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Project Name: New Super Regional Mall
Design Pattern: Decorator
Group Number: 3

Code

```
public class Main {
        public static void main(String[] args) {

                // default store status/non holiday hours
                Store myStore1 = new MerchandiseStore();
                myStore1.setName("Macys");
                System.out.print(myStore1.getName() + ", ");
                System.out.print(myStore1.getDescription() + "Store closes at " + myStore1.closingTime());
                System.out.print(". Enjoy a " + myStore1.storeDiscount() + "% off storewide! ");

                System.out.println();

                // adding holiday status: Thanksgiving
                Store myStore2 = new Dining("TGI Fridays");
                System.out.print(myStore2.getName());
                myStore2 = new Thanksgiving(myStore2);
                System.out.print(", " + myStore2.getDescription() + "Store closes at " + myStore2.closingTime());
                System.out.print(". Enjoy a " + myStore2.storeDiscount() + "% off storewide! ");

                System.out.println();

                // adding holiday status: Thanksgiving & Christmas
                Store myStore3 = new MerchandiseStore("Macys");
                System.out.print(myStore3.getName());
                myStore3 = new Thanksgiving(myStore3);
                myStore3 = new Christmas(myStore3);
                System.out.print(", " + myStore3.getDescription() + "Store closes at " + myStore3.closingTime());
                System.out.print(". Enjoy a " + myStore3.storeDiscount() + "% off storewide! ");
        }
}
```

Main Output:

```
Macys, A Merchandise Store. Store closes at 2000. Enjoy a 0.0% off storewide!
TGI Fridays, A dining establishment. Thanksgiving installations and decorations are up! Store closes at 2400. Enjoy a
0.15% off storewide!
Macys, A Merchandise Store. Thanksgiving installations and decorations are up! Christmas decorations are up! Store
closes at 2300. Enjoy a 0.35% off storewide!
```

```
// abstract store class
public abstract class Store {
		String description = "Default Store Description";
		String name;
		public void setName(String name) {
				this.name = name;
		}
		public String getName() {
				return name;
		}
		public String getDescription() {
				return description;
		}
		public abstract double storeDiscount();
		public abstract int closingTime();
}

// concrete store classes
public class MerchandiseStore extends Store {
		public MerchandiseStore() {
				description = "A Merchandise Store. ";
		}
		public MerchandiseStore(String name) {
				description = "A Merchandise Store. ";
				this.name = name;
		}
		public double storeDiscount() {
				return 0.0;
		}
		public int closingTime() {
				return 2000;
		}
}

public class Dining extends Store {
		public Dining() {
				description = "A dining establishment. ";
		}
		public Dining(String name) {
				description = "A dining establishment. ";
				this.name = name;
		}
		public double storeDiscount() {
				return 0.0;
		}
		public int closingTime() {
				return 2200;
		}
}
```

```
// decorators
public abstract class HolidayDecorator extends Store {
        public abstract String getDescription();
        public abstract double storeDiscount();
        public abstract int closingTime();
}

public class Thanksgiving extends HolidayDecorator {
        Store store;
        public Thanksgiving(Store store) {
                this.store = store;
        }
        public String getDescription() {
                return store.getDescription() + "Thanksgiving installations and decorations are up! ";
        }
        public double storeDiscount() {
                return 0.15 + store.storeDiscount();
        }
        public int closingTime() {
                return store.closingTime() + 200;
        }
}

public class Christmas extends HolidayDecorator {
        Store store;
        public Christmas(Store store) {
                this.store = store;
        }
        public String getDescription() {
                return store.getDescription() + "Christmas decorations are up! ";
        }
        public double storeDiscount() {
                return 0.20 + store.storeDiscount();
        }
        public int closingTime() {
                return store.closingTime() + 100;
        }
}

public class Easter extends HolidayDecorator{
        Store store;
        public Easter(Store store) {
            this.store = store;
        }
        public String getDescription() {
           return store.getDescription() + "Photos with the Easter Bunny are going on now through next Saturday! ";
        }
        public double storeDiscount() {
            return 0.00 + store.storeDiscount();
        }
        public int closingTime() {
             return store.closingTime() - 200;
        }
}
```

