***1.print element array***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,sum=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

System.out.print(a[i]+"\t");

}

}

***Output:***

Enter array size

5

Enter 5 Elements

3

7

9

8

5

Array elements are

3 7 9 8 5

***2.print sum and average using array***.

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,sum=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

sum=sum+a[i];

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

double avg=sum/n;

System.out.println("\nSum="+sum+"\nAverage="+avg);

}

}

***Output:***

Enter array size

3

Enter 3 Elements

4

9

6

Array elements are

4 9 6

Sum=19

Average=6.0

***3.print prime using array.***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,p,j,flag=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n prime elements are:");

for(i=0;i<n;i++)

{

p=a[i];flag=0;

for(j=2;j<=(p/2);j++)

{

if(p%j==0)

{

flag=1;break;

}

}

if(flag==0)

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter 5 Elements

2

5

7

45

98

Array elements are

2 5 7 45 98

prime elements are:

2

5

7

***4.print palindrome number using array***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,r,i,m,s;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n palindrome elements are:");

for(i=0;i<n;i++)

{

m=a[i];

s=0;

while(m>0)

{

r=m%10;

m=m/10;

s=(s\*10)+r;

}

if(s==a[i])

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter array size

3

Enter 3 Elements

121

45

88

Array elements are

121 45 88

palindrome elements are:

121

88

***5.print armstrong number using array.***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,r,i,m,s;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n armstrong elements are:");

for(i=0;i<n;i++)

{

m=a[i];

s=0;

while(m>0)

{

r=m%10;

m=m/10;

s=s+r\*r\*r;

}

if(s==a[i])

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter array size

5

Enter 5 Elements

153

45

89

56

43

Array elements are

153 45 89 56 43

armstrong elements are:

153

***6.print krishnmurty number using array***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,r,i,j,m,s,f1=1;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n palindrome elements are:");

for(i=0;i<n;i++)

{

m=a[i];

s=0;

while(m>0)

{

r=m%10;

f1=1;

for(j=1;j<=r;j++)

{

f1\*=j;

}

s=s+f1;

m=m/10;

}

if(s==a[i])

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter array size

3

Enter 3 Elements

145

56

89

Array elements are

145 56 89

palindrome elements are:

145

***7.print dissarium number using array.***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,r,i,j,m,s,f1=1;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n palindrome elements are:");

for(i=0;i<n;i++)

{

int num=i;

num=a[i];

s=0;

int count=0;

while (num>0)

{

count++;

num=num/10;

}

num=a[i];

int power=count;

while(num>0)

{

r=num%10;

s += Math.pow(r,power);

power--;

num=num/10;

}

if(s==a[i])

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

79

135

175

43

Array elements are

79 135 175 43

palindrome elements are:

135

175

***8. print magic number using array.***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,r,i,j,m,s,f1=1;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n palindrome elements are:");

for(i=0;i<n;i++)

{

n=a[i];

while(n>9)

{

s=0;

while(n!=0)

{

s=s+(n%10);

n=n/10;

}

n=s;

}

if(n==1)

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter array size

3

Enter 3 Elements

78

55

28

Array elements are

78 55 28

palindrome elements are:

55

***9.print prime palindrome using array***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,r,i,j,s=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n palindrome elements are:");

for(i=0;i<n;i++)

{

n=a[i];

j=2;

int flag=0;

while(j<n)

{

if(n%j==0)

{

flag=1;

break;

}

j++;

}

while(n>0)

{

r=n%10;

s=(s\*10)+r;

n=n/10;

}

if(flag==0 && s==a[i])

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter array size

3

Enter 3 Elements

11

5

4

Array elements are

11 5 4

palindrome elements are:

11

OR

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of elements: ");

int n = scanner.nextInt();

int[] numbers = new int[n];

System.out.println("Enter the numbers:");

for (int i = 0; i < n; i++) {

numbers[i] = scanner.nextInt();

}

System.out.println("Prime Palindrome numbers in the array:");

int i = 0;

while (i < numbers.length) {

if (isPrime(numbers[i]) && isPalindrome(numbers[i])) {

System.out.println(numbers[i]);

}

i++;

}

scanner.close();

}

public static boolean isPalindrome(int number) {

int original = number;

int reverse = 0;

while (number != 0) {

int digit = number % 10;

reverse = reverse \* 10 + digit;

number /= 10;

}

return original == reverse;

}

public static boolean isPrime(int number) {

if (number <= 1) {

return false;

}

for (int i = 2; i <= Math.sqrt(number); i++) {

if (number % i == 0) {

return false;

}

}

return true;

}

}

***Output:***

Enter the number of elements: 5

Enter the numbers:

11

1

3

5

8

Prime Palindrome numbers in the array:

11

3

5

***10.print xylem phloem using array.***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,r,i,j,m,sum=0,f1,p=0,first=0,last=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n palindrome elements are:");

for(i=0;i<n;i++)

{

n=p=a[i];

first=0;

last=0;

r=0;

last=n%10;

sum=0;

while(n>0)

{

first=n%10;

n=n/10;

}

while(p>0)

{

r=p%10;

if(r!=first && r!=last)

{

sum=sum+r;

}

p=p%10;

}

if(sum==a[i])

System.out.println("\t"+a[i]);

}

}

}

***11.pronic number using array***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int i,j,n,n1,sum=0;

boolean isPronic=false;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n pronic elements are:");

for(i=0;i<n;i++)

{

n1=a[i];

sum=0;

for(j=1;j<=(n1/2);j++)

{

if(n1==(j\*(j+1)))

