

## Lesson 02 Demo 02

### Using Arrays for Managing Covid Case Data

**Objective:** To depict the various use cases of covid data with two-dimensional arrays in Java

**Tools required:** Eclipse IDE

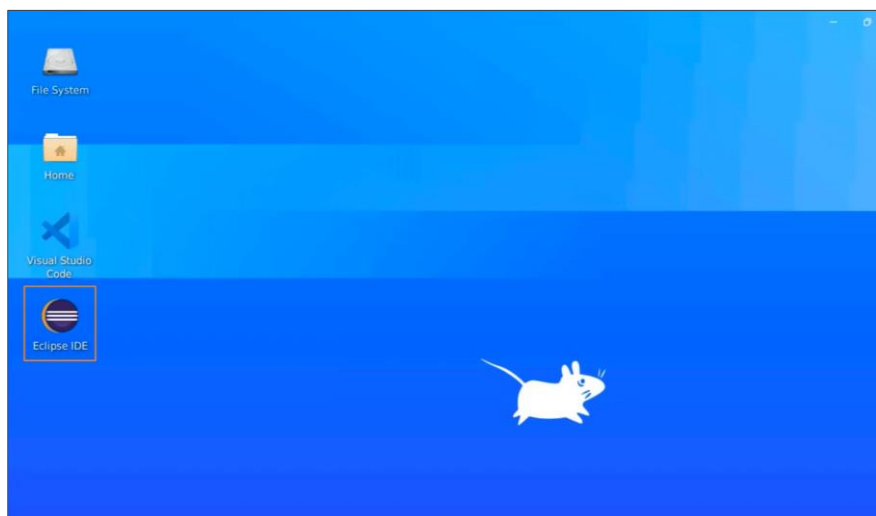
**Prerequisites:** None

Steps to be followed:

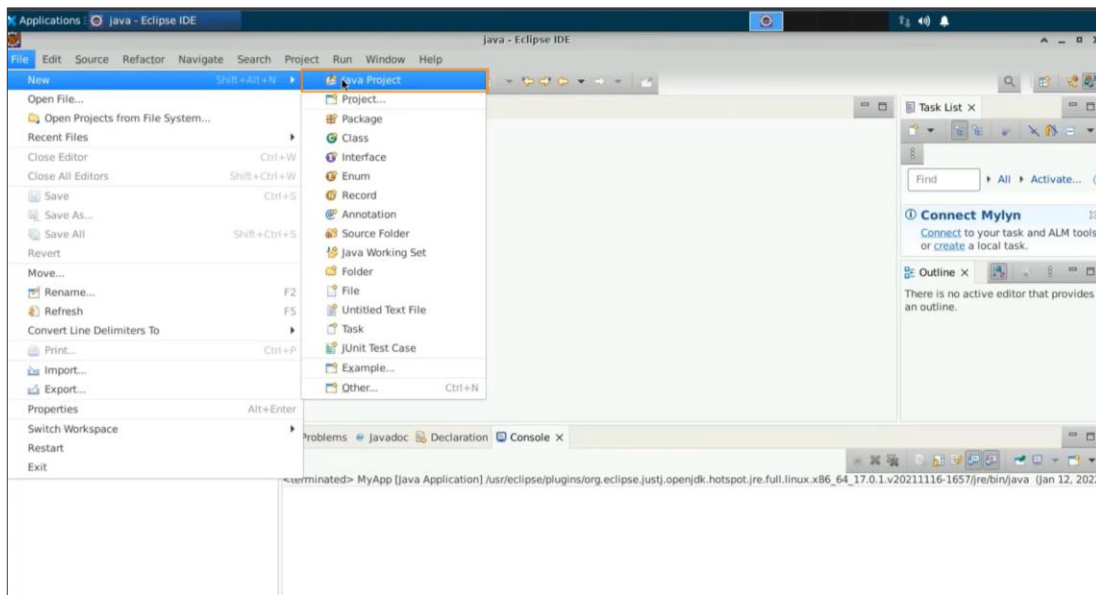
1. Represent indexes or column names
2. Run the index loop
3. Run the code and filter the data
4. Use the switch case statements
5. Implement filtration of data and execute it with example data

