Numeric Computation- Hands on 1

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        int a;
        double b,c;

        Scanner sc = new Scanner(System.in);
        a = sc.nextInt();
        b = sc.nextDouble();
        c = sc.nextDouble();

        Account account = new Account(a, b, c);

        int noOfYear;
        noOfYear = sc.nextInt();

        double answer = calculateInterest(account, noOfYear);
        System.out.format("%.3f",answer);
    }

    public static double calculateInterest(Account account, int noOfYear) {
        double temp = noOfYear * account.getInterestRate() / 100;
        return (account.getBalance() * (account.getInterestRate()+temp) / 100);
    }
}

class Account {
    private int id;
    private double balance;
    private double interestRate;
```

```
    Account(int id, double balance, double interestRate) {
        this.id = id;
        this.balance = balance;
        this.interestRate = interestRate;
    }

    public int getId() {
        return this.id;
    }
    public void setId(int id) {
        this.id = id;
    }

    public double getBalance() {
        return this.balance;
    }
    public void setBalance(double balance) {
        this.balance = balance;
    }

    public double getInterestRate() {
        return this.interestRate;
    }
    public void setInterestRate(double interestRate) {
        this.interestRate = interestRate;
    }
}
```

Classes and Objects - Hands on 1

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        int x1,y1,x2,y2;
        Scanner scn=new Scanner(System.in);
        x1=scn.nextInt();
        y1=scn.nextInt();
        x2=scn.nextInt();
        y2=scn.nextInt();
        Point p1=new Point(x1, y1);
        Point p2=new Point(x2, y2);
        double distance=findDistance(p1, p2);
        System.out.format("%.3f",distance);
    }

    public static double findDistance(Point p1, Point p2)
    {
        double distance=Math.sqrt((p2.x-p1.x)*(p2.x-p1.x)+(p2.y-p1.y)*(p2.y-p1.y));
        return distance;
    }
}

class Point
{
    int x,y;
    Point(int x,int y)
    {
        this.x=x;
        this.y=y;
    }
}
```

Conditional Operands - Hands on 1

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT */
        double x1,y1,x2,y2,x3,y3;
        Scanner scn=new Scanner(System.in);
        x1=scn.nextDouble();
        y1=scn.nextDouble();
        x2=scn.nextDouble();
        y2=scn.nextDouble();
        x3=scn.nextDouble();
        y3=scn.nextDouble();
        Point p1=new Point(x1, y1);
        Point p2=new Point(x2, y2);
        Point p3=new Point(x3, y3);
        Point highest=pointWithHighestOriginDistance(p1, p2, p3);
        System.out.format("%.1f \n",highest.x);
        System.out.format("%.1f",highest.y);
    }
    public static Point pointWithHighestOriginDistance(Point p1, Point p2, Point p3)
    {
        double d1=Math.sqrt(p1.x*p1.x+p1.y*p1.y);
        double d2=Math.sqrt(p2.x*p2.x+p2.y*p2.y);
        double d3=Math.sqrt(p3.x*p3.x+p3.y*p3.y);
        return d1>d2?(d1>d3?p1:p3):(d2>d3?p2:p3);
    }
}

class Point
{
    double x,y;
```

```
    Point(double x, double y)
    {
        this.x=x;
        this.y=y;
    }
}
```

Java Iterations - Hands on 1

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT */
        String str;
        Scanner scn=new Scanner(System.in);
        str=scn.next();
        int[] values=new int[str.length()];
        for(int i=0;i<str.length();i++)
        {
            values[i]=(int)(str.charAt(i));
        }
        int min=values[0];
        for(int i=0;i<values.length;i++)
        {
            if(values[i]<=min)
                min=values[i];
        }
        char c=(char)min;
        System.out.print(c);
    }
}
```

Java Iterations - Hands on 2

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT */
        Scanner scn=new Scanner(System.in);
        int []num=new int[5];
        for(int i=0;i<5;i++)
        {
            num[i]=scn.nextInt();
            String res=factorial(num[i]);
            System.out.println(res);

        }

    }

    public static String factorial(int n)
    {
        BigInteger fact=new BigInteger("1");
        for(int i=1;i<=n;i++){
            fact=fact.multiply(new BigInteger(i+""));
        }
        return fact.toString();
    }
}
```

Java Arrays - Hands on 1

Problem 1:

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT */
        Scanner scn=new Scanner(System.in);
        Document[] docsArray=new Document[4];
        Document[] res=new Document[4];
        for(int i=0;i<docsArray.length;i++)
            {
                docsArray[i]=new Document();
                res[i]=new Document();
            }
        for(int i=0;i<docsArray.length;i++)
        {
         docsArray[i].id=scn.nextInt();
         docsArray[i].title=scn.next();
         docsArray[i].folderName=scn.next();
         docsArray[i].pages=scn.nextInt();
        }
        res= docsWithOddPages(docsArray);
        for(int i=0;i<res.length;i++)
        {
            if(res[i].title!=null)
            System.out.println(res[i].id+" "+res[i].title+" "+res[i].folderName+" "+res[i].pages);
        }
    }
    public static Document[] docsWithOddPages(Document[]docsArray){
        Document[] oddDocs=new Document[4];
        for(int i=0;i<docsArray.length;i++)
            {
```

```
                oddDocs[i]=new Document();
            }
        int k=0;
        for(int i=0;i<docsArray.length;i++)
        {
            if(docsArray[i].pages%2!=0)
            {
                oddDocs[k++]=docsArray[i];
            }
        }
        return oddDocs;
    }
}

class Document
{
    int id,pages;
    String title,folderName;
}
```

Problem 2:

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT */
        Scanner scn=new Scanner(System.in);
        Book[] booksArray=new Book[4];
        Book[] sorted=new Book[4];
        for(int i=0;i<booksArray.length;i++)
            {
                booksArray[i]=new Book();
                sorted[i]=new Book();
```

```
        }
        for(int i=0;i<booksArray.length;i++)
        {
         booksArray[i].id=scn.nextInt();
         booksArray[i].title=scn.next();
         booksArray[i].author=scn.next();
         booksArray[i].price=scn.nextDouble();
        }
        sorted=sortBooksByPrice(booksArray);
        for(int i=0;i<sorted.length;i++)
        {
            System.out.println(sorted[i].id+" "+sorted[i].title+" "+sorted[i].author+"
"+sorted[i].price);
        }
    }
    public static Book[] sortBooksByPrice(Book[]booksArray){
        int n=booksArray.length;
        for(int i=0;i<n-1;i++)
        {
            for(int j=0;j<n-i-1;j++)
            {
                if(booksArray[j].price>booksArray[j+1].price)
                {
                    Book temp=booksArray[j];
                    booksArray[j]=booksArray[j+1];
                    booksArray[j+1]=temp;
                }
            }
        }
        return booksArray;
    }
}

class Book
{
    int id;
    String title,author;
    double price;
}
```

Java Arrays - Hands on 2

Problem 1:

```
import java.util.Scanner;

public class Solution {
    public static void main(String args[] ) throws Exception {
        /* Do not alter code in main method */
       Shirt[] shirts = new Shirt[5];

        Scanner sc = new Scanner(System.in);

        for(int i = 0;i<5;i++)
        {
            int tag = sc.nextInt();sc.nextLine();
            String brand = sc.nextLine();
            double price = sc.nextDouble();sc.nextLine();
            char g = sc.nextLine().charAt(0);
            shirts[i] = new Shirt(tag,brand,price,g);
        }



        double price = sc.nextDouble();

        for(Shirt s: shirts)
        {
            System.out.println(getDiscountPrice(s));
        }

        Shirt[] result = getShirtWithMoreThanSpecificPrice(shirts,price);

        for(Shirt s: result)
        {
            if(s.getTag()!=0)
            System.out.println(s.getTag()+" "+s.getPrice()+ " " + s.getBrand());
        }
```

```
    }

    /* implement your methods here*/
    public static double getDiscountPrice(Shirt s)
    {
        double discount;
        if(s.gender=='m')
            discount=10;
        else if(s.gender=='f')
            discount=20;
        else if(s.gender=='u')
            discount=30;
        else
            discount=0;
        return s.price-(discount*s.price)/100;

    }
    public static Shirt[] getShirtWithMoreThanSpecificPrice(Shirt [] shirts, double price)
    {
        Shirt[] res = new Shirt[5];
        for(int i=0;i<res.length;i++)
            res[i]=new Shirt(0,"",0,'c');// taking sample to avoid null pointer exception
        int j=0;
        for(int i=0;i<shirts.length;i++)
        {
            if(shirts[i].price>price)
            {
                res[j++]= new Shirt(shirts[i].tag,shirts[i].brand,shirts[i].price,shirts[i].gender);
            }
        }
        return res;
    }
}

class Shirt
{
    //define the class as per details shared in the question
    int tag;
    String brand;
```

```
    double price;
    char gender;
    Shirt(int tag, String brand, double price, char gender)
    {
        this.tag=tag;
        this.brand=brand;
        this.price=price;
        this.gender=gender;
    }
    public int getTag()
    {
        return this.tag;
    }
    public void setTag(int tag)
    {
        this.tag=tag;
    }
    public String getBrand()
    {
        return this.brand;
    }
    public void setBrand(String brand)
    {
        this.brand=brand;
    }
    public double getPrice()
    {
        return this.price;
    }
    public void setPrice(double price)
    {
        this.price=price;
    }
    public char getGender()
    {
        return this.gender;
    }
    public void setGender(char gender)
    {
```

```
        this.gender=gender;
    }
}
```

Problem 2:

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;
import java.util.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT */
        Scanner scn=new Scanner(System.in);
        Book[] booksArray=new Book[4];
        Book[] res=new Book[4];
        for(int i=0;i<booksArray.length;i++)
            {
                booksArray[i]=new Book();
                res[i]=new Book();
            }
        for(int i = 0;i<4;i++)
            {
                booksArray[i].id = scn.nextInt();scn.nextLine();
                booksArray[i].title = scn.nextLine();
                booksArray[i].author = scn.nextLine();
                booksArray[i].price = scn.nextDouble();
            }
        String value=scn.next();
        res=searchTitle(value, booksArray);
        int [] matchedId=new int[4];
        int j=0;
        for(int i=0;i<res.length;i++)
        {
            if(res[i].id!=0)
```

```
            {
                matchedId[j++]=res[i].id;
            }
        }
        Arrays.sort(matchedId);
        for(int i=0;i<matchedId.length;i++)
        {
            if(matchedId[i]!=0)
                System.out.println(matchedId[i]);
        }

    }
    public static Book[] searchTitle(String value, Book[] books)
    {
        int k=0;
        Book[] matching=new Book[4];
        for(int i=0;i<matching.length;i++)
            matching[i]=new Book();
        for(int i=0;i<books.length;i++)
        {
            String val=value.toLowerCase();
            String bookTitle=books[i].title.toLowerCase();
            if(bookTitle.contains(val))
            {
                matching[k++]=books[i];
            }
        }
        return matching;
    }
}

class Book
{
    int id;
    String title;
    String author;
    double price;
    public int getId()
    {
```

```
        return this.id;
    }
    public void setId(int id)
    {
        this.id=id;
    }
    public String getTitle()
    {
        return this.title;
    }
    public void setTitle(String title)
    {
        this.title=title;
    }
    public String getAuthor()
    {
        return this.author;
    }
    public void setAuthor(String author)
    {
        this.author=author;
    }
    public double getPrice()
    {
        return this.price;
    }
    public void setPrice(double price)
    {
        this.price=price;
    }
```