{

sum=1;

break;

}

}

if(sum==1)

System.out.println("\t"+a[i]);

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

12

20

67

34

Array elements are

12 20 67 34

pronic elements are:

12

20

***12.perfect number using array***.

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int i,j,n,n1,sum=0;

boolean isPronic=false;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n perfect elements are:");

for(i=0;i<n;i++)

{

n1=a[i];

sum=0;

for(j=1;j<=(n1/2);j++)

{

if(n1%j==0)

{

sum=sum+j;

}

}

if(n1==sum)

System.out.println(a[i]+"\t");

}

}

}

***Output:***

Enter array size

3

Enter 3 Elements

3

6

5

Array elements are

3 6 5

perfect elements are:

6

#############################\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*10-july-2024\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*#################################

***13.even odd using array***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,sum=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

System.out.println(a[i]+"\t");

System.out.println("even");

for(i=0;i<n;i++){

if(a[i]%2==0)

{

System.out.println(" \t"+a[i]);

}

}

System.out.println("odd");

for(i=0;i<n;i++){

if(a[i]%2==1)

{

System.out.println(" \t"+a[i]);

}

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

2

4

5

9

Array elements are

2

4

5

9

even

2

4

odd

5

9

***14. alternate array elements***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,sum=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

System.out.println(a[i]+"\t");

System.out.println("alternate array elements:");

for(i=0;i<n;i=i+2){

System.out.println(a[i]+"\t");

}

}

}

***Output:***

Enter array size

5

Enter 5 Elements

4

7

9

2

7

Array elements are

4

7

9

2

7

alternate array elements:

4

9

7

***15. array size even(4)***

***i/p 10 20 30 40***

***o/p 20 10 40 30***

***0 1 2 3***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

if(n%2==0)

{

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\nArray elements are");

for(i=0;i<n;i=i+2)

{

temp=a[i];

a[i]=a[i+1];

a[i+1]=temp;

}

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

}

else

{

System.out.println("\nArray size invalid");

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

10

20

30

40

Array elements are

20 10 40 30

***16.searching element from an array(linearsearch)***

import java.util.\*;

public class Main {

public static void main(String[] args){

int i,n,num,flag=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter size of array");

n=sc.nextInt();

int a[]=new int[n];

System.out.println("Enter "+n+" elements");

for(i=0; i<n; i++){

a[i]=sc.nextInt();

}

System.out.println("The elements are");

for(i=0;i<n; i++){

System.out.print("\t"+a[i]);

}

System.out.println("\nEnter an element which u want to search?");

num=sc.nextInt();

for(i=0; i<n; i++)

{

if(a[i]==num)

{

flag=1;

System.out.println("Element found at position "+(i+1));

break;

}

}

if(flag==0)

{

System.out.println("Element not found");

}

}

}

***Output:***

Enter size of array

4

Enter 4 elements

10

20

30

40

The elements are

10 20 30 40

Enter an element which u want to search?

30

Element found at position 3

***17.Binary search.***

import java.io.\*;

class Main {

// Returns index of x if it is present in arr[].

int binarySearch(int arr[], int x)

{

int low = 0, high = arr.length - 1;

while (low <= high) {

int mid = low + (high - low) / 2;

// Check if x is present at mid

if (arr[mid] == x)

return mid;

// If x greater, ignore left half

if (arr[mid] < x)

low = mid + 1;

// If x is smaller, ignore right half

else

high = mid - 1;

}

// If we reach here, then element was

// not present

return -1;

}

// Driver code

public static void main(String args[])

{

Main ob = new Main();

int arr[] = { 2, 3, 4, 10, 40 };

int n = arr.length;

int x = 10;

int result = ob.binarySearch(arr, x);

if (result == -1)

System.out.println(

"Element is not present in array");

else

System.out.println("Element is present at "

+ "index " + result);

}

}

***Output:***

Element is present at index 3

***18.reverse array.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int i,n,num,flag=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter size of array");

n=sc.nextInt();

int a[]=new int[n];

System.out.println("Enter "+n+" elements");

for(i=0; i<n; i++){

a[i]=sc.nextInt();

}

System.out.println("The elements are");

for(i=0;i<n; i++){

System.out.print("\t"+a[i]);

}

System.out.println("\n\nArray reverse elements are");

for(i=n-1;i>=0;i--)

{

System.out.print(" "+a[i]);

}

}

}

***Output:***

Enter size of array

5

Enter 5 elements

34

9

23

56

45

The elements are

34 9 23 56 45

Array reverse elements are

45 56 23 9 34

***19.Sorting elements using array***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,j,sum=0,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("Array elements are");

for(i=0;i<n;i++)

System.out.println(a[i]+"\t");

System.out.println("selection sort:");

for(i=0;i<n-1;i++){

for(j=i+1;j<n;j++){

if(a[i]>a[j])

{

temp=a[i];

a[i]=a[j];

a[j]=temp;

}

}

}

System.out.println("sorted array element:");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("\t"+a[n-2]);

}

}

***Output:***

Enter array size

5

Enter 5 Elements

2

10

99

1

5

Array elements are

2

10

99

1

5

selection sort:

sorted array element:

1

2

5

10

99

***20. Array sort(Java Program to sort the elements of an array in ascending order.)***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

int temp;

for ( i = 0; i < n-1; i++)

{

for ( j = i+1; j < n; j++)

{

if (a[i] > a[j])

{

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

System.out.println("\n\nSorted Array elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("2 nd highest "+a[n-2]);

