**package** topic3\_3;

/\*\*

\*

\* The Bomb class represents a bomb weapon

\*

\*/

**public** **class** Bomb **implements** WeaponInterface {

/\*\*

\*

\* Fires the bomb with the specified power.

\*

\* **@param** power, The power of the bomb.

\*

\*/

@Override

**public** **void** fireWeapon(**int** power)

{

System.***out***.println("In Bomb.fireWeapon() with a power of " + power);

}

/\*\*

\*

\* Fires the bomb without specifying power.

\*

\*/

@Override

**public** **void** fireWeapon()

{

System.***out***.println("In Bomb.fireWeapon()");

}

/\*\*

\*

\* Activates or Deactivates the bomb.

\*

\* **@param** enable {@code true} to enable the bomb, {@code false} to disable it.

\*/

@Override

**public** **void** activate(**boolean** enable)

{

System.***out***.println("In the Bomb.activate() with an enable of " + enable);

}

}

**package** topic3\_3;

/\*\*

\*

\* The Gun class represents a gun weapon.

\*

\*/

**public** **class** Gun **implements** WeaponInterface {

/\*\*

\* Fires the gun with the specified power.

\*

\* **@param** power, The power of the gun.

\*

\*/

@Override

**public** **void** fireWeapon(**int** power)

{

System.***out***.println("In Gun.fireWeapon() with a power of " + power);

}

/\*\*

\*

\* Fires the gun without specifying power

\*/

@Override

**public** **void** fireWeapon()

{

System.***out***.println("In Gun.fireWeapon()");

}

/\*\*

\*

\* Activates or deactivates the gun.

\*

\* **@param** enable {@code true} to enable the gun, {@code false} to disable it.

\*

\*/

@Override

**public** **void** activate(**boolean** enable)

{

System.***out***.println("In the gun.activate() with an enable of " + enable);

}

}

**package** topic3\_3;

/\*\*

\* The game class represents a game that involves firing different weapons.

\*

\*/

**public** **class** Game {

/\*\*

\* Fires the provided weapon

\*

\* **@param** weapon , The weapon to be fired.

\*

\*/

**private** **static** **void** fireWeapon(WeaponInterface weapon)

{

**if**(weapon **instanceof** Bomb)

System.***out***.println("---------> I am a Bomb");

weapon.activate(**true**);

weapon.fireWeapon(5);

}

/\*\*

\* The entry point of the game

\*

\*

\* **@param** args , The command line arguments

\*/

**public** **static** **void** main(String[] args) {

// Create an array of weaponInterface and initialize to specific Weapon of Bomb and Gun

WeaponInterface[] weapons = **new** WeaponInterface[2];

weapons[0] = **new** Bomb();

weapons[1] = **new** Gun();

//For all Weapons fire them

**for**(**int** x = 0; x < weapons.length; ++x)

{

*fireWeapon*(weapons[x]);

}

}

}

**package** topic3\_3;

/\*\*

\*

\* The WeaponInterface defines the contract for a weapon

\*

\*/

**public** **interface** WeaponInterface {

/\*\*

\*

\* Fires the weapon without specifying power.

\*/

**public** **void** fireWeapon();

/\*\*

\* Fires the weapon with the specified power.

\*

\* **@param** power, The power of the weapon

\*/

**public** **void** fireWeapon(**int** power);

/\*\*

\* Activates or Deactivates the weapon.

\*

\* **@param** enable {@code true} to enable the weapon, {@code false} to disable it.

\*/

**public** **void** activate(**boolean** enable);

}

/\*\*

\* Notes

\*

\* Polymorphism is demonstrated in the code through the usage of the WeaponInterface as a reference type.

\* In the Game class, the fireWeapon() method takes a WeaponInterface object as a parameter, allowing it to accept any object that implements the WeaponInterface, such as Bomb and Gun objects.

\* This enables the fireWeapon() method to be invoked with different types of weapons, and the appropriate implementation of fireWeapon() and activate()

\* methods is called based on the actual type of the object at runtime, showcasing polymorphic behavior.

\*

\*

\*

\*

\*/