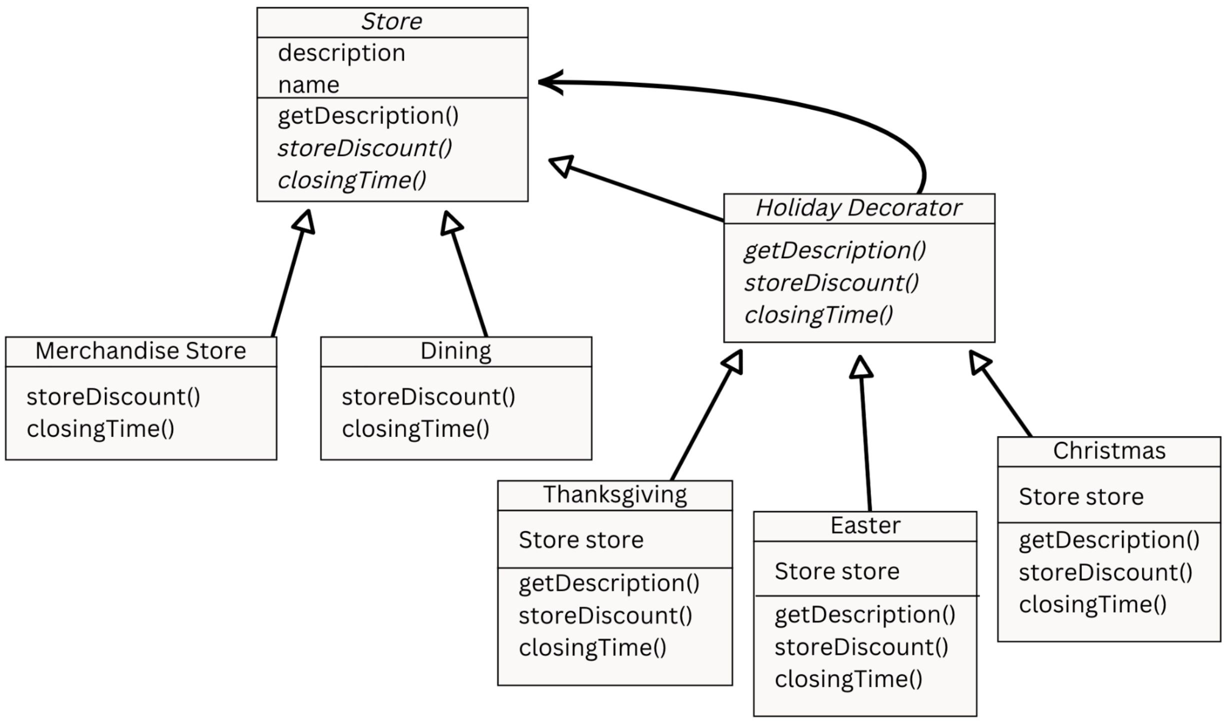
Unit Testing

```
import static org.junit.jupiter.api.Assertions.*;
import org.junit.jupiter.api.DisplayName;
import org.junit.jupiter.api.Test;

class MerchandiseStoreTest {
	@Test
	@DisplayName("Concrete Store closingTime Test")
	void closingTime() {
		Store store = new MerchandiseStore();
		assertEquals(2100, store.closingTime()+100);
	}

	@Test
	@DisplayName("Name Constructor Test")
	void MerchandiseStore() {
		Store store2 = new MerchandiseStore("Target");
		System.out.print(store2.getName());
		assertEquals("Target", store2.getName());
	}
}

class ThanksgivingTest {
	@Test
	@DisplayName("Decorator getDescription Test")
	void getDescription() {
		Store myStore1 = new Dining("Test Store");
		myStore1 = new Thanksgiving(myStore1);
		assertEquals("A dining establishment. Thanksgiving installations and decorations are up! ",
myStore1.getDescription());
	}
}
```

Component Test

The time of year is one week before Thanksgiving. A user logs on to see what holiday decorations, promotions, and store hours are available. The app will return information that Thanksgiving and Christmas decorations are up, the store hours, and a combined discount for both holiday promotions.

UML Diagram



Store
description
name
getDescription()
storeDiscount()
closingTime()
Holiday Decorator
getDescription()
storeDiscount()
closingTime()
Merchandise Store
storeDiscount()
closingTime()
Dining
storeDiscount()
closingTime()
Thanksgiving
Store store
getDescription()
storeDiscount()
closingTime()
Easter
Store store
getDescription()
storeDiscount()
closingTime()
Christmas
Store store
getDescription()
storeDiscount()
closingTime()