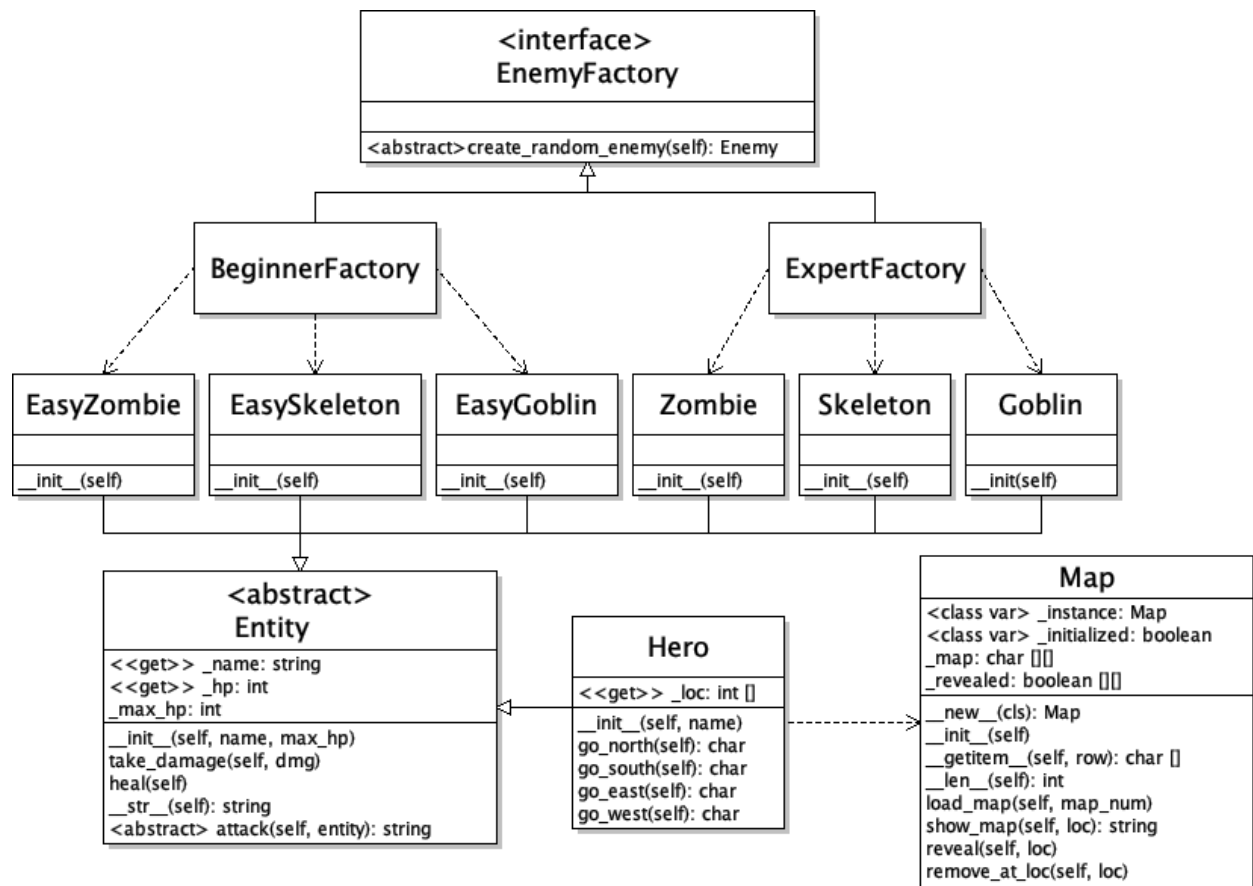


CECS 277 – Lab 11 – Factory Method

Dungeons and Monsters Part 2

Use the program that you created for Lab 10 and add an Enemy Factory to it. Use the following UML diagram and the class descriptions below to create your program.



Classes:

1. Entity – no changes
2. Enemy – remove this class
3. Hero – no changes
4. Map – singleton – the map of the dungeon maze.
 - a. __init__(self) – move the code for reading in the file to the method below (load_map) and call it to load the first map.
 - b. load_map(self, map_num) – passes in an integer for map number (1, 2, or 3). Fill the 2D map list from the specified file contents and reset the 2D revealed list with all False values.
 - c. all other methods are the same.
5. EnemyFactory – interface
 - a. create_random_enemy(self) – abstract method (no code) that each concrete factory overrides to create and return enemy objects.
6. BeginnerFactory – factory to create easy enemies.

