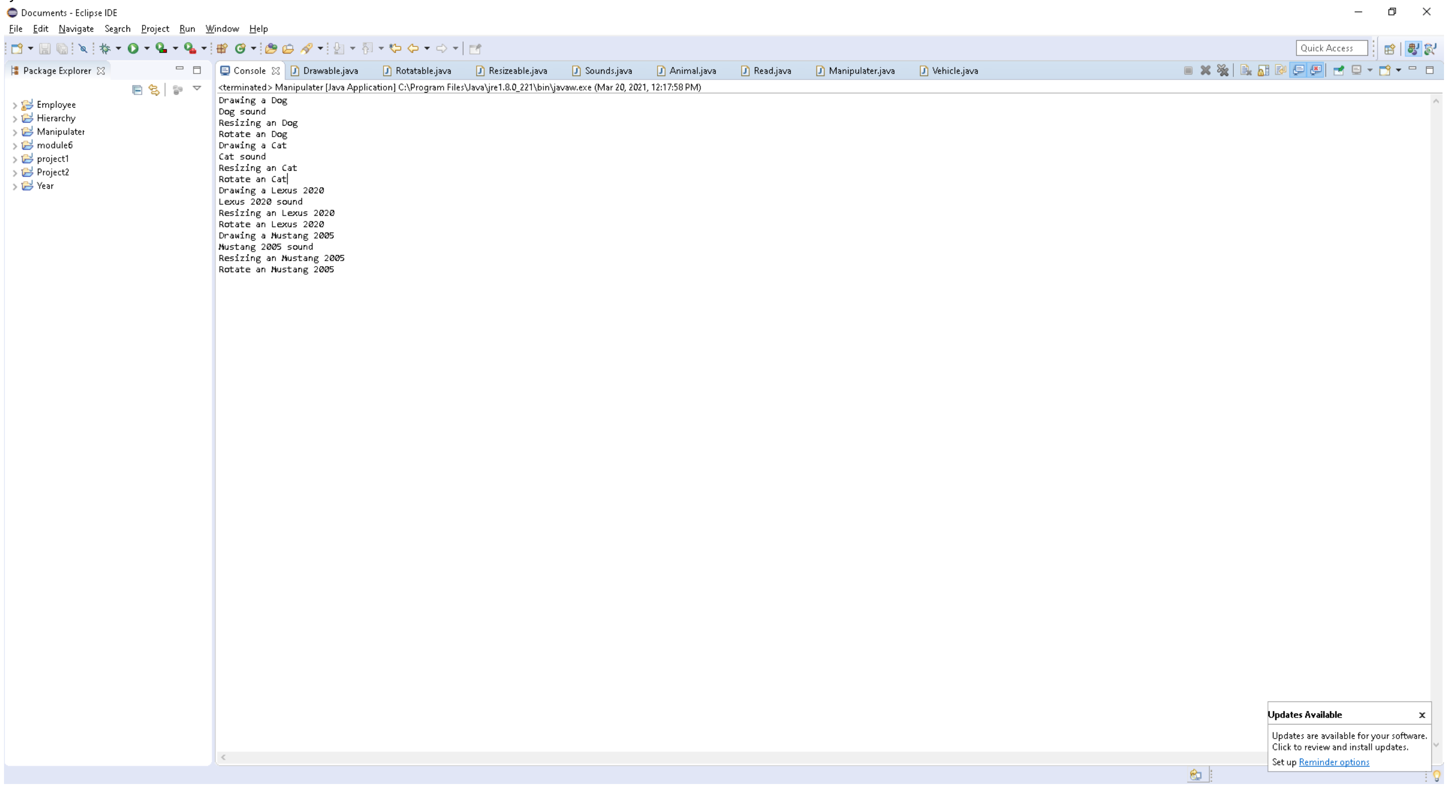
This program will produce an output that will display messages from the animal class and vehicle class. The animal class and the vehicle class both extends read which is an abstract class that implements the 4 interfaces. Implement method allows for several interfaces to be acknowledged by the single class. The reason the read is an abstract class is because there is no code definition it is just implement the four interfaces to allow me to extend it for the now subclasses animal and vehicle. The animal class produces a setter and getter for the animal name and then I call on the abstract methods of each interface like public void resizeObject and produce an actual method. So, the animal subclass here just provides a code for that abstract method. Then there is the vehicle class which does the same thing as animal except it takes the name of the vehicle and the year of the vehicle which is under the integer variable age. Lastly to produce the output we have the main method in the class manipulater which uses an array of the 2 animals and 2 vehicles. When this output is produced it will take the names for the animals that are provided which is dog and cat and display the messages for each of the 4 interfaces.