}

}

***Output:***

Enter array size

4

Enter 4 Elements

3

76

23

2

Array elements are

3 76 23 2

Sorted Array elements are

2

3

23

76

2 nd highest 23

***21. Java Program to sort the elements of an array in descending order>(<)***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

for ( i = 0; i < n; i++)

{

for ( j = i + 1; j < n; j++)

{

if (a[i] < a[j])

{

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

System.out.println("Descending Order:");

for ( i = 0; i < n - 1; i++)

{

System.out.println(a[i] + " ");

}

System.out.println(a[n - 1]);

}

}

***Output:***

Enter array size

4

Enter 4 Elements

5

6

2

98

Array elements are

5

6

2

98

Descending Order:

98

6

5

2

***22. Java Program to Find 3rd Largest Number in an arraySOP("Third highest"+a[n-3])***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

int temp;

for ( i = 0; i < n-1; i++)

{

for ( j = i+1; j < n; j++)

{

if (a[i] > a[j])

{

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

System.out.println("\n\nSorted Array elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("2 nd highest "+a[n-3]);

}

}

***Output:***

Enter array size

4

Enter 4 Elements

78

56

335

99

Array elements are

78 56 335 99

Sorted Array elements are

56

78

99

335

3rd highest 78

***23. Java Program to Find 2nd Largest Number in an array n-2 System.out.println("2 nd highest "+a[n-2]);***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

int temp;

for ( i = 0; i < n-1; i++)

{

for ( j = i+1; j < n; j++)

{

if (a[i] > a[j])

{

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

System.out.println("\n\nSorted Array elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("2nd highest "+a[n-2]);

}

}

***Output:***

Enter array size

4

Enter 4 Elements

67

89

99

45

Array elements are

67 89 99 45

Sorted Array elements are

45

67

89

99

2nd highest 89

***24. Java Program to Find Largest Number in an array n-1***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

int temp;

for ( i = 0; i < n-1; i++)

{

for ( j = i+1; j < n; j++)

{

if (a[i] > a[j])

{

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

System.out.println("\n\nSorted Array elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("largest element is: "+a[n-1]);

}

}

***Output:***

Enter array size

4

Enter 4 Elements

100

67

78

99

Array elements are

100 67 78 99

Sorted Array elements are

67

78

99

100

largest element is: 100

***25. Java to Program Find 2nd Smallest Number in an array a[1]***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

int temp;

for ( i = 0; i < n-1; i++)

{

for ( j = i+1; j < n; j++)

{

if (a[i] > a[j])

{

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

System.out.println("\n\nSorted Array elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("2nd smallest "+a[1]);

}

}

***Output:***

Enter array size

4

Enter 4 Elements

67

87

43

23

Array elements are

67 87 43 23

Sorted Array elements are

23

43

67

87

2nd smallest 43

***26.bubble sort***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

for ( i = 1; i < n; i++) //passes bubble sort

{

for ( j = 0; j < n-i; j++) //inner iteration

{

if (a[j] > a[j+1]) //swap

{

temp = a[j];

a[j] = a[j+1];

a[j+1] = temp;

}

}

}

System.out.println("\n\nSorted Array elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

45

78

12

34

Array elements are

45 78 12 34

Sorted Array elements are

12

34

45

78

#######################\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 11-june-2024 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*###############################

***27. Java Program to copy all elements of one array into another arrayb[i]=a[i]***

import java.util.Scanner;

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

int n,i,n1,div=0,j;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

int b[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

b[i]=a[i];

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(a[i]+"\t");

}

System.out.println("\n\nCopied Array elements are");

for(i=0;i<n;i++)

{

System.out.print(b[i]+"\t");

}

}

}

***Output:***

Enter array size

3

Enter 3 Elements

1

2

3

Array elements are

1 2 3

Copied Array elements are

1 2 3

***28. Java Program to find the frequency of each element in the array***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int arr[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

arr[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.print(arr[i]+"\t");

}

int [] fr = new int [arr.length];

int visited = -1;

for( i = 0; i < arr.length; i++){

int count = 1;

for(j = i+1; j < arr.length; j++){

if(arr[i] == arr[j]){

count++;

fr[j] = visited;

}

}

if(fr[i] != visited)

fr[i] = count;

}

System.out.println(" ");

System.out.println(" Element | Frequency");

System.out.println("---------------------------------------");

for( i = 0; i < fr.length; i++){

if(fr[i] != visited)

System.out.println(" " + arr[i] + " | " + fr[i]);

}

System.out.println("----------------------------------------");

}

}

***Output:***

Enter array size

6

Enter 6 Elements

2

3

5

4

4

6

Array elements are

2 3 5 4 4 6

Element | Frequency

---------------------------------------

2 | 1

3 | 1

5 | 1

4 | 2

6 | 1

----------------------------------------

***29. Java Program to left rotate the elements of an array.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("rotate element:");

for(i=2;i<n;i++)

{

System.out.print(" "+a[i]);

}

System.out.print(" "+a[0]);

System.out.print(" "+a[1]);

}

}

***Output:***

Enter array size

5

Enter 5 Elements

10

12

3

5

6

Array elements are

10

12

3

5

6

rotate element:

3 5 6 10 12

***30. Java Program to right rotate the elements of an array***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("rotate element:");

for(i=3;i<n;i++)

{

System.out.print(" "+a[i]);

}

System.out.print(" "+a[0]);

System.out.print(" "+a[1]);

System.out.print(" "+a[2]);

}

}

***Output:***

Enter array size

5

Enter 5 Elements

10

2

3

5

6

Array elements are

10

2

3

5

6

rotate element:

