Exercise 1

class Rectangle{

double length,width;

Rectangle()

{

length=0;

width=0;

}

public void setrect(double length,double width)

{

this.length=length;

this.width=width;

}

public double area()

{

return length\*width;

}

}

class Box extends Rectangle{

double height;

Box()

{

height=0;

}

void setBox(double length,double width,double height)

{

setrect(length,width);

this.height=height;

}

double volume()

{

return height\*area();

}

}

class HelloWorld {

public static void main(String[] args) {

System.out.println("Hello, World!");

Box b=new Box();

b.setBox(10,20,30);

System.out.println(b.volume());

}

}

Exercise 2:

import java.util.\*;

class Product implements Comparable<Product> {

private int productId;

private String productName;

private String productType;

private String productCategory;

private double productPrice;

public Product(int productId, String productName, String productType, String productCategory, double productPrice) {

this.productId = productId;

this.productName = productName;

this.productType = productType;

this.productCategory = productCategory;

this.productPrice = productPrice;

}

@Override

public int compareTo(Product otherProduct) {

return double.compare(this.productPrice, otherProduct.productPrice);

}

@Override

public String toString() {

return "Product{" +

"productId=" + productId +

", productName='" + productName + '\'' +

", productType='" + productType + '\'' +

", productCategory='" + productCategory + '\'' +

", productPrice=" + productPrice +

'}';

}

}

class ProductTypeComparator implements Comparator<Product> {

@Override

public int compare(Product product1, Product product2) {

return product1.compareTo(product2);

}

}

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

Set<Product> products = new HashSet<>();

while (true) {

System.out.print("Enter product id: ");

int productId = scanner.nextInt();

scanner.nextLine(); // Consume newline

System.out.print("Enter product name: ");

String productName = scanner.nextLine();

System.out.print("Enter product type: ");

String productType = scanner.nextLine();

System.out.print("Enter product category: ");

String productCategory = scanner.nextLine();

System.out.print("Enter product price: ");

double productPrice = scanner.nextDouble();

scanner.nextLine(); // Consume newline

Product newProduct = new Product(productId, productName, productType, productCategory, productPrice);

products.add(newProduct);

System.out.print("Do you want to enter more products? (yes/no): ");

String moreProducts = scanner.nextLine();

if (!moreProducts.equalsIgnoreCase("yes")) {

break;

}

}

List<Product> productList = new ArrayList<>(products);

Collections.sort(productList);

System.out.println("\nProducts sorted by price:");

for (Product product : productList) {

System.out.println(product);

}

List<Product> productListByType = new ArrayList<>(products);

Collections.sort(productListByType, new ProductTypeComparator());

System.out.println("\nProducts sorted by type:");

for (Product product : productListByType) {

System.out.println(product);

}

}

}