#### Step 1: Represent indexes or column names

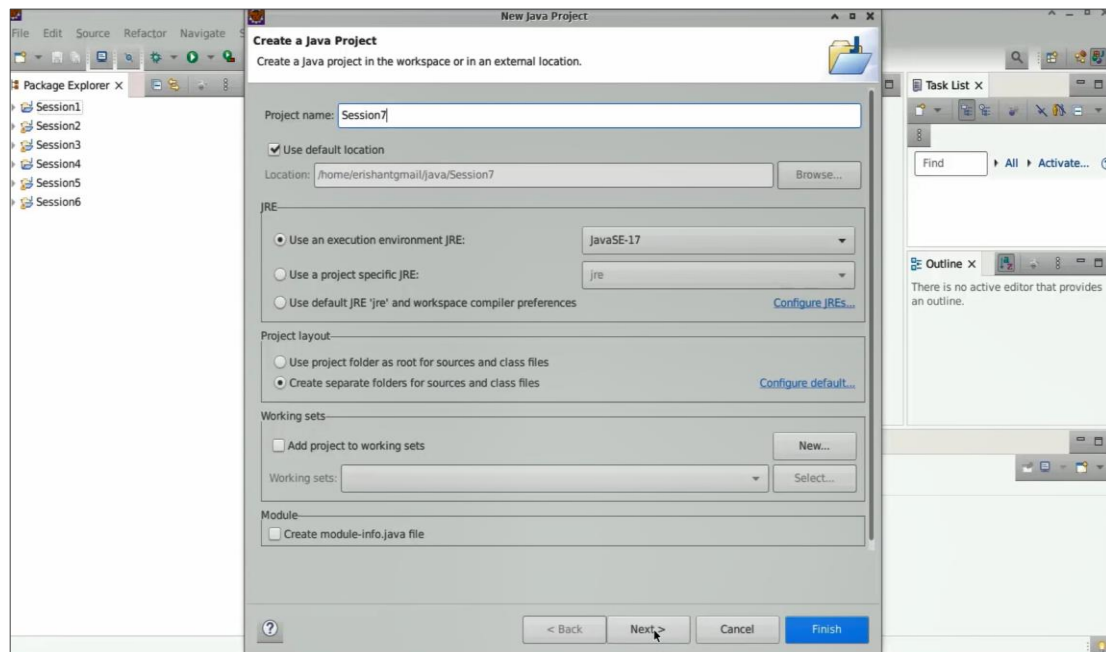
##### 1.1 Open the Eclipse IDE



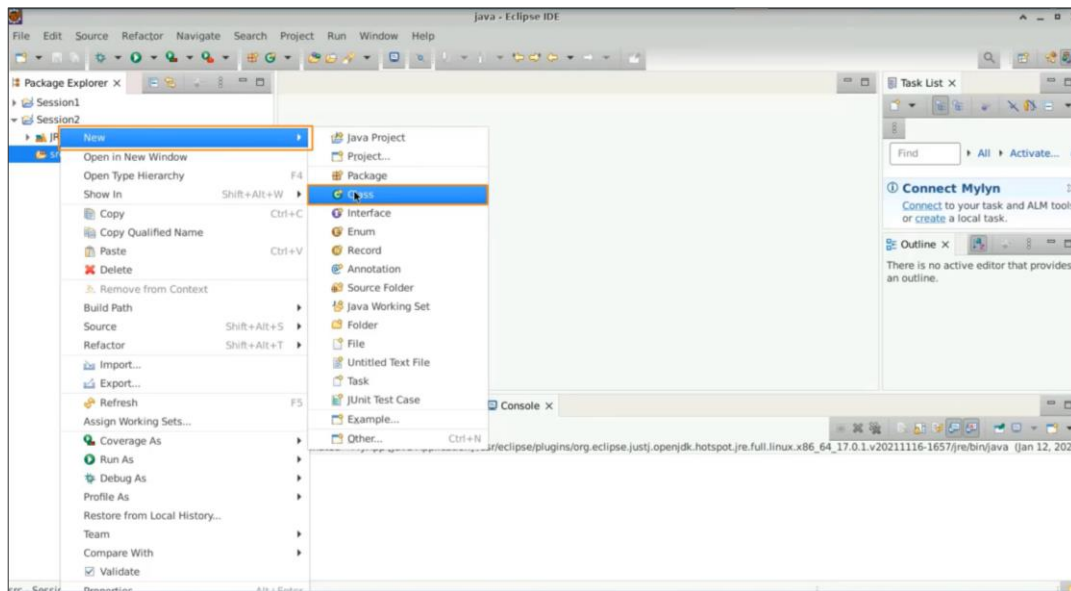
## 1.2. Select **File**, then **New**, and then **Java project**



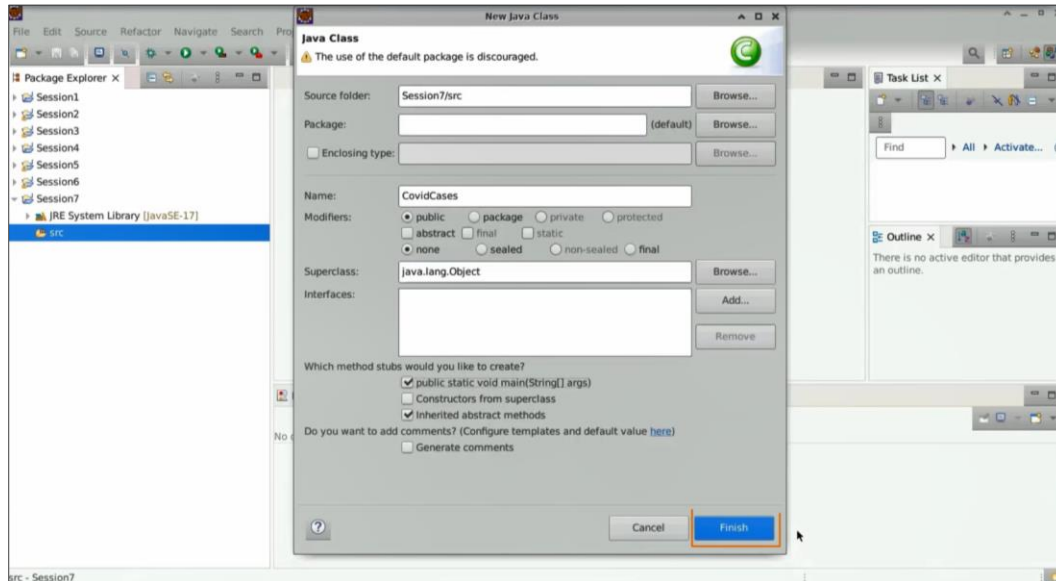
## 1.3 Name the project **“Session7”**, uncheck **“Create a module info dot Java file”**, and Click on **Finish**



1.4 With a **Session7** on the src, do a right-click and create a **new class**



1.5 Name this class as an **CovidCases**, then select the **main method**, and then select **finish**



1.6 In order to represent the COVID cases, in your browser, open the world meters dot info for the coronavirus, and you can see country-wise the data, there are various filters available like the total cases, total recovered, active cases, serious critical, and more. You will try to represent the first five details.

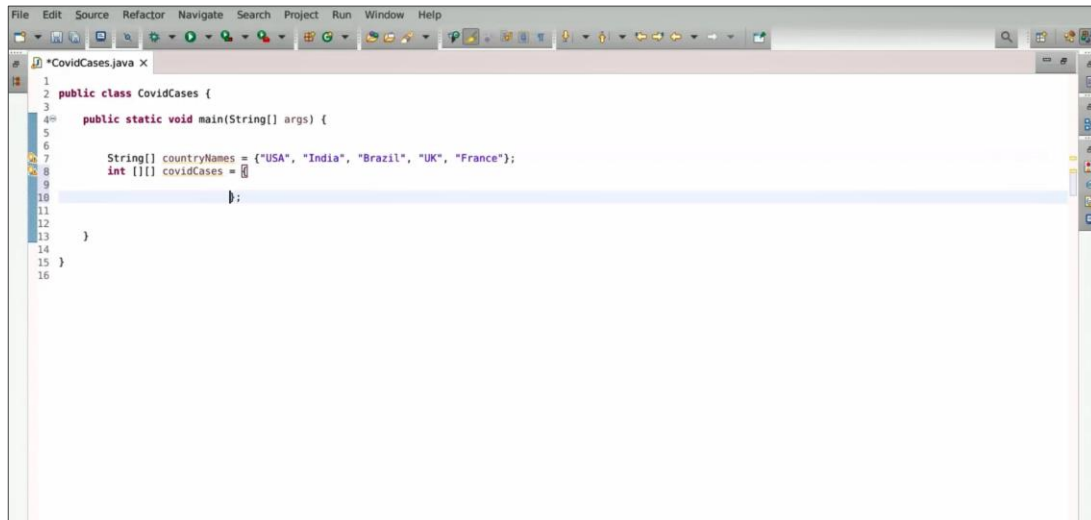
COVID Live - Coronavirus													
worldometers.info/coronavirus/													
<div>Now Yesterday 2 Days Ago Columns - Search:</div>													
<div>All Europe North America Asia South America Africa Oceania</div>													
#	Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	New Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Deaths/ 1M pop	Total Tests	Test, 1M p
	World	328,844,451	+166,743	5,557,893	+288	267,726,222	+103,248	55,560,336	96,043	42,188	713.0		
1	USA	66,995,533		873,564		43,090,644		23,031,325	25,780	200,590	2,616	858,706,919	2.5
2	India	37,380,253		486,482		35,237,461		1,656,310	8,944	26,683	347	703,762,282	5
3	Brazil	23,006,952		621,099		21,710,831		675,022	8,318	107,065	2,890	63,776,166	2
4	UK	15,217,280		151,987		11,389,181		3,676,112	777	222,360	2,221	430,233,640	6.2
5	France	14,172,384		126,967		9,019,484		5,025,933	3,895	216,385	1,939	211,520,605	3.2
6	Russia	10,803,534		321,320		9,858,615		623,599	2,300	73,981	2,200	246,400,000	1.6
7	Turkey	10,457,164		84,758		9,665,504		706,902	1,128	121,968	989	125,029,654	1.4
8	Italy	8,706,915		141,104		6,016,954		2,548,857	1,691	144,334	2,339	155,797,197	2.5
9	Spain	8,093,036		90,759		5,249,372		2,752,905	2,224	172,992	1,940	66,213,858	1.4
10	Germany	7,991,432		116,268		7,000,000	+36,300	875,164	3,212	94,914	1,381	89,622,218	1.0