5 6 10 2 3

***31. Java Program to print the duplicate elements of an array.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println("duplicate element:");

for ( i = 0; i < n - 1; i++) {

for ( j = i + 1; j < n; j++) {

if (a [i] == a [j]) {

System.out.println(" " + a [i]);

}

}

}

}

}

***Output:***

Enter array size

6

Enter 6 Elements

11

2

2

3

4

4

Array elements are

11

2

2

3

4

4

duplicate element:

2

4

***32 . Java Program to print the elements of an array present on even position i=1 i=i+2.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println(" even position:");

for(i=1;i<n;i=i+2)

{

System.out.println(""+a[i]);

}

}

}

***Output:***

Enter array size

5

Enter 5 Elements

1

2

3

4

5

Array elements are

1

2

3

4

5

even position:

2

4

***33. Java Program to print the elements of an array present on odd position i=0 i=i+2***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,temp;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

System.out.println(" odd position:");

for(i=0;i<n;i=i+2)

{

System.out.println(""+a[i]);

}

}

}

***Output:***

Enter array size

5

Enter 5 Elements

1

2

3

4

5

Array elements are

1

2

3

4

5

odd position:

1

3

5

***34. Java Program to sum of the even elements of an array.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,sum=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

for(i=0;i<n;i++)

{ if(a[i]%2==0)

sum=sum+a[i];

}

System.out.println("sum of even array element: "+sum);

}

}

***Output:***

Enter array size

5

Enter 5 Elements

2

4

3

1

6

Array elements are

2

4

3

1

6

sum of even array element: 12

***35. Write a program to find the sum of odd no from an array***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,sum=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

for(i=0;i<n;i++)

{ if(a[i]%2==1)

sum=sum+a[i];

}

System.out.println("sum of even array element: "+sum);

}

}

***Output:***

Enter array size

5

Enter 5 Elements

2

3

5

4

6

Array elements are

2

3

5

4

6

sum of even array element: 8

***36. Write a program to show perfect square numbers?ex.9=3\*3 sqrt(n1)***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,sum=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(a[i]+"\t");

}

for(i=0;i<n;i++)

{

int number=a[i];

int sqrt = (int) Math.sqrt(number);

if(sqrt\*sqrt == number)

{

System.out.println(number+" is a perfect square number!");

}

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

4

28

9

5

Array elements are

4

28

9

5

4 is a perfect square number!

9 is a perfect square number!

***37. java Program to Separate Zeros from the given Array elements.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,sum=0,flag=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(j=0;j<n;j++)

{

flag=0;

if(a[j]==0)

{

flag=1;

}

if(flag==0)

System.out.println(" "+a[j]);

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

0

1

2

3

Array elements are

1

2

3

***38. java Program to remove number form array which contains Zeros elements.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,num,div=0,j,sum=0,flag=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int a[]=new int[n];//array creation

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

a[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

int n2;

for(i=0;i<n;i++)

{ int rev=0,rev1=0;

num=a[i];

while(num>0)

{

n1=num%10;

if(n1!=0)

{

rev=(rev\*10)+n1;

}

num=num/10;

}

while(rev>0)

{

n2=rev%10;

rev1=(rev1\*10)+n2;

rev=rev/10;

}

System.out.print(" "+rev1);

}

}

}

***Output:***

Enter array size

4

Enter 4 Elements

101

44

102

45

Array elements are

11 44 12 45

***39. Accept n subjects mark from user store into array & calculate reuslt having ATKT Fail also.***

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of subjects: ");

int n = scanner.nextInt();

int[] marks = new int[n];

System.out.println("Enter the marks for each subject: ");

for (int i = 0; i < n; i++) {

System.out.print("Subject " + (i + 1) + ": ");

marks[i] = scanner.nextInt();

}

int failCount = 0;

for (int i = 0; i < n; i++) {

if (marks[i] < 40) {

failCount++;

}

}

if (failCount == 0) {

System.out.println("Result: Pass");

} else if (failCount == 1) {

System.out.println("Result: ATKT ");

} else {

System.out.println("Result: Fail");

}

}

}

***Output:***

Enter the number of subjects: 5

Enter the marks for each subject:

Subject 1: 89

Subject 2: 78

Subject 3: 99

Subject 4: 89

Subject 5: 76

Result: Pass

***40 .Write a Java program to find second highest no without sorting***

import java.util.\*;

public class Main

{

public static void main(String[] args)

{

Scanner sc=new Scanner(System.in);

int n,i,p;

System.out.println("Enter array size");

n=sc.nextInt();

int []a=new int[n];

System.out.println("Enter Array Elements");

for(i=0;i<n;i++)

a[i]=sc.nextInt();

int max=a[0],j=0,t;

for(i=1;i<n;i++) {

if(a[i]>max) {

max=a[i];

j=i;

}

}

t=a[0];

a[0]=a[j];

a[j]=t;

int max2=a[1];

for(i=2;i<n;i++) {

if(a[i]>max2) {

max2=a[i];

}

}

System.out.println("2nd highest number is "+max2);

}

}

***Output:***

Enter array size

4

Enter Array Elements

56

99

78

45

2nd highest number is 78

***41. Write Java program unsorted array ,find the sum of pair component.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int n,i,n1,div=0,j,x=8;

Scanner sc=new Scanner(System.in);

System.out.println("Enter array size");

n=sc.nextInt();

int arr1[]=new int[n];//array creation

int arr2[]=new int[n];

System.out.println("\nvalue of x is:");

x=sc.nextInt();

System.out.println("Enter "+ n +" Elements");

for(i=0;i<n;i++)