1.

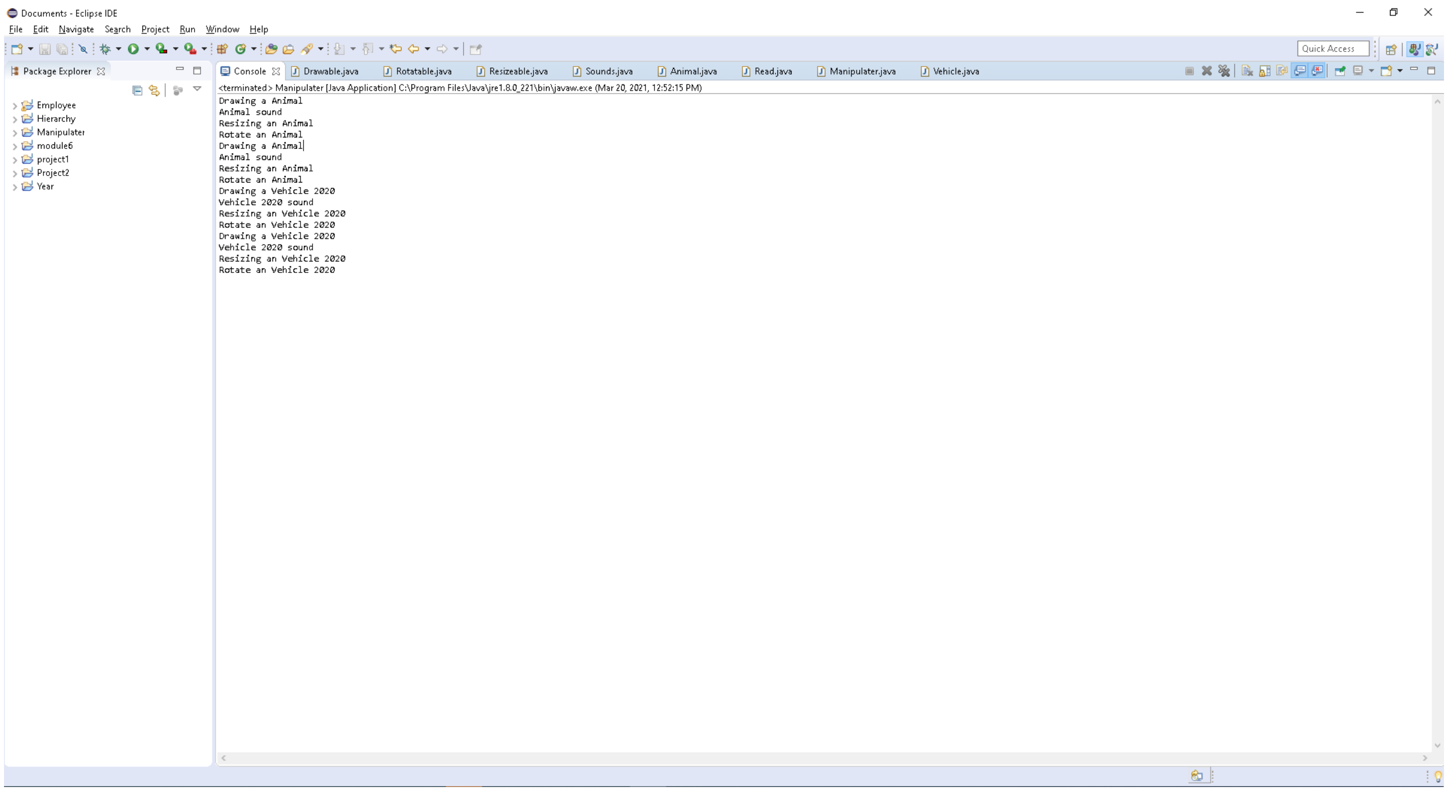
```
public interface Drawable
{
   void drawObjects();
}

public interface Rotatable
{
   void rotateObject();
}

public interface Resizeable
{
   void resizeObject();
}

public interface Sounds
{
   void playSounds();
}
```

2.

```
/* This is a subclass to read that provides code for the abstract methods*/
public class Animal extends Read
{
   // declaring variables
   public String name;

   public Animal (String name)
   {
      this.name = name;
   }
   // setters and getters for name of animal
   public String getName()
   {
      return name;
   }
   public void setName(String name)
   {
      this.name = name;
   }
   // applies the methods from read.
   public void resizeObject()
   {
      System.out.println("Resizing an "+ name);
   }
   public void playSounds()
   {
      System.out.println( name +" sound");
   }
   public void rotateObject()
   {
      System.out.println("Rotate an " + name);
   }
   public void drawObjects()
   {
      System.out.println("Drawing a "+ name);
   }
}

/* This is a subclass to read that provides code for the abstract methods*/
public class Vehicle extends Read
{
   // Declaring variables
   public String name;
   public int age;

   public Vehicle (String name, int age)
   {
      this.name = name;
      this.age = age;
   }
   // setters and getters for age and name of vehicle
   public int getAge()
   {
      return age;
   }
   public void setAge(int age)
   {
      this.age = age;
   }
   public String getName()
   {
      return name;
   }
   public void setName(String name)
   {
      this.name = name;
   }
   public void resizeObject()
   {
      System.out.println("Resizing an "+ name +" "+ age);
   }
   public void playSounds()
   {
      System.out.println( name +" "+ age +" sound");
   }
   public void rotateObject()
   {
      System.out.println("Rotate an " + name +" "+ age);
   }
   public void drawObjects()
   {
      System.out.println("Drawing a "+ name +" "+ age);
   }
}

public abstract class Read implements Drawable, Resizeable, Rotatable, Sounds
{
}
/* Class that contains main method which has an array that will provide the names
for 2 animal and 2 vehicles */

public class Manipulater
{
   public static void main(String[]args)
   {
      Read [] drawableObjects = {new Animal("Dog"), new Animal("Cat"), new
Vehicle("Lexus", 2020), new Vehicle("Mustang", 2005)};

     // for loop to produce out put for each of the array.
      for(int i = 0; i<drawableObjects.length; i++)
      {
         drawableObjects[i].drawObjects();
         drawableObjects[i].playSounds();
         drawableObjects[i].resizeObject();
         drawableObjects[i].rotateObject();
      }
   }
}
```



```
<terminated> Manipulater [Java Application] C:\Program Files\Java\jre1.8.0_221\bin\javaw.exe (Mar 20, 2021, 12:17:58 PM)
Drawing a Dog
Dog sound
Resizing an Dog
Rotate an Dog
Drawing a Cat
Cat sound
Resizing an Cat
Rotate an Cat
Drawing a Lexus 2020
Lexus 2020 sound
Resizing an Lexus 2020
Rotate an Lexus 2020
Drawing a Mustang 2005
Mustang 2005 sound
Resizing an Mustang 2005
Rotate an Mustang 2005
```



```
<terminated> Manipulater [Java Application] C:\Program Files\Java\jre1.8.0_221\bin\javaw.exe (Mar 20, 2021, 12:52:15 PM)
Drawing a Animal
Animal sound
Resizing an Animal
Rotate an Animal
Drawing a Animal
Animal sound
Resizing an Animal
Rotate an Animal
Drawing a Vehicle 2020
Vehicle 2020 sound
Resizing an Vehicle 2020
Rotate an Vehicle 2020
Drawing a Vehicle 2020
Vehicle 2020 sound
Resizing an Vehicle 2020
Rotate an Vehicle 2020
```