1.7 Before you represent them, come back here, and first, you need to represent some indexes. Those indexes are nothing but column names. The first index is the country name, the second is the total cases, the third is active cases, and the fourth is Total tests. Next, you will have a string array and then write country names. You can consider the USA, India, Brazil, UK, and France. These are the array of country names.

```

1
2 public class CovidCases {
3
4     public static void main(String[] args) {
5
6
7         String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
8
9     }
10
11 }
12
13
    
```

1.8 Let's consider these cases as **covidCases**, it will be a two-dimensional array. The zeroth array should represent the USA, the first one is India, and so on:

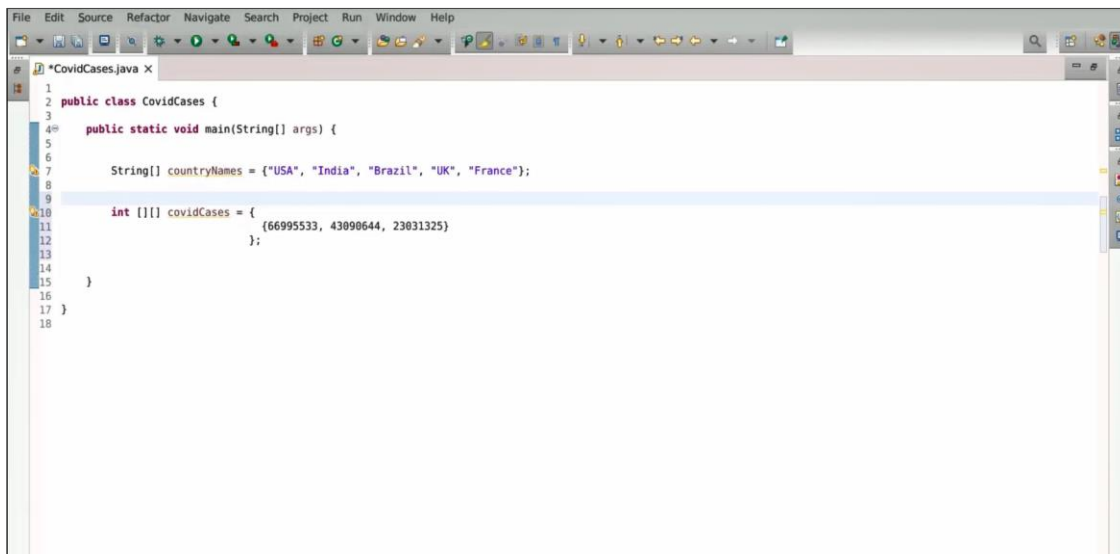


```

1 public class CovidCases {
2
3
4     public static void main(String[] args) {
5
6
7         String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
8         int [][] covidCases = {{
9
10            }};
11
12    }
13
14
15 }
16

```

1.9 Create a zeroth index array, and this will hold the data for the USA. You can take some details from **Worldometers.info**, such as the total cases in the USA, total recovered, and active cases.

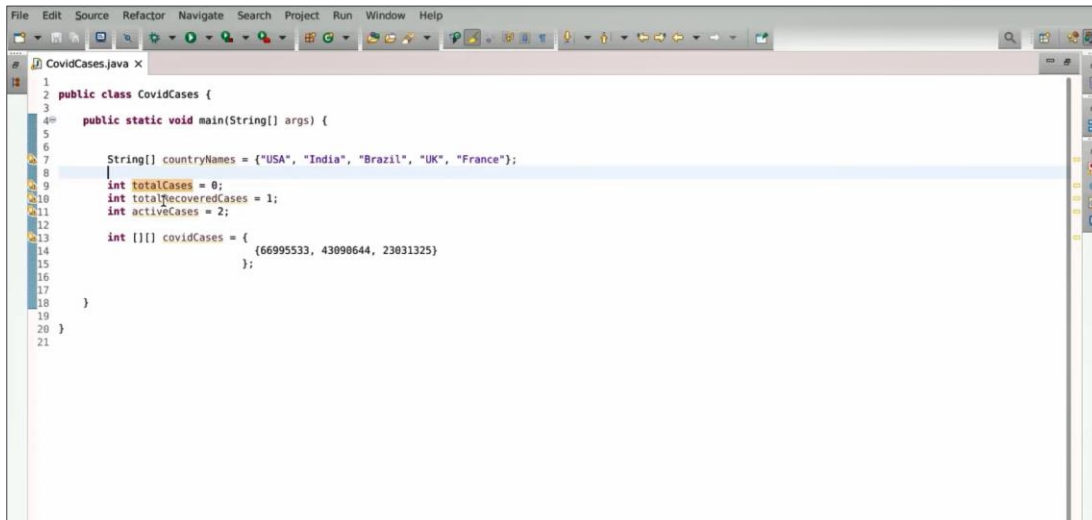


```

1 public class CovidCases {
2
3
4     public static void main(String[] args) {
5
6
7         String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
8
9
10        int [][] covidCases = {
11            {66995533, 43090644, 23031325}
12        };
13
14    }
15
16
17 }
18

```

1.10 Next, you need to add a few indexes, the first one is total cases represented as zero, then you have total recovered cases, and active cases. These are the three indexes, 0 index represent total cases, 1 index represent the total recovered cases, and 2 represent the active cases.

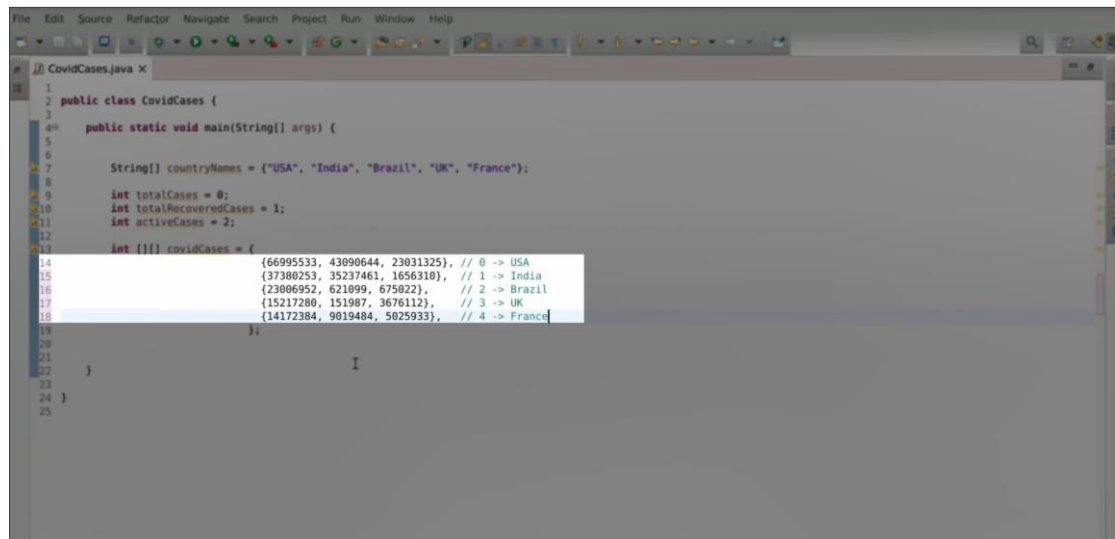


```

1 public class CovidCases {
2
3     public static void main(String[] args) {
4
5
6         String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
7
8         int totalCases = 0;
9         int totalRecoveredCases = 1;
10        int activeCases = 2;
11
12        int [][] covidCases = {
13            {66995533, 43090644, 23031325}
14        };
15
16    }
17
18 }
19
20
21

```

1.11 Copy and paste the five records. Return to the browser and take the data. The index number one is for India, then this index number 2 is for Brazil, then you got index number 3 for the UK, and then you have index number Four for France.