{

arr1[i]=sc.nextInt();

arr2[i]=sc.nextInt();

}

System.out.println("\n\nArray elements are");

for(i=0;i<n;i++)

{

System.out.println(arr1[i]+"\t");

}

System.out.println("Enter Array Elements");

for ( i = 0; i < n; i++)

for (j = 0; j < n; j++)

if (arr1[i] + arr2[j] == x)

System.out.println(arr1[i] + " "

+ arr2[j]);

}

}

***Output:***

Enter array size

4

value of x is:

9

Enter 4 Elements

5

4

6

3

9

6

7

2

Array elements are

5

6

9

7

Enter Array Elements

5 4

6 3

7 2

***42. Merging of 2 arrays.***

import java.util.\*;

public class Main {

public static void main(String[] args){

int a[]={1,2,3,4,5};

int b[]={10,20,30,40,50};

int al=a.length;

int bl=b.length;

int cl=al+bl;

int[] c=new int[cl];

System.out.println("merging element is:");

for(int i=0;i<al;i++)

{

c[i]=a[i];

}

for(int i=0;i<bl;i++)

{

c[al+i]=b[i];

}

for(int i=0;i<cl;i++)

{

System.out.print(" "+c[i]);

}

}

}

***Output:***

merging element is:

1 2 3 4 5 10 20 30 40 50

***43. Intersection of 2 arrays***

import java.util.\*;

public class Main {

public static void main(String[] args){

int arr1[]={1,2,3,4,5};

int arr2[]={10,20,30,40,50};

int i=0,j=0;

for( i = 0; i<arr1.length; i++ ) {

for( j = 0; j<arr2.length; j++) {

if(arr1[i]==arr2[j]) {

System.out.println(arr2[j]);

}

}

}

}

}

***44.union***

public class Main {

public static void main(String[] args) {

int[] arr1 = {1, 3, 5, 7};

int[] arr2 = {2, 4, 6, 8};

int m = arr1.length;

int n = arr2.length;

System.out.print("Union of two arrays: ");

printUnion(arr1, arr2, m, n);

}

public static void printUnion(int[] arr1, int[] arr2, int m, int n) {

int i = 0, j = 0;

//Loop through both arrays until one of them is exhausted

while (i < m && j < n) {

if (arr1[i] < arr2[j]) {

// If the element at i is smaller, print it and move to the next element in arr1

System.out.print(arr1[i++] + " ");

} else if (arr1[i] > arr2[j]) {

// If the element at j is smaller, print it and move to the next element in arr2

System.out.print(arr2[j++] + " ");

} else {

// If the elements are equal, print one of them and move both pointers to the next element

System.out.print(arr1[i++] + " ");

j++;

}

}

// If there are any remaining elements in arr1, print them

while (i < m) {

System.out.print(arr1[i++] + " ");

}

// If there are any remaining elements in arr2, print them

while (j < n) {

System.out.print(arr2[j++] + " ");

}

}

}

###################\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*12-july-2024\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*####################################

***45.sum and transpose of matrix***

import java.util.\*;

public class Main {

public static void main(String[] args) {

Scanner sc=new Scanner(System.in);

int sum=0;

System.out.println("enter the size of row");

int m=sc.nextInt();

System.out.println("enter the size of column");

int n=sc.nextInt();

System.out.println("enter "+(m\*n)+" elements:");

int a[][]=new int[m][n];

for(int i=0;i<m;i++)

{

for(int j=0;j<n;j++)

{

a[i][j]=sc.nextInt();

sum=sum+a[i][j];

}

}

for(int i=0;i<m;i++)

{

for(int j=0;j<n;j++)

{

System.out.print(" "+a[i][j]);

}

System.out.println();

}

System.out.println(""

+ "sum of matrix elements :"+sum);

System.out.println("Transpose Matrix");

for(int i=0;i<n;i++)

{

for(int j=0;j<m;j++)

{

System.out.print(" "+a[j][i]);

}

System.out.println();

}

}

}

Output:

enter the size of row

2

enter the size of column

3

enter 6 elements:

2

3

4

56

7

8

2 3 4

56 7 8

sum of matrix elements :80

Transpose Matrix

2 56

3 7

4 8

***46.addition of matrix***

import java.util.\*;

public class Main {

public static void main(String[] args)

{

int m,n,i,j,m1,n1;

Scanner sc=new Scanner(System.in);

System.out.println("Enter no of rows & cols A");

m=sc.nextInt();

n=sc.nextInt();

System.out.println("Enter no of rows & cols B");

m1=sc.nextInt();

n1=sc.nextInt();

int [][]a=new int[m][n];

int b[][]=new int[m1][n1];

int c[][]=new int[m1][n1];

if(m==m1 && n==n1)

{

System.out.println("Enter "+(m\*n)+" Elements");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

a[i][j]=sc.nextInt();

}

}

System.out.println("Enter "+(m1\*n1)+" Elements");

for(i=0;i<m1;i++)

{

for(j=0;j<n1;j++)

{

b[i][j]=sc.nextInt();

}

}

System.out.println("Matrix A");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

System.out.print("\t"+a[i][j]);

}

System.out.println();

}

System.out.println("Matrix B");

for(i=0;i<m1;i++)

{

for(j=0;j<n1;j++)

{

System.out.print("\t"+b[i][j]);

}

System.out.println();

}

System.out.println("Addition\n");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

c[i][j]=a[i][j]+b[i][j];

System.out.print("\t"+c[i][j]);

}

System.out.println();

}

}

else

{

System.out.println("In valide rows & columns");

