Write a Java program to create a class called "ElectronicsProduct" with attributes for product ID, name, and price. Implement methods to apply a discount and calculate the final price. Create a subclass " WashingMachine" that adds a warranty period attribute and a method to extend the warranty.

Sample Solution:

Java Code:

ElectronicsProduct.java

```java
// Define the ElectronicsProduct class
public class ElectronicsProduct {
    // Attributes for the product ID, name, and price
    private String productId;
    private String name;
    private double price;

    // Constructor to initialize the ElectronicsProduct object
    public ElectronicsProduct(String productId, String name, double price)
        this.productId = productId;
        this.name = name;
        this.price = price;
    }

    // Method to apply a discount to the product price
    public void applyDiscount(double discountPercentage) {
        // Calculate the discount amount
        double discountAmount = price * discountPercentage / 100;
        // Subtract the discount amount from the original price
        price -= discountAmount;
    }

    // Method to calculate the final price after discount
    public double getFinalPrice() {
        // Return the current price which may have been discounted
        return price;
    }

    // Getter for product ID
    public String getProductId() {
```

```java
        return productId;
    }

    // Getter for name
    public String getName() {
        return name;
    }

    // Getter for price
    public double getPrice() {
        return price;
    }
}
```

Explanation:

ElectronicsProduct Class:

- Attributes: productId, name, and price.

- Constructor: Initializes the attributes.

- applyDiscount(double discountPercentage): Applies a discount to the product price.

- getFinalPrice(): Returns the final price after the discount.

- Getters: Methods to get the values of the attributes.

WashingMachine.java

```java
    // Define the WashingMachine subclass that extends ElectronicsProduct
    class WashingMachine extends ElectronicsProduct {
        // Additional attribute for the warranty period
        private int warrantyPeriod; // in months

        // Constructor to initialize the WashingMachine object
        public WashingMachine(String productId, String name, double price, int
            // Call the superclass constructor to initialize common attributes
            super(productId, name, price);
            this.warrantyPeriod = warrantyPeriod;
        }

        // Method to extend the warranty period
        public void extendWarranty(int additionalMonths) {
```

```java
            // Add the additional months to the current warranty period
            warrantyPeriod += additionalMonths;
        }

        // Getter for warranty period
        public int getWarrantyPeriod() {
            return warrantyPeriod;
        }

        // Override the display method to include warranty period
        @Override
        public void applyDiscount(double discountPercentage) {
            // Call the superclass method to apply the discount
            super.applyDiscount(discountPercentage);
            // Display a message indicating the discount was applied
            System.out.println("Discount applied to Washing Machine: " + getNam
        }
    }
```

Explanation:

WashingMachine Class:

- Extends ElectronicsProduct.

- Additional Attribute: warrantyPeriod.

- Constructor: Initializes the attributes, calling the superclass constructor for the common attributes.

- extendWarranty(int additionalMonths): Extends the warranty period by the given

Main.java

```java
    // Main class to test the ElectronicsProduct and WashingMachine class  Copy
    public class Main {
        public static void main(String[] args) {
            // Create an ElectronicsProduct object
            ElectronicsProduct product = new ElectronicsProduct("WM123", "Washi
            // Apply a discount and display the final price
            product.applyDiscount(10);
            System.out.println("Product ID: " + product.getProductId());
            System.out.println("Name: " + product.getName());
            System.out.println("Price after discount: $" + product.getFinalPri
```

```java
            System.out.println();

            // Create a WashingMachine object
            WashingMachine washingMachine = new WashingMachine("W456", "Front I
            // Apply a discount and display the final price
            washingMachine.applyDiscount(15);
            System.out.println("Product ID: " + washingMachine.getProductId())
            System.out.println("Name: " + washingMachine.getName());
            System.out.println("Price after discount: $" + washingMachine.getF:
            // Display the warranty period
            System.out.println("Warranty period: " + washingMachine.getWarranty

            // Extend the warranty period and display the new warranty period
            washingMachine.extendWarranty(12);
            System.out.println("Warranty period after extension: " + washingMac
        }
    }
```

Explanation:

Main Class:

- Creates instances of ElectronicsProduct and WashingMachine and demonstrates the usage of their methods.

Output:

```
Product ID: WM123
Name: Washing Machine

Discount applied to Washing Machine: Front Load Washing Machine
Product ID: W456
Name: Front Load Washing Machine
Price after discount: $680.0
Warranty period: 24 months
Warranty period after extension: 36 months
```

Java Code Editor: