2d Array

1. DAMT return the biggest element from the matrix ?

   ▼ Ans

```
public class p191
{
  public static void main(String[] args)
  {
    Matrix mt=new Matrix();
    System.out.println("Read matrix:= ");
    int x[][]=mt.readmat();
    System.out.println("Enter the matrix elements:= ");
    mt.display(x);
    int bg=mt.getbiggest(x);
    System.out.println("Biggest is:="+bg);
  }
}
class Matrix
{
  public int[][] readmat()
  {
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the order of the matrix:= ");
    int row=sc.nextInt();
    int col=sc.nextInt();
    int mat[][]=new int[row][col];
    System.out.println("Enter the "+row*col+" elements:= ");
    for(int i=0; i<mat.length; i++)
    {
      for(int j=0; j<mat[i].length; j++)
      {
        mat[i][j]=sc.nextInt();
      }
    }
    return mat;
  }

  void display(int[][] mat)
  {
    for(int i=0; i<mat.length; i++)
    {
      for(int j=0; j<mat[i].length; j++)
      {
        System.out.print(mat[i][j]+" ");
      }
      System.out.println();
    }
```

```
  }
  public int getbiggest(int mat[][])
  {
    int big=mat[0][0];
    for(int i=0; i<mat.length; i++)
    {
      for(int j=0; j<mat[i].length; j++)
      {
        if(big<mat[i][j])
          big=mat[i][j];
      }
    }
    return big;
  }

}
```

92. DAMT transpose the matrix ?

▼ Ans

```
public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      mat[i][j]=sc.nextInt();
    }
  }
  int tra[][]=new int[mat[0].length][mat.length];
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      tra[j][i]=mat[i][j];
    }
  }
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      System.out.print(tra[i][j]+" ");
    }
    System.out.println();
```

```
  }
}
```

93. WAJP to Row wise biggest and Column wise biggest and Diagonal biggest in matrix ?

▼ Ans

```
static int[] diagonalwisebiggest(int mat[][])
{
  int pbig=mat[0][0];
  int sbig=mat[0][mat.length-1];
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      if(i==j)
      {
        if(pbig<mat[i][j])
          pbig=mat[i][j];
      }
      if(i+j==mat.length-1)
      {
        if(sbig<mat[i][j])
          sbig=mat[i][j];
      }
    }
  }
  int big[]= {pbig,sbig};
  return big;
}
static int[] rowwisebiggest(int mat[][])
{
  int big[]=new int[mat.length];
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      if(mat[i][j]>big[i])
        big[i]=mat[i][j];
    }
  }
  return big;
}
static int[] columnwisebiggest(int mat[][])
{
  int big[]=new int[mat[0].length];
  for(int i=0; i<mat[0].length; i++)
  {
    for(int j=0; j<mat.length; j++)
```

```
    {
      if(mat[j][i]>big[i])
        big[i]=mat[j][i];
    }
  }
  return big;
}
public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      mat[i][j]=sc.nextInt();
    }
  }
  int rbig[]=rowwisebiggest(mat);
  for(int i=0; i<rbig.length; i++)
  {
    System.out.println(i+1+" row biggest is "+rbig[i]);
  }
  int cbig[]=columnwisebiggest(mat);
  for(int i=0; i<cbig.length; i++)
  {
    System.out.println(i+1+" column biggest is "+cbig[i]);
  }
  int dbig[]=diagonalwisebiggest(mat);
  for(int i=0; i<dbig.length; i++)
  {
    System.out.println(i+1+" Diagonal biggest is "+dbig[i]);
  }
}
```

94. WAJP Swap the diagonal elements of a Matrix ?

▼ Ans

```
public static void main(String[] arg)
  {
    Scanner sc=new Scanner(System.in);
    int r=sc.nextInt(),c=sc.nextInt();
    int mat[][]=new int[r][c];
    for(int i=0; i<mat.length; i++)
    {
      for(int j=0; j<mat[0].length; j++)
```

```
      {
        mat[i][j]=sc.nextInt();
      }
    }
    sc.close();
    for(int i=0; i<mat.length/2; i++)
    {
      for(int j=0; j<mat[i].length; j++)
      {
        if(i==j)
        {
          int temp=mat[i][j];
          mat[i][j]=mat[mat.length-1-i][mat[i].length-1-j];
          mat[mat.length-1-i][mat[i].length-1-j]=temp;
        }
        if(i+j==mat.length-1)
        {
          int temp=mat[i][j];
          mat[i][j]=mat[j][i];
          mat[j][i]=temp;
        }
      }
    }
    for(int i=0; i<mat.length; i++)
    {
      for(int j=0; j<mat[0].length; j++)
      {
        System.out.print(mat[i][j]+" ");
      }
      System.out.println();
    }
  }
```