}

}

}

***Output:***

Enter no of rows & cols A

2

2

Enter no of rows & cols B

2

2

Enter 4 Elements

3

4

5

6

Enter 4 Elements

6

7

8

9

Matrix A

3 4

5 6

Matrix B

6 7

8 9

Addition

9 11

13 15

***47. substraction***

import java.util.\*;

public class Main {

public static void main(String[] args)

{

int m,n,i,j,m1,n1;

Scanner sc=new Scanner(System.in);

System.out.println("Enter no of rows & cols A");

m=sc.nextInt();

n=sc.nextInt();

System.out.println("Enter no of rows & cols B");

m1=sc.nextInt();

n1=sc.nextInt();

int [][]a=new int[m][n];

int b[][]=new int[m1][n1];

int c[][]=new int[m1][n1];

if(m==m1 && n==n1)

{

System.out.println("Enter "+(m\*n)+" Elements");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

a[i][j]=sc.nextInt();

}

}

System.out.println("Enter "+(m1\*n1)+" Elements");

for(i=0;i<m1;i++)

{

for(j=0;j<n1;j++)

{

b[i][j]=sc.nextInt();

}

}

System.out.println("Matrix A");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

System.out.print("\t"+a[i][j]);

}

System.out.println();

}

System.out.println("Matrix B");

for(i=0;i<m1;i++)

{

for(j=0;j<n1;j++)

{

System.out.print("\t"+b[i][j]);

}

System.out.println();

}

System.out.println("substraction\n");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

c[i][j]=a[i][j]-b[i][j];

System.out.print("\t"+c[i][j]);

}

System.out.println();

}

}

else

{

System.out.println("In valide rows & columns");

}

}

}

***Ouput:***

Enter no of rows & cols A

2

2

Enter no of rows & cols B

2

2

Enter 4 Elements

6

7

4

2

Enter 4 Elements

9

8

5

1

Matrix A

6 7

4 2

Matrix B

9 8

5 1

substraction

-3 -1

-1 1

***48. orthogonal or not***

import java.util.\*;

public class Main {

public static void main(String[] args)

{

int m,n,i,j,m1,n1,cnt=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter no of rows & cols A");

m=sc.nextInt();

n=sc.nextInt();

int a[][]=new int[m][n];

int b[][]=new int[n][m];

System.out.println("Enter "+(m\*n)+" Elements");

for(i=0;i<m;i++)//row

{

for(j=0;j<n;j++)//col

{

a[i][j]=sc.nextInt();

}

}

System.out.println("Matrix A");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

System.out.print(" "+a[i][j]);

}

System.out.println();

}

for(i=0;i<n;i++)

{

for(j=0;j<m;j++)

{

b[i][j]=a[j][i];

}

}

System.out.println("Transpose B");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

System.out.print(" "+b[i][j]);

}

System.out.println();

}

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

if(a[i][j]==b[i][j])

{

cnt++;

}

}

}

if(cnt==m\*n)

{

System.out.println("Ortho");

}

else

{

System.out.println("not ortho");

}

}

}

***Output:***

Enter no of rows & cols A

2

2

Enter 4 Elements

1

0

0

1

Matrix A

1 0

0 1

Transpose B

1 0

0 1

Ortho

***49. Java Program to determine whether two matrices are equal***

import java.util.\*;

public class Main {

public static void main(String[] args)

{

int m,n,i,j,m1,n1,cnt=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter no of rows & cols A");

m=sc.nextInt();

n=sc.nextInt();

System.out.println("Enter no of rows & cols B");

m1=sc.nextInt();

n1=sc.nextInt();

int a[][]=new int[m][n];

int b[][]=new int[m1][n1];

if(m==m1 && n==n1)

{

System.out.println("Enter "+(m\*n)+" Elements");//Matrix Accept

for(i=0;i<m;i++)//row

{

for(j=0;j<n;j++)//col

{

a[i][j]=sc.nextInt();

}

}

System.out.println("Matrix A");

for(i=0;i<m;i++)//row

{

for(j=0;j<n;j++)//col

{

System.out.print(" "+a[i][j]);

}

System.out.println();

}

System.out.println("Enter "+(m1\*n1)+" Elements");//Matrix Accept

for(i=0;i<m1;i++)//row

{

for(j=0;j<n1;j++)//col

{

b[i][j]=sc.nextInt();

}

}

System.out.println("Matrix B");

for(i=0;i<m1;i++)//row

{

for(j=0;j<n1;j++)//col

{

System.out.print(" "+b[i][j]);

}

System.out.println();

}

for(i=0;i<m1;i++)//row

{

for(j=0;j<n1;j++)//col

{

if(a[i][j]==b[i][j])

{

cnt++;

}

}

}

if(cnt==m\*n)

{

System.out.println("Equla");

}

else

{

System.out.println("not equal ");

}

}

else

{

System.out.println("In valide rows & columns");

}

}

}

***Output:***

Enter no of rows & cols A

2

3

Enter no of rows & cols B

2

3Enter no of rows & cols A

2

3

Enter no of rows & cols B

2

3

Enter 6 Elements

2

3

4

5

6

7

Matrix A

2 3 4

5 6 7

Enter 6 Elements

3

4

5

6

7

8

Matrix B

3 4 5

6 7 8

not equal

***50. Write a menu driven program to perform the following operations on 2D array:***

***i. Sum of diagonal elements***

***ii. Sum of upper diagonal elements***

***iii. Sum of lower diagonal elements***

***iv. Exi***

import java.util.\*;

public class Main

{

public static void main(String[] args) {

int m,n,i,j,sumd=0,sumu=0,suml=0;

