Ship.java

```java
/**
 *  Ship.java
 *  COSC-2436.902
 *  02/08/2023
 *  @author Joshua Williams
 */

public class Ship
{
    private String name;        // the name of the ship.
    private String yearBuilt;   // the year the ship was built.

    /**
     * Constructor.
     * @param n the name of the ship.
     * @param y the year the ship was built.
     */
    public Ship(String n, String y)
    {
        name = n;
        yearBuilt = y;
    }

    /**
     * Mutator method to assign a new name to the ship.
     * @param n the updated name of the ship.
     */
    public void setName(String n)
    {
        name = n;
    }
```

```java
33        /**
34         * Mutator method to change the year that the ship was built.
35         * @param y the updated year that the ship was built.
36         */
37        public void setYearBuilt(String y)
38        {
39            yearBuilt = y;
40        }
41
42        /**
43         * Accessor method to return the name of the ship.
44         * @return the name of the ship.
45         */
46        public String getName()
47        {
48            return name;
49        }
50
51        /**
52         * Accessor method to return the year that the ship was built.
53         * @return the year that the ship was built.
54         */
55        public String getYearBuilt()
56        {
57            return yearBuilt;
58        }
59
60        /**
61         * Creates a String that displays the ship's details.
62         * @return a String containing the details of the ship.
63         */
64        public String toString()
65        {
66            return "Ship:\nShip Name:\t" + this.name + "\nYear Built:\t" + this.yearBuilt + "\n";
67        }
68    }
```

CargoShip.java

```java
src > J CargoShip.java > CargoShip > toString()
1  /**
2   *  CargoShip.java
3   *  COSC-2436.902
4   *  02/08/2023
5   *  @author Joshua Williams
6   */
7
8  public class CargoShip extends Ship
9  {
10     private int tonnage;    // the tonnage of the CargoShip.
11
12     /**
13      * Constructor.
14      * @param n the name of the CargoShip.
15      * @param y the year the CargoShip was built.
16      * @param t the tonnage of the CargoShip.
17      */
18     public CargoShip(String n, String y, int t)
19     {
20         super(n, y);
21         tonnage = t;
22     }
23
24     /**
25      * Updates the tonnage of the CargoShip.
26      * @param t the updated tonnage of the CargoShip.
27      */
28     public void setTonnage(int t)
29     {
30         tonnage = t;
31     }
32
```

```java
    /**
     * Updates the tonnage of the CargoShip.
     * @param t the updated tonnage of the CargoShip.
     */
    public void setTonnage(int t)
    {
        tonnage = t;
    }

    /**
     * Accessor method to return the tonnage of the CargoShip.
     * @return the tonnage of the CargoShip.
     */
    public int getTonnage()
    {
        return tonnage;
    }

    /**
     * Creates a String that displays the CargoShip's details.
     * @return a String containing the details of the CargoShip.
     */
    public String toString()
    {
        return "Cargo Ship:\nShip Name:\t" + this.getName() + "\nCapacity:\t" + this.tonnage + " containers\n";
    }
}
```

CruiseShip.java

```java
src > J CruiseShip.java > CruiseShip
  1    /**
  2     *  CruiseShip.java
  3     *  COSC-2436.902
  4     *  02/08/2023
  5     *  @author Joshua Williams
  6     */
  7
  8    public class CruiseShip extends Ship
  9    {
 10        private int passengers; // max occupancy of the CruiseShip.
 11
 12        /**
 13         * Constructor.
 14         * @param n the name of the CruiseShip.
 15         * @param y the year the CruiseShip was built.
 16         * @param p the maximum number of passengers the CruiseShip can hold.
 17         */
 18        public CruiseShip(String n, String y, int p)
 19        {
 20            super(n, y);
 21            passengers = p;
 22        }
 23
 24        /**
 25         * Updates the maximum occupancy of the CruiseShip.
 26         * @param p the updated maximum occupancy of the CruiseShip.
 27         */
 28        public void setPassengers(int p)
 29        {
 30            passengers = p;
 31        }
 32
```

```java
22        }
23
24        /**
25         * Updates the maximum occupancy of the CruiseShip.
26         * @param p the updated maximum occupancy of the CruiseShip.
27         */
28        public void setPassengers(int p)
29        {
30            passengers = p;
31        }
32
33        /**
34         * Accessor method to return the maximum occupancy of the CruiseShip.
35         * @return the maximum occupancy of the CruiseShip.
36         */
37        public int getPassengers()
38        {
39            return passengers;
40        }
41
42        /**
43         * Creates a String that displays the CruiseShip's details.
44         * @return a String containing the details of the CruiseShip.
45         */
46        public String toString()
47        {
48            return "Cruise Ship:\nShip Name:\t" + this.getName() + "\nMax Occupancy:\t" + this.passengers + " passengers\n";
49        }
50    }
51
```

ShipDemo.java

```java
src > J ShipDemo.java > ShipDemo > main(String[])
1    /**
2     *  ShipDemo.java
3     *  Creates and displays Ship, CruiseShip, and CargoShip objects.
4     *  COSC-2436.902
5     *  02/08/2023
6     *  @author Joshua Williams
7     */
8
9    public class ShipDemo
10   {
         Run | Debug
11       public static void main(String[] args) throws Exception
12       {
13           Ship ships[] = new Ship[3];
14           Ship battleship = new Ship(n: "USS Texas", y: "1912");
15           CargoShip cargo = new CargoShip(n: "Ever Ace", y: "2021", t: 24000);
16           CruiseShip cruise = new CruiseShip(n: "Titanic", y: "1911", p: 3300);
17           ships[0] = battleship;
18           ships[1] = cargo;
19           ships[2] = cruise;
20
21           for(int i = 0; i < 3; i++)
22           {
23               System.out.println(ships[i].toString());
24           }
25       }
26   }
```

Output:

```
PROBLEMS    OUTPUT    TERMINAL    DEBUG CONSOLE

PS C:\Users\joshu\Desktop\Fundamentals III\Lab 3\Williams_Lab_3>  c:; cd 'c:\Users\joshu\Desktop\Fundamentals III\Lab 3\Williams_Lab_3'
DetailsInExceptionMessages' '-cp' 'C:\Users\joshu\Desktop\Fundamentals III\Lab 3\Williams_Lab_3\bin' 'ShipDemo'
Ship:
Ship Name:      USS Texas
Year Built:     1912

Cargo Ship:
Ship Name:      Ever Ace
Capacity:       24000 containers

Cruise Ship:
Ship Name:      Titanic
Max Occupancy:  3300 passengers
```