- a. `create_random_enemy(self)` – randomizes and constructs one of the easy enemies (EasyZombie, EasySkeleton, or EasyGoblin).
7. ExpertFactory – factory to create more difficult enemies.
 - a. `create_random_enemy(self)` – randomizes and constructs one of the difficult enemies (Zombie, Skeleton, or Goblin).
8. Enemy Classes (EasyZombie, EasySkeleton, EasyGoblin, Zombie, Skeleton, Goblin) –
 - a. `__init__(self)` – randomize `max_hp` according to the table below for each of the different enemies. Call `super().__init__` to initialize the name and randomized `max_hp` (Note: give the difficult enemies a scarier name so that it is easy for me to tell that the correct factory was used (ex. “Angry Goblin” or “Fast Zombie”).
 - b. `attack(self, entity)` – enemy attacks hero – randomize damage according to the table below. The hero should take the damage and the method should return a string representing the event.

Enemy	Zombie	Skeleton	Goblin
Easy	HP: 4-5, Dmg: 1-5	HP: 3-4, Dmg: 1-4	HP: 4-6, Dmg: 2-5
Difficult	HP: 8-10, Dmg: 5-12	HP: 6-10, Dmg: 6-10	HP: 8-12, Dmg: 6-12

9. Main – prompt the user to enter their name, and a difficulty level. Then construct the hero, the map, and the appropriate factory (beginner or expert) that the user chose. Create a loop that repeats until the hero dies, or the user quits the game. Have the user to choose a direction to move in (north, south, east, west), move the hero in that direction, reveal that spot, and then present the encounter at that location as follows:
 - a. ‘m’ – monster – construct an enemy using the factory and display its information. The rest of the attack should work the same as before.
 - b. ‘x’ – no change
 - c. ‘n’ – no change
 - d. ‘s’ – no change
 - e. ‘i’ – no change
 - f. ‘f’ – finish – display a congratulatory message stating that they found the entrance to the next level. Load the next map. The maps are loaded in the order 1,2,3,1,2,3,... (hint: you can keep a counter that increments and then resets back to 1 when it reaches 4).

Example Output:

```

What is your name, traveler? Jack
Difficulty:
1.Beginner
2.Expert
2
Jack
HP: 25/25
* x x x x
x x x x x
x x x x x
x x x x x
x x x x x

1. Go North

```

```

2. Go South
3. Go East
4. Go West
5. Quit
Enter choice: 2
There is nothing here...
Jack
HP: 25/25
s x x x x
* x x x x
x x x x x
x x x x x
x x x x x

```

1. Go North
 2. Go South
 3. Go East
 4. Go West
 5. Quit
 Enter choice: 2
 You encounter a Vicious Goblin
 HP: 10/10
 1. Attack Vicious Goblin
 2. Run Away
 Enter choice: 1
 Jack attacks a Vicious Goblin for 5 damage.
 Vicious Goblin attacks Jack for 10 damage.
 1. Attack Vicious Goblin
 2. Run Away
 Enter choice: 1
 Jack attacks a Vicious Goblin for 5 damage.
 You have slain a Vicious Goblin
 Jack
 HP: 17/25
 s x x x x
 n x x x x
 * x x x x
 x x x x x
 x x x x x

 1. Go North
 2. Go South
 3. Go East
 4. Go West
 5. Quit
 Enter choice: 3
 There is nothing here...
 Jack
 HP: 17/25
 s x x x x
 n x x x x
 n * x x x
 x x x x x
 x x x x x

 1. Go North
 2. Go South
 3. Go East
 4. Go West
 5. Quit
 Enter choice: 2
 You found a Health Potion! You drink it to restore your health.
 Jack
 HP: 25/25
 s x x x x
 n x x x x
 n n x x x

x * x x x
 x x x x x

 1. Go North
 2. Go South
 3. Go East
 4. Go West
 5. Quit
 Enter choice: 3
 There is nothing here...
 Jack
 HP: 25/25
 s x x x x
 n x x x x
 n n x x x
 x n * x x
 x x x x x

 1. Go North
 2. Go South
 3. Go East
 4. Go West
 5. Quit
 Enter choice: 2
 There is nothing here...
 Jack
 HP: 25/25
 s x x x x
 n x x x x
 n n x x x
 x n n x x
 x x * x x

 1. Go North
 2. Go South
 3. Go East
 4. Go West
 5. Quit
 Enter choice: 3
 You encounter a Vicious Goblin
 HP: 7/7
 1. Attack Vicious Goblin
 2. Run Away
 Enter choice: 1
 Jack attacks a Vicious Goblin for 3 damage.
 Vicious Goblin attacks Jack for 4 damage.
 1. Attack Vicious Goblin
 2. Run Away
 Enter choice: 1
 Jack attacks a Vicious Goblin for 3 damage.
 Vicious Goblin attacks Jack for 4 damage.
 1. Attack Vicious Goblin
 2. Run Away

Enter choice: 1
Jack attacks a Vicious Goblin for 2 damage.

You have slain a Vicious Goblin
Jack

HP: 17/25

s x x x x
n x x x x
n n x x x
x n n x x
x x n * x

1. Go North
2. Go South
3. Go East
4. Go West
5. Quit

Enter choice: 3

Congratulations! You found the stairs to the next floor of the dungeon.

Jack

HP: 17/25

x x x x x
x x x x x
x x x x x
x x x x x
x x x x *

1. Go North
2. Go South
3. Go East
4. Go West
5. Quit

Enter choice: 1

There is nothing here...

Jack

HP: 17/25

x x x x x
x x x x x
x x x x x
x x x x *
x x x x s

1. Go North
2. Go South
3. Go East
4. Go West
5. Quit

Enter choice: 1

You found a Health Potion! You drink it to restore your health.

Jack

HP: 25/25

x x x x x
x x x x x
x x x x *

x x x x n
x x x x s

1. Go North
2. Go South
3. Go East
4. Go West
5. Quit

Enter choice: 1

There is nothing here...

Jack

HP: 25/25

x x x x x
x x x x *
x x x x n
x x x x n
x x x x s

1. Go North
2. Go South
3. Go East
4. Go West
5. Quit

Enter choice: 1

You encounter a Necrotic Zombie

HP: 10/10

1. Attack Necrotic Zombie
2. Run Away

Enter choice: 2

You ran away!

Jack

HP: 25/25

x x x x m
x x x x *
x x x x n
x x x x n
x x x x s

1. Go North
2. Go South
3. Go East
4. Go West
5. Quit

Enter choice: 4

You encounter a Scary Skeleton

HP: 9/9

1. Attack Scary Skeleton
2. Run Away

Enter choice: 1

Jack attacks a Scary Skeleton for 4 damage.

Scary Skeleton attacks Jack for 9 damage.

1. Attack Scary Skeleton
2. Run Away

Enter choice: 1

Jack attacks a Scary Skeleton for 3 damage.
 Scary Skeleton attacks Jack for 10 damage.
 1. Attack Scary Skeleton
 2. Run Away
 Enter choice: 1
 Jack attacks a Scary Skeleton for 5 damage.
 You have slain a Scary Skeleton
 Jack
 HP: 6/25
 x x x x m
 x x x * n
 x x x x n
 x x x x n
 x x x x s

1. Go North
 2. Go South
 3. Go East

4. Go West
 5. Quit
 Enter choice: 1
 Congratulations! You found the stairs to the next floor of the dungeon.
 Jack
 HP: 6/25
 x x x * x
 x x x x x
 x x x x x
 x x x x x
 x x x x x

1. Go North
 2. Go South
 3. Go East
 4. Go West
 5. Quit
 Enter choice: 5
 Game Over

Notes:

1. You should have 13 different files: main.py, entity.py, hero.py, map.py, enemy_factory.py, beg_factory.py, exp_factory.py, easy_zombie.py, easy_skeleton.py, easy_goblin.py, zombie.py, skeleton.py, goblin.py.
2. Check all user input using the get_int_range function in the check_input module.
3. Do not create any extra methods, attributes, functions, parameters, etc.
4. Please do not create any global variables (besides the singleton map), or use attributes globally (ie. do not access any of the attributes using the underscores).
5. Use docstrings to document each of the classes, their attributes, and their methods.
6. Place your names, date, and a brief description of the program in a comment block at the top of your main file. Place brief comments throughout your code.
7. When you run away from a monster the 'm' stays on the map. If you return to that same location, it will randomize a new monster (ie. it may not be the exact same monster).
8. Thoroughly test your program before submitting:
 - a. Make sure that when the user reaches the finish, it does not end the game.
 - b. Make sure that the maps repeat forever (1,2,3,1,2,3,...). You can't win this game.
 - c. Make sure that a random enemy is constructed from the factory that the user chose (beginner or expert). Do not preconstruct the enemies and then randomly select them from a list, because if they are chosen again their hp will still be 0.

Dungeons and Monsters Part 2 Rubric – Time estimate: 3 hours

Dungeons and Monsters Part 2 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
Updates: 1. Entity and Hero class are the same. 2. Enemy class is removed. 3. Map has load_map and updated init.					
Factory classes (separate files): 1. EnemyFactory is an interface. 2. Beginner and Expert Factories inherit from Enemy Factory. 3. Beginner Factory creates the 3 easy enemies, and Expert Factory creates the 3 difficult enemies.					
Enemy classes (separate files): 1. Each of the enemy classes inherit from Entity. 2. init method initializes the name and hp. 3. overrides the attack method and deals the correct damage from table.					
Main file (in separate file): 1. Constructs Hero and Map. 2. Allows user to choose difficulty of game. 3. Error checks all user input. 4. Game plays similarly to how it did in the Part 1. 5. Map is updated to the next map when hero reaches the finish. Next map is reset (no spots are revealed). Repeats in pattern 1,2,3,1,2,3... 6. Game repeats until user quits, or the hero dies.					
Code Formatting: 1. Correct documentation. 2. Meaningful variable names. 3. No exceptions thrown. 4. No global variables (other than singleton) or accessing attributes directly. 5. Correct spacing.					