

**Q1)**

Bill1:

S.No	Title	ISBN	Barcode
1	COREJAVAONE	978933251889	123456896
2	COREJAVATWO	979913751999	765643283

Bill2:

S.No	Title	ISBN	Barcode
1	COREJAVAONE	977933251889	129456232
2	JAVAFORDUMMIES	939914751799	324631457

Bill3:

S.No	Title	ISBN	Barcode
1	COREJAVAONE	977933251889	123456654
2	COREJAVATWO	979913751999	115465643

Number of Racks=2. Therefore, number of slots per rack=3

**Data Creation [1 mark]**

If the above data gets entered, merged and stored in the software: **1 mark**

NOTE (to TA): Modify the data if expected number of digits in ISBN or Barcode is different.

**Data Sorting [3 marks]**

Running: 1.5 marks

If sorting is done using only titles: 0.5 mark [Check if Bill2-item2 is at the bottom]

If sorting is done using titles and ISBNs: 1 mark [Check if Bill2-item1 is above Bill1-item1]

If sorting is done using titles, ISBNs and barcodes: 1.5 marks [Check if Bill3-item1 is at the top]

NOTE (to TA): Modify the data and resultant ranking if expected number of digits in ISBN and Barcode is different.

Usage: 1.5 marks

If comparator interface is used while sorting: 1.5 marks

**Slot Retrieval [1 mark]**

Upon entering the book details of a book, if it outputs both rack number and slot number: **0.5 marks**  
Each book entered gets a unique slot in the racks: **0.5 marks**

**Q2)**

Gray Image:

1 2 3

3 1 2

3 3 2

Color Image:

*For Red:*

1 2 3

3 1 2

3 3 2

*For Green:*

7 2 3

3 7 2

8 3 2

*For Blue:*

9 2 3

3 9 2

9 3 2

A class is defined for a gray image: **1 mark**

*[0.5 for correct matrix creation (1 2D matrix) & 0.5 for correct range of 0-255]*

A class is defined for a color image: **1 mark**

*[0.5 for correct matrix creation (1 3D matrix or 3 2D matrices) & 0.5 for correct range of 0-255]*

A generic class/method (with type parameters of above gray & color classes) is defined for generating negative of an image: **1 mark**

Correct negative of gray image: **1 mark** (check if the negative is  $255 - \text{Gray Image}$ )

Correct negative of color image: **1 mark** (check if the negative is  $255 - \text{Color Image}$ )