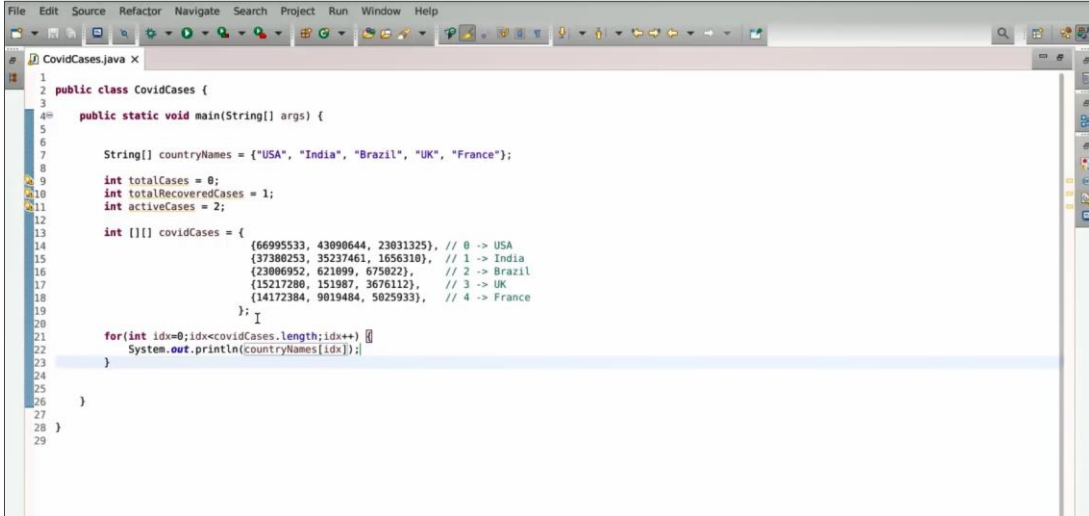
```

1 public class CovidCases {
2
3     public static void main(String[] args) {
4
5
6         String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
7
8         int totalCases = 0;
9         int totalRecoveredCases = 1;
10        int activeCases = 2;
11
12        int [][] covidCases = {
13            (66995533, 43090644, 23031325), // 0 -> USA
14            (37380253, 35237461, 1656310), // 1 -> India
15            (23006952, 621099, 675022), // 2 -> Brazil
16            (15217280, 151987, 3676112), // 3 -> UK
17            (14172384, 9019484, 5025933), // 4 -> France
18        };
19
20    }
21
22 }
23
24
25

```

## Step 2: Run the index loop

2.1 Then, you need to run an index loop starting from zero, where the index is less than **covidCases.length**. In this loop, write **System.out.println** to print the country names at the current index.

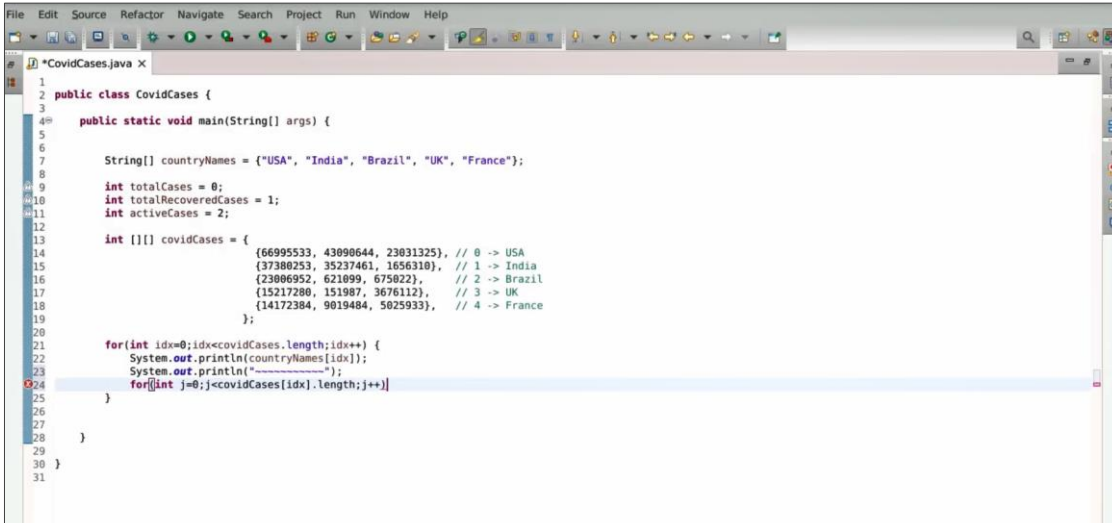


```

1  public class CovidCases {
2
3      public static void main(String[] args) {
4
5
6
7          String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
8
9          int totalCases = 0;
10         int totalRecoveredCases = 1;
11         int activeCases = 2;
12
13         int [][] covidCases = {
14             {66995533, 43090644, 23031325}, // 0 -> USA
15             {37380253, 35237461, 1656310}, // 1 -> India
16             {23006952, 621099, 675022}, // 2 -> Brazil
17             {15217280, 151987, 3676112}, // 3 -> UK
18             {14172384, 9019484, 5025933}, // 4 -> France
19         };
20
21         for(int idx=0;idx<covidCases.length;idx++) {
22             System.out.println(countryNames[idx]);
23         }
24
25     }
26 }
27
28
29

```

2.2 Thereafter, put one delimiter, and run one for loop which begins with **j** as zero and **j** less than your **covidCases** of the index dot length, and you are iterating in every single array through this loop



```

1  public class CovidCases {
2
3      public static void main(String[] args) {
4
5
6
7          String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
8
9          int totalCases = 0;
10         int totalRecoveredCases = 1;
11         int activeCases = 2;
12
13         int [][] covidCases = {
14             {66995533, 43090644, 23031325}, // 0 -> USA
15             {37380253, 35237461, 1656310}, // 1 -> India
16             {23006952, 621099, 675022}, // 2 -> Brazil
17             {15217280, 151987, 3676112}, // 3 -> UK
18             {14172384, 9019484, 5025933}, // 4 -> France
19         };
20
21         for(int idx=0;idx<covidCases.length;idx++) {
22             System.out.println(countryNames[idx]);
23             System.out.println("-----");
24             for(int j=0;j<covidCases[idx].length;j++){
25
26
27
28
29
30
31