95. DAMT add two Matrix ?

▼ Ans

```
static int[][] readmat()
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      mat[i][j]=sc.nextInt();
    }
```

```
  }
  return mat;
}
static int[][] addmatrix(int a[][],int b[][])
{
  if(a.length!=b.length || a[0].length!=b[0].length)
  {
    System.out.println("Not possible to Add");
    return null;
  }
  int c[][]=new int[a.length][a[0].length];
  for(int i=0; i<c.length; i++)
  {
    for(int j=0; j<c[i].length; j++)
    {
      c[i][j]=a[i][j]+b[i][j];
    }
  }
  return c;
}
public static void main(String[] args)
{
  int a[][]=readmat();
  int b[][]=readmat();
  int rs[][]=addmatrix(a,b);

  for(int i=0; i<rs.length; i++)
  {
    for(int j=0; j<rs[i].length; j++)
    {
      System.out.print(rs[i][j]+" ");
    }
    System.out.println();
  }
}
```

96. DAMT Reverse or swap the Matrix elements row wise ?

▼ Ans

```
public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
```

```
    {
      mat[i][j]=sc.nextInt();
    }
  }
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length/2; j++)
    {
      int temp=mat[i][j];
      mat[i][j]=mat[i][mat[i].length-1-j];
      mat[i][mat[i].length-1-j]=temp;
    }
  }
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      System.out.print(mat[i][j]+" ");
    }
    System.out.println();
  }

}
```

97. DAMT Reverse or swap the matrix element column wise ?

▼ Ans

```
public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      mat[i][j]=sc.nextInt();
    }
  }
  for(int i=0; i<mat.length/2; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      int temp=mat[i][j];
      mat[i][j]=mat[mat.length-1-i][j];
      mat[mat.length-1-i][j]=temp;
    }
```

```
  }
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      System.out.print(mat[i][j]+" ");
    }
    System.out.println();
  }

}
```

98. DAMT Rotate the matrix element into 90’ Left and 90’ Right ?

▼ Ans

```
static void displayArray(int mat[][])
{
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      System.out.print(mat[i][j]+" ");
    }
    System.out.println();
  }
}
static int[][] columnwiseriverse(int[][] mat)
{
  for(int i=0; i<mat.length/2; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      int temp=mat[i][j];
      mat[i][j]=mat[mat.length-1-i][j];
      mat[mat.length-1-i][j]=temp;
    }
  }
  return mat;
}
static int[][] rowwisewiseriverse(int[][] mat)
{
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length/2; j++)
    {
      int temp=mat[i][j];
      mat[i][j]=mat[i][mat[i].length-1-j];
      mat[i][mat[i].length-1-j]=temp;
    }
  }
```

```
  return mat;
}
static int[][] transpose(int[][] x)
{
  int y[][]=new int[x[0].length][x.length];
  for(int i=0; i<x.length; i++)
  {
    for(int j=0; j<x[i].length; j++)
    {
      y[j][i]=x[i][j];
    }
  }
  return y;
}
static int[][] rotate90right(int x[][])
{
  x=transpose(x);
  rowwisewiseriverse(x);
  return x;
}
static int[][] rotate90left(int x[][])
{
  x=transpose(x);
  columnwiseriverse(x);
  return x;
}
public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      mat[i][j]=sc.nextInt();
    }
  }

  int[][] left=rotate90left(mat);
  int[][] right=rotate90right(mat);
  System.out.println("90 degree Left:= ");
  displayArray(left);
  System.out.println("90 degree Right:= ");
  displayArray(right);
}
```

99. DAMT print a matrix element in Spiral order ?(clock wise) ?

▼ Ans

```
static void printSpiralorder(int x[][])
{
  int n=x.length;
  for(int i=0,j=n-1;i<j; i++,j--)
  {
    for(int k=i; k<j; k++)
      System.out.print(x[i][k]+" ");
    for(int k=i; k<j; k++)
      System.out.print(x[k][j]+" ");
    for(int k=j; k>i; k--)
      System.out.print(x[j][k]+" ");
    for(int k=j; k>i; k--)
      System.out.print(x[k][i]+" ");
  }
  if(n%2==1)
    System.out.println(x[n/2][n/2]);
}
public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      mat[i][j]=sc.nextInt();
    }
  }

  printSpiralorder(mat);
}
```

00. DAMT print a matrix element in Spiral order ?(Anti-clock wise) ?

▼ Ans

```
static void printSpiralorder(int x[][])
{
  int n=x.length;
  for(int i=0,j=n-1;i<j; i++,j--)
  {
    for(int k=i; k<j; k++)
      System.out.print(x[k][i]+" ");
```

```
    for(int k=i; k<j; k++)
      System.out.print(x[j][k]+" ");
    for(int k=j; k>i; k--)
      System.out.print(x[k][j]+" ");
    for(int k=j; k>i; k--)
      System.out.print(x[i][k]+" ");
  }
  if(n%2==1)
    System.out.println(x[n/2][n/2]);
}
public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter the order of the matrix:= ");
  int row=sc.nextInt();
  int col=sc.nextInt();
  int mat[][]=new int[row][col];
  System.out.println("Enter the "+row*col+" elements:= ");
  for(int i=0; i<mat.length; i++)
  {
    for(int j=0; j<mat[i].length; j++)
    {
      mat[i][j]=sc.nextInt();
    }
  }

  printSpiralorder(mat);
}
```