Write (Test.java) for the following:

```
class Complex {
    int real, img;
    00   !            !    !      !          !        !    !      –!       !
} 00          !        !       !   !    !     !   !      !,0.!    !   !  /  !3,4 !

class ComplexArray {
    Complex[ ] data;
!   00     !         ! !     !        !
}

00       !     !      !     !     !            !     ! !
public class Test {
  public static void main(){
    int n;
    //get values of n from user (no of Complex numbers)
    ComplexArray arr;
    //allocate necessary memory to arr
    Loop: as long as user wants [choice: 1 to populate, 2 to exit]
    {
       arr.augment(n); 00!    0       ! !        !        !   !    !

    }
    int lower, upper;
    //get values of lower & upper from user

    Now display all the Complex numbers from arr whose real<=lower &
    img>=upper, using show(lower,upper) method of Complex class;
  }
}
```

P.T.O

```
class MyArray {
    int[] intData;
    00!    !           !         !
} !

class Matrix {
    MyArray[ ][ ] arrayObjects;
    00!    !           !         ! )!    !      ) ! !
}

public class Test {
  public static void main(){
    Matrix m = new Matrix();
   Loop: as long as user wants to continue
    {
       m.augment();
        00!    !       !   ! !   !     ! !     !     !      /
        00!   ! !   !       –!              !    ! 3 !       /!    !    !     !   !     !
        00!         !         !   !    ! 3 !    !           !     !     !        !           /!
        !
        00!   ! !         !    !     !         !         !   !   –!    !    !     ! !!
        00!     !    !         !     !    !    ! !        !   !   !  –!     !    !     !!
        00!   !     !             !         !         !   !    ! 3 !    !         !     !!
        00!   !  –!           !     !     !       /!
        !
    !
       m.display();
        00!         !    !       !   !         !         !

    }
  }00   !      )
}00   !      !
```

P.T.O

- Classes of your projects are: myarrays.***OneDArray***, myarrays. and mainpkg.
- Class OneDArray has following _____ fields:

  Methods: a) b)

  If necessary, add other methods to ensure that your main method works
- Matrix class has following _____ fields:

  According to given RUN, you need to add appropriate methods in Matrix class

MainClass has the following main method:

```
public static void main(String[] args){
    Matrix m1, m2, m3;
    r = no of rows for Matrix class object. r is a user input
    c = no of columns for Matrix class object. c is a user input

    m1 = new Matrix(r, c); 00! 2!    !    ! !    ! ! !    !
      00     !         !       !  !            !      ! 2!      !
      00   !    !   !      !   !      !   !    !         !
      00       !     !  !    !           !  !    !          !

      Sout("First Matrix:"); m1.showMatrix(); 00   !   !

    m2 = new Matrix(r, c, 2, 10);! 00! 3!    !    ! !    ! ! !
      004 !          !  !   !      !  !      !         !  !  3–!!
      00     !    !           !  ! 2!   !          !          !        !  !  3!
      005 !          !  !   !      !      !  !       !       !  !         !  3!
      00       !     !  !    !          !  !    !           !

    Sout("Second Matrix:"); m2.showMatrix();00   !   !

    m3 = m1.merge(m2);

    Sout("Merged Matrix:"); m3.showMatrix();00   !   !
}
```

RUN:

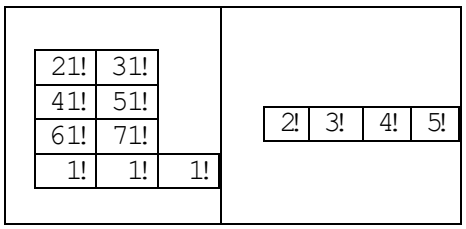
How many rows? 2 How many columns? 2 How many numbers: 2 Enter values: 1 3 How many numbers: 3 Enter values: 4 8 6 How many numbers: 2 Enter values: 7 2 How many numbers: 4 Enter values: 3 7 9 1	First Matrix: {1,3} Avg: 2 {4,8,6} Avg: 6 {7,2} Avg: 4.5 {3,7,9,1} Avg: 5 Second Matrix: {5,1} Avg: 3 {3,1,7} Avg: 3.67 {9,1,5,4} Avg: 4.75 {2,7,1,8,5} Avg: 4.6 Merged Matrix: {1,3,5,1} Avg: 2.5 {4,8,6,3,1,7} Avg: 4.83 {7,2,9,1,5,4} Avg: 4.67 {3,7,9,1,2,7,1,8,5} Avg: 4.78

- Implement the above project without changing main(), fields of the classes and given RUN

P.T.O

Write (Test.java) for the following:

Declare and populate a 3D Java array called as per the following diagram:



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Your console application package called has the following:

- class **`Student`** with fields (id, name, cgpa, dept, major), constructors, setter & getter methods
- public class **`MainClass`** having:
  - private field: an ArrayList of objects called
  - private field: an array of ArrayList<float>
  - Private method which reads Student information from user for n students (n is a user input and ensure that n is >0 and <=45) and stores them in studArray. Now, if same ID is given by user for two students, you must not proceed (show custom message) until user gives a unique ID.
  - private method to go through the already loaded and copy student cgpa values into an array of 3 ArrayList (s) of floats named , where

    all the cgpa (s) < 2.0 to be added to cgpaTable[0]
    all the cgpa (s) >= 2.0 and <3.0 to be added to cgpaTable[1]
    all the cgpa (s) >= 3.0 to be added to cgpaTable[2]
  - private method to print 3 rows of cgpas from to the console separated by comma
  - public static void main(…){
    //menu based do-while loop to call
    }

    WRITE Student class with appropriate fields & methods
    WRITE MainClass class with appropriate field declaration
    WRITE populateStudArray method of MainClass class
    WRITE scanStudArray method of MainClass class
    WRITE displayCgpaTable method of MainClass class
    WRITE main method of MainClass class

P.T.O

6.