```

2.3 Print `covidCases[index][j]` followed by a tab space. Keep this as a print statement. Once this loop is finished, write an empty print line. If you want to print the different headers, you can do that here with `System.out.println` as follows: "Total Cases," then add a tab space, "Total Recovered," then a tab space, and "Active Cases"

```

1
2 public class CovidCases {
3
4     public static void main(String[] args) {
5
6
7         String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
8
9         int totalCases = 0;
10        int totalRecoveredCases = 1;
11        int activeCases = 2;
12
13        int [][] covidCases = {
14            {66995533, 43090644, 23031325}, // 0 -> USA
15            {37380253, 35237461, 1656310}, // 1 -> India
16            {23006952, 621099, 675022}, // 2 -> Brazil
17            {15217280, 151987, 3676112}, // 3 -> UK
18            {14172384, 9019484, 5025933}, // 4 -> France
19        };
20
21        System.out.println("Total Cases\tTotal Recovered\tActive Cases");
22
23        for(int idx=0;idx<covidCases.length;idx++) {
24
25            System.out.println(countryNames[idx]);
26            System.out.println("-----");
27
28            for(int j=0;j<covidCases[idx].length;j++) {
29                System.out.print(covidCases[idx][j]+"\\t");
30            }
31
32            System.out.println();
33        }
34    }
35

```

2.4 Next, you can try to add a delimiter here

```

1
2 public class CovidCases {
3
4     public static void main(String[] args) {
5
6
7         String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
8
9         int totalCases = 0;
10        int totalRecoveredCases = 1;
11        int activeCases = 2;
12
13        int [][] covidCases = {
14            {66995533, 43090644, 23031325}, // 0 -> USA
15            {37380253, 35237461, 1656310}, // 1 -> India
16            {23006952, 621099, 675022}, // 2 -> Brazil
17            {15217280, 151987, 3676112}, // 3 -> UK
18            {14172384, 9019484, 5025933}, // 4 -> France
19        };
20
21        System.out.println("Total Cases\tTotal Recovered\tActive Cases");
22        System.out.println("-----");
23
24        for(int idx=0;idx<covidCases.length;idx++) {
25
26            System.out.println(countryNames[idx]);
27            System.out.println("-----");
28
29            for(int j=0;j<covidCases[idx].length;j++) {
30                System.out.print(covidCases[idx][j]+"\\t");
31            }
32
33            System.out.println();
34        }
35    }
36

```



2.5 Now let us run this code. To improve it, you can add two print lines here to make the output appear on the next line. You are trying to represent the **covidCases** and print them in the required format

```

public static void main(String[] args) {
    String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};

    int totalCases = 0;
    int totalRecoveredCases = 1;
    int activeCases = 2;

    int [][] covidCases = {
        {66995533, 43090644, 23031325}, // 0 -> USA
        {37380253, 35237461, 1656310}, // 1 -> India
        {23006952, 621099, 675022}, // 2 -> Brazil
        {15217280, 151987, 3676112}, // 3 -> UK
        {14172384, 9019484, 5025933}, // 4 -> France
    };

    System.out.println("Total Cases\tTotal Recoverd\tActive Cases");
    System.out.println("-----");
    for(int idx=0;idx<covidCases.length;idx++) {
        System.out.println(countryNames[idx]);
        System.out.println("-----");
        for(int j=0;j<covidCases[idx].length;j++) {
            System.out.print(covidCases[idx][j]+"");
        }
        System.out.println();
    }
}

```

Country Name	Total Cases	Total Recoverd	Active Cases
USA	66995533	43090644	23031325
India	37380253	35237461	1656310
Brazil	23006952	621099	675022
UK	15217280	151987	3676112
France	14172384	9019484	5025933

## Step 3: Run the code and filter the data

3.1 Consider the memory region as the stack and this memory region as the heap

```

public static void main(String[] args) {
    String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};

    int totalCases = 0;
    int totalRecoveredCases = 1;
    int activeCases = 2;

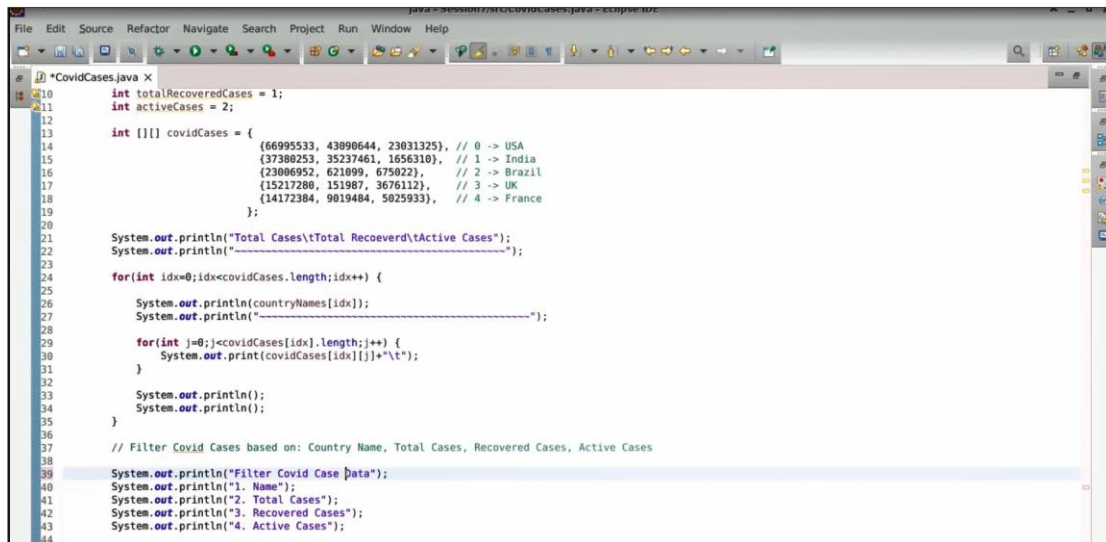
    int [][] covidCases = {
        {66995533, 43090644, 23031325}, // 0 -> USA
        {37380253, 35237461, 1656310}, // 1 -> India
        {23006952, 621099, 675022}, // 2 -> Brazil
        {15217280, 151987, 3676112}, // 3 -> UK
        {14172384, 9019484, 5025933}, // 4 -> France
    };

    System.out.println("Total Cases\tTotal Recoeverd\tActive Cases");
    System.out.println("-----");
    for(int idx=0;idx<covidCases.length;idx++) {
        System.out.println(countryNames[idx]);
        System.out.println("-----");
        for(int j=0;j<covidCases[idx].length;j++) {
            System.out.print(covidCases[idx][j]+"");
        }
        System.out.println();
    }
}

```

// Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases

3.2 Write, Filter Covid Cases Based on some criteria like country name, this is the first filter, then based on total cases, recovered cases, and the active cases. These are the four filters with respect to which you would like to write the algorithmic part, in which you can filter the data

