)>

character:<Pomona Sprout> <e: 0.0> <o: 26.0> <d: 25.0> <wand: PomonaW (HawthornWandBehavior)>

character:<Silvanus Kettleburn> <e: 0.0> <o: 26.0> <d: 25.0> <wand: SilvanusW (HawthornWandBehavior)>

the winner house is:

house:<Slytherin>

character:<Draco Malfoy> <e: 19.25> <o: 20.0> <d: 20.0> <wand: Pear (HawthornWandBehavior)>