1. Create an arraylist of user-defined data type Book. It should have:-

I. **Name of the Book**
II. **Author of the book**
III. **Year of publication of the book**
IV. **Number of copies sold.**

Sort the array list based on the year of publication.

```
import java.util.ArrayList;
import java.util.Collections;

class Book implements Comparable<Object> {
	String Name;
	String Author;
	Integer Year;
	int Copies;

	Book(String name, String author, int year, int copies) {
		this.Name = name;
		this.Author = author;
		this.Year = year;
		this.Copies = copies;
	}

	public int getYear() {
		return this.Year;
	}

	@Override
	public int compareTo(Object o) {
		Book b1 = (Book) o;
		return (this.Year.compareTo(b1.getYear()));
	}
}

public class Sba2_01 {
	public static void main(String[] args) {
		ArrayList<Book> BookList = new ArrayList<Book>();
		Book b1 = new Book("War and Peace", "Leo Tolstoy", 1869, 5061570);
		Book b2 = new Book("Harry Potter and the Deathly Hallows", "J.K.Rowling", 2007, 4475152);
		Book b3 = new Book("A Tale of Two Cities", "Charles Dickens", 1859, 2000000);
		Book b4 = new Book("And Then There Were None", "Agatha Christie", 1939, 1000000);
		Book b5 = new Book("The Alchemist", "Paulo Coelho", 1988, 650000);
		Book b6 = new Book("Charlotte's Web", "E.B.White", 1952, 50000);

		BookList.add(b1);
		BookList.add(b2);
		BookList.add(b3);
		BookList.add(b4);
		BookList.add(b5);
		BookList.add(b6);
```

```
		System.out.println("-------------------------- Original Booklist ----------------------------");
		for (Book b : BookList) {
			System.out.println(b.Name + " -- " + b.Author + " -- " + b.Year + " -- " + b.Copies);
		}
		System.out.println("--------------------------------------------------------------------------");

		Collections.sort(BookList, Collections.reverseOrder()); // Sorted based on year (latest to
oldest)

		System.out.println("-------------------------- Booklist Sorted by year -------------------------");
		for (Book b : BookList) {
			System.out.println(b.Name + " -- " + b.Author + " -- " + b.Year + " -- " + b.Copies);
		}
		System.out.println("--------------------------------------------------------------------------");
	}
}
```

Output :

```
-------------------------- Original Booklist ----------------------------
War and Peace -- Leo Tolstoy -- 1869 -- 5061570
Harry Potter and the Deathly Hallows -- J.K.Rowling -- 2007 -- 4475152
A Tale of Two Cities -- Charles Dickens -- 1859 -- 2000000
And Then There Were None -- Agatha Christie -- 1939 -- 1000000
The Alchemist -- Paulo Coelho -- 1988 -- 650000
Charlotte's Web -- E.B.White -- 1952 -- 50000
--------------------------------------------------------------------------
-------------------------- Booklist Sorted by year -------------------------
Harry Potter and the Deathly Hallows -- J.K.Rowling -- 2007 -- 4475152
The Alchemist -- Paulo Coelho -- 1988 -- 650000
Charlotte's Web -- E.B.White -- 1952 -- 50000
And Then There Were None -- Agatha Christie -- 1939 -- 1000000
War and Peace -- Leo Tolstoy -- 1869 -- 5061570
A Tale of Two Cities -- Charles Dickens -- 1859 -- 2000000
--------------------------------------------------------------------------
```

2. Write a program to create, write and read from a file.

```
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileWriter;
import java.io.IOException;
import java.util.Scanner;

public class Sba2_02 {
        public static void main(String[] args) {
    try {
      // creating a new file
      File f1 = new File("D:NewFilefromJava.txt");
      System.out.println((f1.createNewFile()) ? "A new file named " + f1.getName() + " has been
created!!\n"
              : "File Already exists!!\n");

      // writing contents to the file
      FileWriter fw1 = new FileWriter(f1);
      fw1.write("This is the content of the file written through the java code!!!");
      fw1.close();
      System.out.println("Content has been Written successfully!!\n");

      // reading the file contents
      File f2 = new File("D:NewFilefromJava.txt");
      Scanner sc = new Scanner(f2);
      while (sc.hasNextLine()) {
        System.out.println(sc.nextLine() + "\n");
      }
      sc.close();

    } catch (FileNotFoundException e2) {
      System.out.println("An unexpected error occured!!\n" + e2);
    } catch (IOException e1) {
      System.out.println("An unexpected error occured!!\n" + e1);
    }
  }
}
```

Output :

```
A new file named NewFilefromJava.txt has been created!!

Content has been Written successfully!!

This is the content of the file written through the java code!!!
```

3. Write a program to get the information about the file.

```
import java.io.File;

public class Sba2_03 {
        public static void main(String[] args) {
      File f = new File("D:NewFilefromJava.txt");
      if (f.exists()) {
         System.out.println("File name : " + f.getName());
         System.out.println("File writable : " + f.canWrite());
         System.out.println("File readable : " + f.canRead());
         System.out.println("File path : " + f.getAbsolutePath());
         System.out.println("FIle size : " + f.length() + " bytes");
      }
   }
}
```

Output :

```
File name : NewFilefromJava.txt
File writable : true
File readable : true
File path : D:\myProjects\UST\SBA\NewFilefromJava.txt
FIle size : 64 bytes
```

4. Write a program Implement the filereader until the file ending character is “-1” and print all the data of the file.

```
import java.io.FileReader;
import java.io.IOException;


public class Sba2_04 {
        public static void main(String[] args) {
    try (FileReader fr = new FileReader("D:NewFilefromJava.txt")) {
      int i;
      while ((i = fr.read()) != -1) {
        System.out.print((char) i);
      }
    } catch (IOException e) {
      System.out.println(e);
    }
  }
}
```

Output :

```
This is the content of the file written through the java code!!!
```