

CS 1110 Assignment 7

1. Weapon Class Hierarchy

Name: `Weapon.java`, `Knife.java`, `Sword.java`, `Pistol.java`, `Rifle.java`

Create a `Weapon` class that matches the specification in the following UML diagram. Also, create the follow subclasses of `Weapon`: `Knife`, `Sword`, `Pistol`, `Rifle`. Put each class in its own file.

Weapon
<code>Weapon()</code>
<code>toString(): String</code>

Knife
<code>Knife()</code>
<code>toString(): String</code>

Sword
<code>Sword()</code>
<code>toString(): String</code>

Pistol
<code>Pistol()</code>
<code>toString(): String</code>

Rifle
<code>Rifle()</code>
<code>toString(): String</code>

- `toString()` should simply return a string of the class name (i.e., Sword class's `toString()` method should return "Sword")

2. Player Class

Name: `Player.java`

Create a `Player` class that represents a player in a first-person shooter (FPS) game matching the provided UML diagram.

Player
<code>name: String</code>
<code>arsenal: Weapon[]</code>
<code>currentWeapon: Weapon</code>
<code>currentWeaponIndex: int</code>
Player()
Player(name: String)
getName(): String
setName(name: String)
getCurrentWeapon(): Weapon
getCurrentWeaponIndex(): int
toString(): String
cycleForward()
cycleBackward()

- `toString()` should return a string with the name of the player and indicate the current weapon and list the weapons in their arsenal (see the output below).
- Make the arsenal array be of size 4.
- Fill the arsenal with a weapon of each type in the constructor.
- Set the current weapon to the first weapon in the arsenal.
- `cycleForward()` should advance the `currentWeapon` to the next weapon in the arsenal (i.e., if the current weapon is at index 0 of the arsenal array, `cycleForward()` should advance to the current weapon to the weapon at index 1).
 - Hint: Use incrementing and modding for wrap around (i.e., $4 \% 4 = 0$).
- `cycleBackward()` should transition the `currentWeapon` to the previous weapon in the arsenal (i.e., if the current weapon is at index 1 of the arsenal array, `cycleBackward()` should transition the current weapon to be the weapon at index 0).
- Use default values of 0 for numeric attributes.
- You should not need to modify anything in the test program.

Sample Run (from TestPlayer.java):

```
PLAYER: Hello
CURRENT WEAPON: Knife
INVENTORY: Knife | Sword | Pistol | Rifle

Cycle forward:
PLAYER: Hello
CURRENT WEAPON: Sword
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Pistol
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Rifle
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Knife
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Sword
INVENTORY: Knife | Sword | Pistol | Rifle

Cycle backward:
PLAYER: Hello
CURRENT WEAPON: Knife
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Rifle
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Pistol
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Sword
INVENTORY: Knife | Sword | Pistol | Rifle

PLAYER: Hello
CURRENT WEAPON: Knife
INVENTORY: Knife | Sword | Pistol | Rifle
```