The program for problem 2:

```java
/** Exercise based on p. 266 in HFJ, for H15, W16, CS56, UCSB, P. Conrad */

public class Dog {

    private static Dog dogOfTheWeek = null;

    private String name;

    public void setAsDogOfTheWeek() {
        dogOfTheWeek = this;
    }

    public static Dog getDogOfTheWeek() {
        return dogOfTheWeek;
    }

    public Dog(String name) { this.name = name; }

    public static void main(String [] args) {

        Dog d1 = new Dog("Fido");
        Dog d2 = new Dog("Rover");
        Dog d3 = new Dog("Princess");
        Dog d4 = new Dog("Spot");
        Dog d5 = new Dog("Snoopy");

        d1.setAsDogOfTheWeek();    /* 1 */
        d1 = d2;                    /* 2 */
        Dog d6 = d3;                /* 3 */
        Dog temp = d4;              /* 4 */
        d4 = d3;                    /* 5 */
        d3 = temp;                  /* 6 */
        d2 = getDogOfTheWeek();     /* 7 */
        d4.setAsDogOfTheWeek();     /* 8 */
        d5 = null;                  /* 9 */
        d4 = null;                  /* 10 */
        d3 = null;                  /* 11 */
        d2 = null;                  /* 12 */
        d1 = null;                  /* 13 */
        temp = null;                /* 14 */
    }
}
```
Code for Problem 3:

Product.java

```java
/** something that can be sold */
public abstract class Product {
    /** get the price (in cents) */
    public abstract int getPrice();
}
```

Shippable.java

```java
/** something that can be shipped */
public interface Shippable {
    /** get the shipping weight in pounds */
    public double getWeight();
}
```

Book.java

```java
/** A Book */
public class Book extends Product implements Shippable {
    private int price;
    private double weight;
    private String author;
    private String title;
    public Book(String author, String title, int price,
                 double weight) {
        this.author = author;
        this.title = title;
        this.price = price;
        this.weight = weight;
    }
    public int getPrice() {return this.price;}
    public String getTitle() {return this.title;}
    public String getAuthor() {return this.author;}
    public double getWeight() {return this.weight;}
}
```

Song.java

```java
/** A downloadable Song */
public class Song extends Product {
    private int price;
    private String artist;
    private String title;
    public Song(String artist, String title, int price) {
        this.artist = artist;
        this.title = title;
        this.price = price;
    }
    public Song(String artist, String title) {
        this(artist,title,99);
    }
    public int getPrice() {return this.price;}
    public String getTitle() {return this.title;}
    public String getArtist() {return this.artist;}
}
```