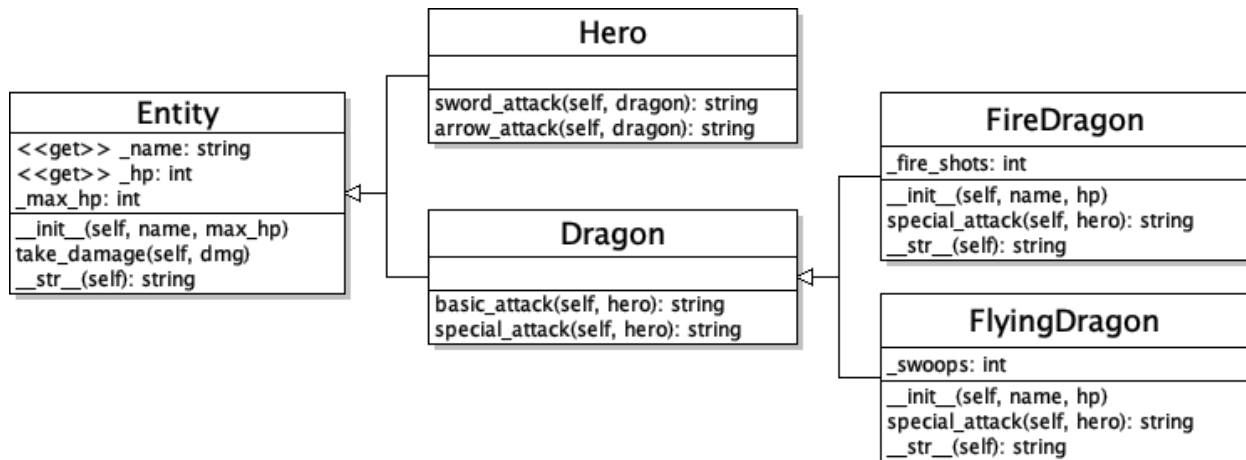


CECS 277 – Lab 7 – Inheritance

Dragon Trainer

Create a game where the user must defeat three dragons to pass the trails. Use inheritance to implement the following class diagram in your program:



Entity Class (entity.py) –

1. `__init__(self, name, max_hp)` – set the `_name`, `_max_hp`, and `_hp` attributes. Assign the `max_hp` value to both the `_max_hp` and `_hp` attributes.
2. `name` and `hp` properties – use decorators to get (not set) the values of `_name` and `_hp`.
3. `take_damage(self, dmg)` – the damage this entity takes. Subtract the `dmg` value from the entity's `_hp`. Do not let the `hp` go past 0 (if it's a negative value, reset it to 0).
4. `__str__(self)` – return the entity's name and `hp` in the format "Name: hp/max_hp".

Hero Class (hero.py) – inherits from Entity

1. `sword_attack(self, dragon)` – the dragon takes a random amount of damage in the range 2D6 (1-6 + 1-6). Return a string with the description of the attack.
2. `arrow_attack(self, dragon)` – the dragon takes a random amount of damage in the range 1D12 (1-12). Return a string with the description of the attack.

Dragon Class (dragon.py) – inherits from Entity

1. `basic_attack(self, hero)` – tail attack – the hero takes a random amount of damage in the range 2-5. Return a string with the description of the attack.
2. `special_attack(self, hero)` – claw attack – the hero takes a random amount of damage in the range 3-7. Return a string with the description of the attack.

FireDragon Class (fire.py) – Inherits from Dragon

1. `__init__(self, name, hp)` – call super to set the name and `hp`, then assign a default number of `fire_shots` (ex. 2 or 3).
2. `special_attack(self, hero)` – overridden fire attack – if the dragon has any `fire_shots` left, then apply a random amount of damage to the hero in the range 6-9, decrement the number of `fire_shots`, and return a string with the description of the attack. Otherwise, do not deal any damage, and return a string describing the failure.
3. `__str__(self)` – use super to get the `__str__` from the entity class, then concatenate on the number of `fire_shots`.

FlyingDragon Class (flying.py) – inherits from Dragon

1. `__init__(self, name, hp)` – call super to set the name and hp, then assign a default number of swoops.
2. `special_attack(self, hero)` – overridden swoop attack – if the dragon has any swoops left, then apply a random amount of damage to the hero in the range 5-8, decrement the number of swoops, and return a string with the description of the attack. Otherwise, do not deal any damage, and return a string describing the failure.
3. `__str__(self)` – use super to get the `__str__` from the entity class, then concatenate on the number of swoops.

Main (main.py) – Construct a Hero object and then create a list that contains one of each of the dragons (Dragon, FireDragon, FlyingDragon). Present a menu that allows the user to choose which dragon to attack, and then another menu that gives them the option of attacking with a sword or an arrow. Call the hero's attack method on the dragon they chose and display the attack message returned. If the user defeats the dragon (hp is 0), then remove that dragon from the list. Then choose a random (surviving) dragon that will attack the user, and randomly choose either a basic or special attack and display the attack message returned. Repeat the attacks until the user defeats all three dragons, or until the hero is knocked out. Check all input for validity.

Example Output (user input is in italics):

What is your name, challenger?
Astrid
Welcome to dragon training, Astrid
You must defeat 3 dragons.

Astrid: 50/50
1. Attack Deadly Nadder: 10/10
2. Attack Gronckle: 15/15
Fire Shots remaining: 2
3. Attack Timberjack: 20/20
Swoop attacks remaining: 3
Choose a dragon to attack: 3
Attack with:
1. Arrow (1 D12)
2. Sword (2 D6)
Enter weapon: 2
You slash the Timberjack with your sword for 9 damage.
Gronckle smashes you with its tail for 5 damage!