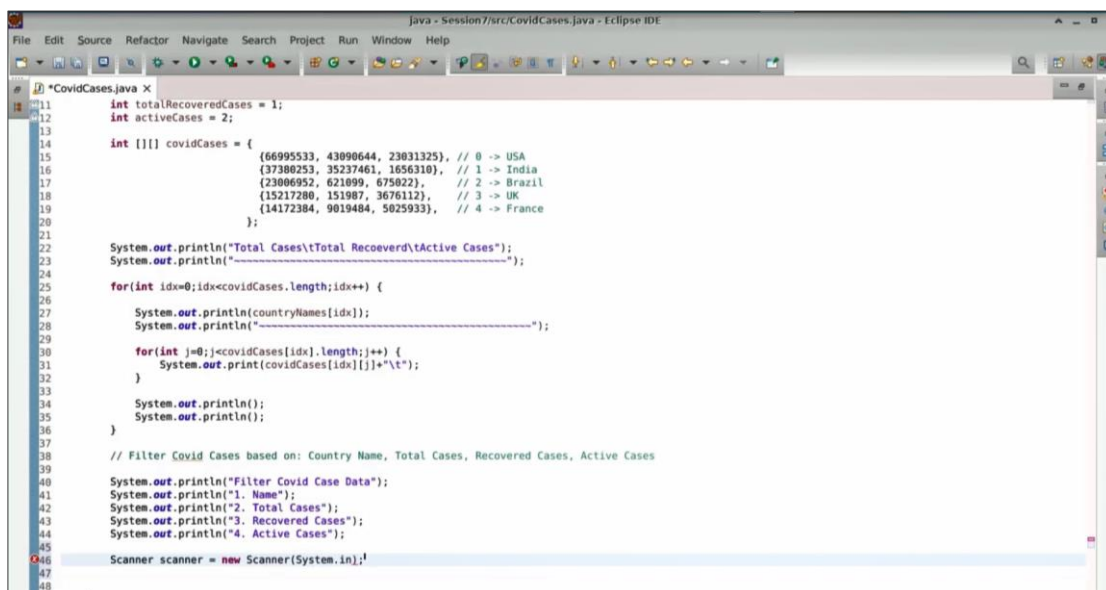


```

10  int totalRecoveredCases = 1;
11  int activeCases = 2;
12
13  int [][] covidCases = {
14      {66995533, 43090644, 23031325}, // 0 -> USA
15      {37380253, 35237461, 1656310},  // 1 -> India
16      {23086952, 621099, 675022},     // 2 -> Brazil
17      {15217280, 151987, 3676112},    // 3 -> UK
18      {14172384, 9019484, 5025933},   // 4 -> France
19  };
20
21  System.out.println("Total Cases\tTotal Recoverd\tActive Cases");
22  System.out.println("-----");
23
24  for(int idx=0;idx<covidCases.length;idx++) {
25
26      System.out.println(countryNames[idx]);
27      System.out.println("-----");
28
29      for(int j=0;j<covidCases[idx].length;j++) {
30          System.out.print(covidCases[idx][j]+"\\t");
31      }
32
33      System.out.println();
34      System.out.println();
35  }
36
37  // Filter Covid Cases based on: Country Name, Recovered Cases, Active Cases
38
39  System.out.println("Filter Covid Case Data");
40  System.out.println("1. Name");
41  System.out.println("2. Total Cases");
42  System.out.println("3. Recovered Cases");
43  System.out.println("4. Active Cases");
44

```

3.3 Now, you will create a Scanner object to read the data from the user. Instantiate the Scanner with **new Scanner(System.in)**



```

10  int totalRecoveredCases = 1;
11  int activeCases = 2;
12
13  int [][] covidCases = {
14      {66995533, 43090644, 23031325}, // 0 -> USA
15      {37380253, 35237461, 1656310},  // 1 -> India
16      {23086952, 621099, 675022},     // 2 -> Brazil
17      {15217280, 151987, 3676112},    // 3 -> UK
18      {14172384, 9019484, 5025933},   // 4 -> France
19  };
20
21  System.out.println("Total Cases\tTotal Recoverd\tActive Cases");
22  System.out.println("-----");
23
24  for(int idx=0;idx<covidCases.length;idx++) {
25
26      System.out.println(countryNames[idx]);
27      System.out.println("-----");
28
29      for(int j=0;j<covidCases[idx].length;j++) {
30          System.out.print(covidCases[idx][j]+"\\t");
31      }
32
33      System.out.println();
34      System.out.println();
35  }
36
37  // Filter Covid Cases based on: Country Name, Recovered Cases, Active Cases
38
39  System.out.println("Filter Covid Case Data");
40  System.out.println("1. Name");
41  System.out.println("2. Total Cases");
42  System.out.println("3. Recovered Cases");
43  System.out.println("4. Active Cases");
44
45  Scanner scanner = new Scanner(System.in);
46
47
48

```

3.4 Next, type **"Enter your choice"** to prompt the user. Let the user enter their choice, and store the input in a variable called choice using **scanner.nextInt()**. Once you have finished this operation, you can close the scanner

```

19      {14172384, 9019484, 5025933}, // 4 -> France
20    };
21
22    System.out.println("Total Cases\tTotal Recoverd\tActive Cases");
23    System.out.println("-----");
24
25    for(int idx=0;idx<covidCases.length;idx++) {
26
27        System.out.println(countryNames[idx]);
28        System.out.println("-----");
29
30        for(int j=0;j<covidCases[idx].length;j++) {
31            System.out.print(covidCases[idx][j]+"\\t");
32        }
33
34        System.out.println();
35        System.out.println();
36    }
37
38    // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
39
40    System.out.println("Filter Covid Case Data");
41    System.out.println("1. Name");
42    System.out.println("2. Total Cases");
43    System.out.println("3. Recovered Cases");
44    System.out.println("4. Active Cases");
45
46    Scanner scanner = new Scanner(System.in);
47    System.out.println("Enter Your Choice:");
48    int choice = scanner.nextInt();
49    scanner.close();
50
51    I
52

```

## Step 4: Use the switch case statements

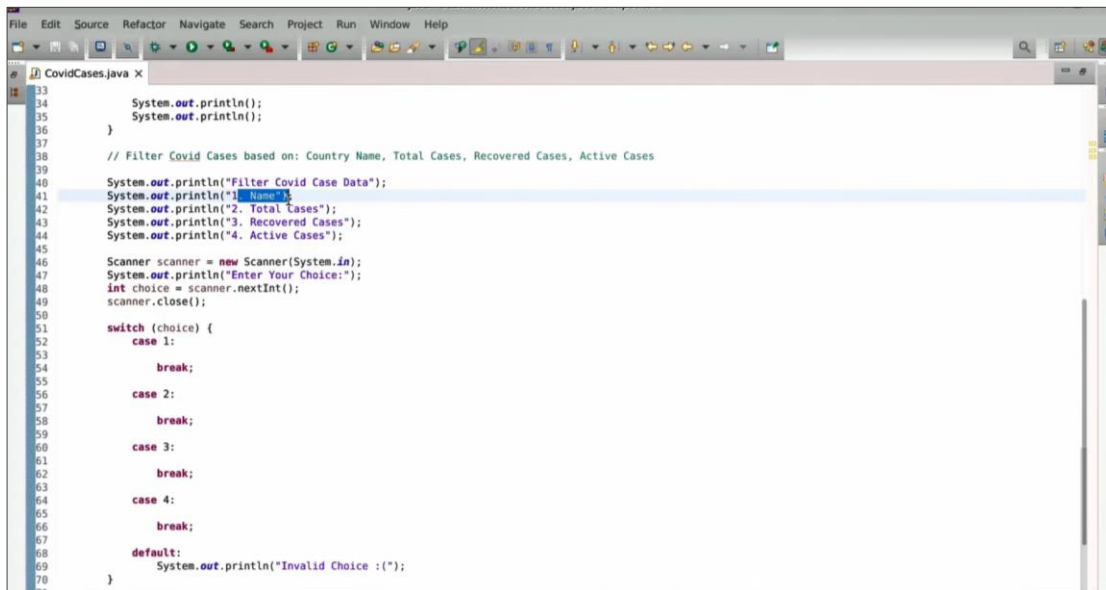
4.1 Work with the Switch case. In the key, pass the value of choice, which typically means the user is supposed to enter 1 2 3, or 4, these are the cases on which you are supposed to work. You have this case called one, you need not have a block here and use a break. In the default case, rather than throwing an exception here, do a print here as an invalid choice

```

28    System.out.println(countryNames[idx]);
29    System.out.println("-----");
30
31    for(int j=0;j<covidCases[idx].length;j++) {
32        System.out.print(covidCases[idx][j]+"\\t");
33    }
34
35    System.out.println();
36    System.out.println();
37
38    // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
39
40    System.out.println("Filter Covid Case Data");
41    System.out.println("1. Name");
42    System.out.println("2. Total Cases");
43    System.out.println("3. Recovered Cases");
44    System.out.println("4. Active Cases");
45
46    Scanner scanner = new Scanner(System.in);
47    System.out.println("Enter Your Choice:");
48    int choice = scanner.nextInt();
49    scanner.close();
50
51    switch (choice) {
52        case 1:
53            I
54            break;
55
56        default:
57            System.out.println("Invalid Choice :()");
58    }
59
60
61