Scanner sc=new Scanner(System.in);

System.out.println("Enter no of rows & cols A");

m=sc.nextInt();

n=sc.nextInt();

int a[][]=new int[m][n];

if(m==n )

{

System.out.println("Enter "+(m\*n)+" Elements");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

a[i][j]=sc.nextInt();

}

}

System.out.println("Matrix A");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

System.out.print(" "+a[i][j]);

}

System.out.println();

}

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

if(i==j)

{

sumd=sumd+a[i][j];

}

else if(j>i)

{

sumu=sumu+a[i][j];

}

else

{

suml=suml+a[i][j];

}

}

}

System.out.println("sum of diagonal"+sumd);

System.out.println("sum of upper diagonal"+sumu);

System.out.println("sum of lower diagonal"+suml);

}

}

}

***Output:***

Enter no of rows & cols A

3

3

Enter 9 Elements

1

2

3

4

5

6

7

8

9

Matrix A

1 2 3

4 5 6

7 8 9

sum of diagonal :15

sum of upper diagonal :11

sum of lower diagonal :19

***51. Java Program to find the frequency of odd & even numbers in the given matrix***

import java.util.Scanner;

public class Main

{

public static void main(String[] args)

{

int p, q, count1 = 0, count2 = 0;

Scanner s = new Scanner(System.in);

System.out.print("Enter number of rows in matrix:");

p = s.nextInt();

System.out.print("Enter number of columns in matrix:");

q = s.nextInt();

int a[][] = new int[p][q];

System.out.println("Enter all the elements of matrix:");

for (int i = 0; i < p; i++)

{

for (int j = 0; j < q; j++)

{

a[i][j] = s.nextInt();

}

}

System.out.println("Given Matrix:");

for (int i = 0; i < p; i++)

{

for (int j = 0; j < q; j++)

{

System.out.print(a[i][j] + " ");

}

System.out.println("");

}

for (int i = 0; i < p; i++)

{

for (int j = 0; j < q; j++)

{

if((a[i][j] % 2) == 0)

{

count1++;

}

else

{

count2++;

}

}

}

System.out.println("Even number frequency:"+count1);

System.out.println("Odd number frequency:"+count2);

}

}

***Output:***

Enter number of rows in matrix:2

Enter number of columns in matrix:2

Enter all the elements of matrix:

2

4

6

7

Given Matrix:

2 4

6 7

Even number frequency:3

Odd number frequency:1

***52. Java Program to find the sum of each row and each column of a matrix.***

public class Main

{

public static void main(String[] args)

{

int rows, cols, sumRow, sumCol;

int a[][] = {

{1, 2, 3},

{4, 5, 6},

{7, 8, 9}

};

rows = a.length;

cols = a[0].length;

for(int i = 0; i < rows; i++){

sumRow = 0;

for(int j = 0; j < cols; j++){

sumRow = sumRow + a[i][j];

}

System.out.println("Sum of " + (i+1) +" row: " + sumRow);

}

for(int i = 0; i < cols; i++){

sumCol = 0;

for(int j = 0; j < rows; j++){

sumCol = sumCol + a[j][i];

}

System.out.println("Sum of " + (i+1) +" column: " + sumCol);

}

}

}

***Output:***

Sum of 1 row: 6

Sum of 2 row: 15

Sum of 3 row: 24

Sum of 1 column: 12

Sum of 2 column: 15

Sum of 3 column: 18

***53. Java Program to determine whether a given matrix is a sparse matrix***

import java.util.Scanner;

public class Main

{

public static void main(String[] args)

{

int m,n, i,j,cnt1=0;

Scanner s = new Scanner(System.in);

System.out.print("Enter number of rows in matrix:");

m = s.nextInt();

System.out.print("Enter number of columns in matrix:");

n = s.nextInt();

int a[][] = new int[m][n];

System.out.println("Enter all the elements of matrix:");

for ( i = 0; i < m; i++)

{

for ( j = 0; j < n; j++)

{

a[i][j] = s.nextInt();

}

}

for(i=0;i<m;i++)//row

{

for(j=0;j<n;j++)//col

{

if(a[i][j]==0)

{

cnt1++;

}

}

}

if(cnt1>((m\*n)/2))

System.out.println("given matrix is parse matrix");

else

System.out.println(" the given matrix is not parse martix ");

}

}

***Output:***

Enter number of rows in matrix:2

Enter number of columns in matrix:2

Enter all the elements of matrix:

2

3

4

5

the given matrix is not parse matrix.

***54.Identity matrix***

import java.util.Scanner;

public class Main

{

public static void main(String[] args)

{

int m,n, i,j,cnt1=0,cnt=0;

Scanner s = new Scanner(System.in);

System.out.print("Enter number of rows in matrix:");

m = s.nextInt();

System.out.print("Enter number of columns in matrix:");

n = s.nextInt();

int a[][] = new int[m][n];

System.out.println("Enter all the elements of matrix:");

for ( i = 0; i < m; i++)

{

for ( j = 0; j < n; j++)

{

a[i][j] = s.nextInt();

}

}

for( i = 0; i < n; i++) {

for( j = 0; j < n; j++) {

if(i == j)

a[i][j] = 1;

else

a[i][j] = 0;

}

}

System.out.println("identity matrix");

// Display the matrix

for( i = 0; i < n; i++) {

for(j = 0; j < n; j++) {

System.out.print(a[i][j] + " ");

}

System.out.println(); // print a newline after each row is printed

}

}

}

***Output:***

Enter number of rows in matrix:2

Enter number of columns in matrix:2

Enter all the elements of matrix:

1

0

0

1

identity matrix

1 0

0 1

OR

***import java.util.Scanner;***

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the size of the matrix: ");

int size = scanner.nextInt();

int[][] identityMatrix = new int[size][size];

for (int i = 0; i < size; i++) {

identityMatrix[i][i] = 1;

}

System.out.println("The identity matrix is:");

for (int i = 0; i < size; i++) {

for (int j = 0; j < size; j++) {

System.out.print(identityMatrix[i][j] + " ");

}

System.out.println();

}

}

}

***Output:***

Enter the size of the matrix: 4

The identity matrix is:

1 0 0 0

0 1 0 0

0 0 1 0

0 0 0 1

***55. Multiplication of 2 matrices***

import java.util.Scanner;

public class Main {

public static void main(String[] args)

{

int m,n,i,j,m1,n1;

Scanner sc=new Scanner(System.in);

System.out.println("Enter no of rows & cols A");

m=sc.nextInt();

n=sc.nextInt();

System.out.println("Enter no of rows & cols B");

m1=sc.nextInt();

n1=sc.nextInt();

int a[][]=new int[m][n];

int b[][]=new int[m1][n1];

int c[][]=new int[m][n1];

if(n==m1)

{

System.out.println("Enter "+(m\*n)+" Elements of A");//Matrix Accept

for(i=0;i<m;i++)//row

{

for(j=0;j<n;j++)//col

{

a[i][j]=sc.nextInt();

}

}

System.out.println("Enter "+(m\*n)+" Elements of B");//Matrix Accept

for(i=0;i<m1;i++)//row

{

for(j=0;j<n1;j++)//col

{

b[i][j]=sc.nextInt();

}

}

System.out.println("Matrix A");

for(i=0;i<m;i++)//row

{

for(j=0;j<n;j++)//col

{

System.out.print(a[i][j]+"\t");

}

System.out.println();

}

System.out.println("Matrix B");

for(i=0;i<m1;i++)//row

{

for(j=0;j<n1;j++)//col

{

System.out.print(b[i][j]+"\t");

}

System.out.println();

}

for(i=0;i<m;i++)//row

{

for(j=0;j<n1;j++)//col

{

c[i][j]=0;

for(int k=0;k<n;k++)

{

c[i][j]=c[i][j]+a[i][k]\*b[k][j];

}

}

}

System.out.println("Result");

for(i=0;i<m;i++)//row

{

for(j=0;j<n;j++)//col

{

System.out.print(c[i][j]+"\t");

}

System.out.println();

}

}//if en

else

{

System.out.println("In valide rows & columns");

}

}

}

***Output:***

Enter no of rows & cols A

2

2

Enter no of rows & cols B

2

2

Enter 4 Elements of A

2

3

4

5

Enter 4 Elements of B

6

7

8

9

Matrix A

2 3

4 5

Matrix B

6 7

8 9

Result

36 41

64 73

***56.sum of column and row***

import java.util.\*;

public class Main

{

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Enter value of N ");

int N = sc.nextInt();

System.out.println("Enter value of M ");

int M = sc.nextInt();

int matrix [][] = new int[N+1][M+1];

System.out.println("Enter values");

for(int i = 0 ; i < N ; i++ ){

for(int j = 0 ; j < M ; j++){

matrix[i][j] = sc.nextInt();

}

}

int sum = 0,suma=0,i=0,j=0,sum1=0;

for( i = 0 ; i < N ; i++ )

{

sum = 0;

for( j = 0 ; j < M ; j++)

{

sum = sum + matrix[i][j];

matrix[i][M] = sum;

}

}

for( i = 0 ; i < N ; i++ )

{

sum = 0;

for( j = 0 ; j < M ; j++)

{

sum = sum + matrix[j][i];

matrix[N][j] = sum;

}

suma=suma+sum;

}

matrix[i][j] = suma;

System.out.println("Printing values");

for(i = 0 ; i <= N ; i++ ){

for( j = 0 ; j <= M; j++){

System.out.print(matrix[i][j] + "\t");

}

System.out.println();

}

}

}

OR

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

int m,n,sum=0,rowSum=0,colSum=0;

Scanner scanner = new Scanner(System.in);

System.out.println("Enter m and n");

m=scanner.nextInt();

n=scanner.nextInt();

int[][] matrix = new int[m][n];

/\*int []row=new int[m];

for(int i=0;i<m;i++)

row[i]=0;\*/

System.out.println("Enter the (m\*n) matrix:");

for (int i = 0; i < m; i++) {

for (int j = 0; j < n; j++) {

System.out.print("Element [" + i + "," + j + "]: ");

matrix[i][j] = scanner.nextInt();

}

}

System.out.println("\nThe matrix is:");

for (int i = 0; i < m; i++) {

for (int j = 0; j < n; j++) {

System.out.print(matrix[i][j] + " ");

}

System.out.println();

}

System.out.println("\nSum of each row:");

for (int i = 0; i < m; i++) {

rowSum = 0;

for (int j = 0; j < n; j++) {

rowSum += matrix[i][j];

}

sum+=rowSum;

System.out.println("Sum of row " + (i + 1) + ": " + rowSum);

}

System.out.println("\nSum of each column:");

for (int j = 0; j < n; j++) {

colSum = 0;

for (int i = 0; i < m; i++) {

colSum += matrix[i][j];

}

sum+=colSum;

System.out.println("Sum of column " + (j + 1) + ": " + colSum);

}

System.out.println("\nSum of row and columns");

//sum=rowSum+colSum;

System.out.println("sum="+sum);

}

}