Astrid: 45/50
1. Attack Deadly Nadder: 10/10
2. Attack Gronckle: 15/15
Fire Shots remaining: 2
3. Attack Timberjack: 11/20
Swoop attacks remaining: 3
Choose a dragon to attack: 3
Attack with:
1. Arrow (1 D12)
2. Sword (2 D6)
Enter weapon: 1

You hit the Timberjack with an arrow for 9 damage.
Gronckle engulfs you in flames for 8 damage!

Astrid: 37/50
1. Attack Deadly Nadder: 10/10
2. Attack Gronckle: 15/15
Fire Shots remaining: 1
3. Attack Timberjack: 2/20
Swoop attacks remaining: 3
Choose a dragon to attack: 3
Attack with:
1. Arrow (1 D12)
2. Sword (2 D6)
Enter weapon: 2
You slash the Timberjack with your sword for 5 damage.
You defeated the Timberjack!
Gronckle engulfs you in flames for 7 damage!

Astrid: 30/50
1. Attack Deadly Nadder: 10/10
2. Attack Gronckle: 15/15
Fire Shots remaining: 0
Choose a dragon to attack: 3
Invalid input – should be within range (1-2).
Choose a dragon to attack: 2
Attack with:
1. Arrow (1 D12)

2. Sword (2 D6)
Enter weapon: 1
You hit the Gronckle with an arrow
for 9 damage.
Deadly Nadder slashes you with its
claws for 7 damage!

Astrid: 23/50
1. Attack Deadly Nadder: 10/10
2. Attack Gronckle: 6/15
Fire Shots remaining: 0
Choose a dragon to attack: 1
Attack with:
1. Arrow (1 D12)
2. Sword (2 D6)
Enter weapon: 2
You slash the Deadly Nadder with
your sword for 2 damage.
Gronckle tries to spit fire at you
but is all out of fire shots.
Astrid: 23/50
1. Attack Deadly Nadder: 8/10
2. Attack Gronckle: 6/15
Fire Shots remaining: 0
Choose a dragon to attack: 1

Attack with:
1. Arrow (1 D12)
2. Sword (2 D6)
Enter weapon: 2
You slash the Deadly Nadder with
your sword for 11 damage.
You defeated the Deadly Nadder!
Gronckle smashes you with its tail
for 5 damage!

Astrid: 18/50
1. Attack Gronckle: 6/15
Fire Shots remaining: 1
Choose a dragon to attack: 1
Attack with:
1. Arrow (1 D12)
2. Sword (2 D6)
Enter weapon: 2
You slash the Gronckle with your
sword for 9 damage.
You defeated the Gronckle!

Congratulations! You have defeated
all 3 dragons, you have passed the
trials.

Notes:

1. You should have 7 different files: entity.py, hero.py, dragon.py, fire.py, flying.py, main.py, and check_input.py.
2. Check all user input using the get_int_range function in the check_input module.
3. Do not create any extra methods or functions or add any extra parameters.
4. Please do not create any global variables or use the attributes globally (ie. do not access any of them using the underscore). Access the name and hp using the properties. Do not access the max_hp, fire_shots, or swoops outside of their own classes.
5. Use docstrings to document each of the classes, their attributes, and each of their methods. See the lecture notes for examples.
6. Place your names, date, and a brief description of your program in a comment block at the top of your program. Place brief comments throughout your code.
7. Thoroughly test your program before submitting:
 - a. Make sure that your classes are inherited properly. Hero and Dragon should inherit from Entity, and Fire and Flying Dragons should inherit from Dragon.
 - b. Make sure user input is validated. Including when a dragon is defeated and removed from the list, that dragon should no longer be selectable.
 - c. Make sure that the damage dealt is correctly subtracted from the opponent.
 - d. Make sure that the randomly selected dragon is alive.
 - e. Make sure that the flying/fire dragons cannot do their special attack once they run out of their respective charges (and no damage is dealt).
 - f. Make sure the game ends when the user defeats all 3 dragons, or when the hero runs out of hp.

Dragon Trainer Rubric – Time estimate: 4 hours

Dragon Trainer 10 points	Correct. 2 points	A minor mistake. 1.5 points	A few mistakes. 1 point	Several mistakes. 0.5 points	No attempt. 0 points
Entity class (in a separate file): 1. Has attributes name, hp, max_hp. 2. Has methods: __init__, take_damage, and __str__. 3. init sets attributes properly. 4. Has properties for name and hp. 5. take_damage checks that hp != 0. 6. Does not access attributes from outside of the class (only use methods).					
Hero/Dragon classes (separate files): 1. Both inherit from Entity. 2. Hero's sword attack does 2D6 dmg. 3. Hero's arrow attack does 1D12 dmg. 4. Dragon's basic attack does 2-5 dmg. 5. Dragon's sp attack does 3-7 dmg. 6. All attacks return an attack string.					
Fire/Flying classes (separate files): 1. Inherits from Dragon. 2. Has extra attribute for attack type. 3. Overrides init and str methods. 4. Overrides special attack method that decrements the fire-shots/swoops. 5. Does not access attributes from outside of the class (only use methods).					
Main File: 1. Constructs Hero and a list of each one of the different dragons. 2. Prompts user for attack and attacks specified dragon with specified attack. 3. Random living dragon attacks back. 4. Displays attack strings returned from attack methods. 5. Displays updated hp. 6. Repeats until user dies or all dragons are slain. 7. Error check all user input.					
Code Formatting: 1. All code is in functions/methods. 2. Correct spacing and good naming. 3. No exceptions thrown. 4. No global variables. 5. Correct documentation.					