```

4.2 Let us create a few more cases so that you can represent the other structure. You have case number 2, case number 3, and case number 4

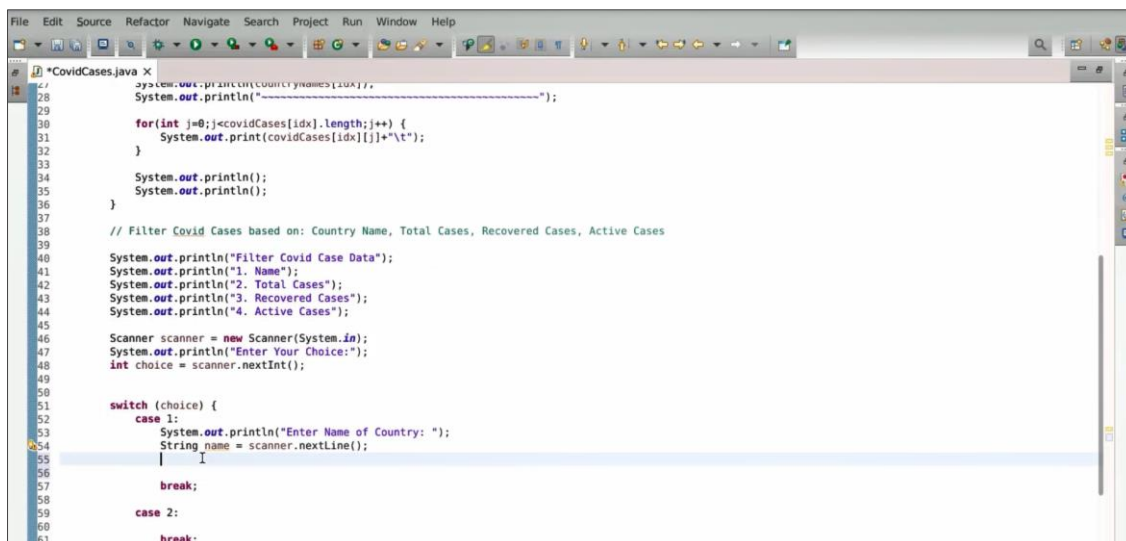


```

33      System.out.println();
34      System.out.println();
35  }
36
37  // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
38
39
40  System.out.println("Filter Covid Case Data");
41  System.out.println("1. Name");
42  System.out.println("2. Total Cases");
43  System.out.println("3. Recovered Cases");
44  System.out.println("4. Active Cases");
45
46  Scanner scanner = new Scanner(System.in);
47  System.out.println("Enter Your Choice:");
48  int choice = scanner.nextInt();
49  scanner.close();
50
51  switch (choice) {
52      case 1:
53          break;
54
55      case 2:
56          break;
57
58      case 3:
59          break;
60
61      case 4:
62          break;
63
64      default:
65          System.out.println("Invalid Choice :(");
66  }
67
68
69
70

```

4.3 For case one, if the user has entered that he wants to filter based on name. First, you need to tell the user to enter the name of the country. Now the string called a name will be **scanner.nextLine()**, so you will read the name



```

27  System.out.println(countryNames[idx]);
28  System.out.println("-----");
29
30  for(int j=0;j<covidCases[idx].length;j++){
31      System.out.print(covidCases[idx][j]+"\\t");
32  }
33
34  System.out.println();
35  System.out.println();
36  }
37
38  // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
39
40  System.out.println("Filter Covid Case Data");
41  System.out.println("1. Name");
42  System.out.println("2. Total Cases");
43  System.out.println("3. Recovered Cases");
44  System.out.println("4. Active Cases");
45
46  Scanner scanner = new Scanner(System.in);
47  System.out.println("Enter Your Choice:");
48  int choice = scanner.nextInt();
49
50
51  switch (choice) {
52      case 1:
53          System.out.println("Enter Name of Country: ");
54          String name = scanner.nextLine();
55          //
56
57          break;
58
59      case 2:
60          break;
61

```

#### 4.4 Write `int index = -1;` and for the loop, write `for (int i = 0; i < countryNames.length; i++)`

```

27  System.out.println(countryNames[idx]);
28  System.out.println("-----");
29
30  for(int j=0;j<covidCases[idx].length;j++) {
31      System.out.print(covidCases[idx][j]+"\\t");
32  }
33
34  System.out.println();
35  System.out.println();
36  }
37
38  // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
39
40  System.out.println("Filter Covid Case Data");
41  System.out.println("1. Name");
42  System.out.println("2. Total Cases");
43  System.out.println("3. Recovered Cases");
44  System.out.println("4. Active Cases");
45
46  Scanner scanner = new Scanner(System.in);
47  System.out.println("Enter Your Choice:");
48  int choice = scanner.nextInt();
49
50  switch (choice) {
51      case 1:
52          System.out.println("Enter Name of Country: ");
53          String name = scanner.nextLine();
54
55          int idx = -1;
56          for(int i=0;i<countryNames.length;i++) {
57              //
58          }
59
60          break;
61

```

#### 4.5 You will extract the index by using a condition: if the name entered by the user equals (ignoring case) the country name at index i, then the index will be set to i, and you will terminate the loop

```

27  System.out.println(countryNames[idx]);
28  System.out.println("-----");
29
30  for(int j=0;j<covidCases[idx].length;j++) {
31      System.out.print(covidCases[idx][j]+"\\t");
32  }
33
34  System.out.println();
35  System.out.println();
36  }
37
38  // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
39
40  System.out.println("Filter Covid Case Data");
41  System.out.println("1. Name");
42  System.out.println("2. Total Cases");
43  System.out.println("3. Recovered Cases");
44  System.out.println("4. Active Cases");
45
46  Scanner scanner = new Scanner(System.in);
47  System.out.println("Enter Your Choice:");
48  int choice = scanner.nextInt();
49
50  switch (choice) {
51      case 1:
52          System.out.println("Enter Name of Country: ");
53          String name = scanner.nextLine();
54
55          int idx = -1;
56          for(int i=0;i<countryNames.length;i++) {
57              if(name.equalsIgnoreCase(countryNames[i])) {
58                  idx = i;
59                  break;
60              }
61

```

- 4.6 Alternatively, if this loop finishes, write an if-statement to check if the index is equal to -1. If it is, print **"Sorry, Country not found"** This handles the edge case. In the else part, write a for-loop to print the entire array. Since you need a read operation, use **for (int element : covidCases[index])**. Print the element followed by a tab space. Once this loop finishes, write an empty print line

```

42 System.out.println("1. Name");
43 System.out.println("2. Total Cases");
44 System.out.println("3. Recovered Cases");
45 System.out.println("4. Active Cases");
46 Scanner scanner = new Scanner(System.in);
47 System.out.println("Enter Your Choice:");
48 int choice = scanner.nextInt();
49
50 switch (choice) {
51     case 1:
52         System.out.println("Enter Name of Country: ");
53         String name = scanner.nextLine();
54
55         int idx = -1;
56         for(int i=0; i<countryNames.length; i++) {
57             if(name.equalsIgnoreCase(countryNames[i])) {
58                 idx = i;
59                 break;
60             }
61         }
62
63         if(idx == -1) {
64             System.out.println("Sorry! Country Not Found");
65         }
66         else {
67             for(int element : covidCases[idx]) {
68                 System.out.print(element+"\t");
69             }
70             System.out.println();
71         }
72     }
73     break;
74
75     case 2:

```

- 4.7 Run the code. You do have four of the filters to work on now. Since you have implemented the first filter, your choice will be 1, and as you enter the choice, you need to enter the name of the country. When you use the scanner API and try to read a string after an integer, you just need to do an empty scanner dot next line first

```

37 // Filter Covid Cases Based on: Country Name, Total Cases, Recovered Cases, Active C
38
39 System.out.println("Filter Covid Case Data");
40 System.out.println("1. Name");
41 System.out.println("2. Total Cases");
42 System.out.println("3. Recovered Cases");
43 System.out.println("4. Active Cases");
44
45 Scanner scanner = new Scanner(System.in);
46 System.out.println("Enter Your Choice:");
47 int choice = scanner.nextInt();
48
49 switch (choice) {
50     case 1:
51         System.out.println("Enter Name of Country: ");
52         String name = scanner.nextLine();
53
54         int idx = -1;
55         for(int i=0; i<countryNames.length; i++) {
56             if(name.equalsIgnoreCase(countryNames[i])) {
57                 idx = i;
58                 break;
59             }
60         }
61
62         if(idx == -1) {
63             System.out.println("Sorry! Country Not Found");
64         }
65         else {
66             for(int element : covidCases[idx]) {
67                 System.out.print(element+"\t");
68             }
69             System.out.println();
70         }
71     }
72     break;
73
74     case 2:

```

<terminated> CovidCases [Java Application] /usr/eclipse/plugins/org.eclipse.justj.openjdk.1  
 UK  
 15217280      151987   3676112  
 -----  
 France  
 14172384      9019484   5025933  
 -----  
 Filter Covid Case Data  
 1. Name  
 2. Total Cases  
 3. Recovered Cases  
 4. Active Cases  
 Enter Your Choice:  
 1  
 Enter Name of Country:  
 Sorry! Country Not Found



#### 4.8 Write `scanner.nextLine()` for an empty read operation

```

37
38 // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
39
40 System.out.println("Filter Covid Case Data");
41 System.out.println("1. Name");
42 System.out.println("2. Total Cases");
43 System.out.println("3. Recovered Cases");
44 System.out.println("4. Active Cases");
45
46 Scanner scanner = new Scanner(System.in);
47 System.out.println("Enter Your Choice:");
48 int choice = scanner.nextInt();
49
50 switch (choice) {
51     case 1:
52         scanner.nextLine();
53         System.out.println("Enter Name of Country: ");
54         String name = scanner.nextLine();
55
56         int idx = -1;
57         for(int i=0; i<countryNames.length; i++) {
58             if(name.equalsIgnoreCase(countryNames[i])) {
59                 idx = i;
60                 break;
61             }
62         }
63
64         if(idx == -1) {
65             System.out.println("Sorry! Country Not Found");
66         }
67         else {
68             for(int element : covidCases[idx]) {
69                 System.out.print(element+"\t");
70             }
71             System.out.println();
72         }
73     }
74 }

```

4.9 Run the code. You need to enter the choice as one, now it asks to enter the name of the country, and you have five countries. You can choose France, so write France, and when this loop runs here, which will get the Index of the country, the value of the index is supposed to be 5. This will show the data for France:

```

28 System.out.println(countryNames[10]);
29 System.out.println("-----");
30
31 for(int j=0; j<covidCases[idx].length; j++) {
32     System.out.print(covidCases[idx][j]+"\\t");
33 }
34
35 System.out.println();
36 System.out.println();
37 }
38
39 // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
40
41 System.out.println("Filter Covid Case Data");
42 System.out.println("1. Name");
43 System.out.println("2. Total Cases");
44 System.out.println("3. Recovered Cases");
45 System.out.println("4. Active Cases");
46
47 Scanner scanner = new Scanner(System.in);
48 System.out.println("Enter Your Choice:");
49 int choice = scanner.nextInt();
50
51 switch (choice) {
52     case 1:
53         scanner.nextLine();
54         System.out.println("Enter Name of Country: ");
55         String name = scanner.nextLine();
56
57         int idx = -1;
58         for(int i=0; i<countryNames.length; i++) {
59             if(name.equalsIgnoreCase(countryNames[i])) {
60                 idx = i;
61                 break;
62             }
63         }
64
65         if(idx == -1) {
66             System.out.println("Sorry! Country Not Found");
67         }
68         else {
69             for(int element : covidCases[idx]) {
70                 System.out.print(element+"\t");
71             }
72             System.out.println();
73         }
74     }
75 }

```

Console Output:

```

<terminated> CovidCases [Java Application] /usr/eclipse/plugins/org.eclipse.justj.openjdk.
15217280      151987  3676112
-----
France
14172384      9019484  5025933
Filter Covid Case Data
1. Name
2. Total Cases
3. Recovered Cases
4. Active Cases
Enter Your Choice:
1
Enter Name of Country:
france
14172384      9019484  5025933

```

4.10 Provide an option to view the index by writing **index is** followed by the **index value**. You will print the index in this case

```

36 }
37
38 // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active Cases
39
40 System.out.println("Filter Covid Case Data");
41 System.out.println("1. Name");
42 System.out.println("2. Total Cases");
43 System.out.println("3. Recovered Cases");
44 System.out.println("4. Active Cases");
45
46 Scanner scanner = new Scanner(System.in);
47 System.out.println("Enter Your Choice:");
48 int choice = scanner.nextInt();
49
50 switch (choice) {
51     case 1:
52         scanner.nextLine();
53         System.out.println("Enter Name of Country: ");
54         String name = scanner.nextLine();
55
56         int idx = -1;
57         for(int i=0;i<countryNames.length;i++) {
58             if(name.equalsIgnoreCase(countryNames[i])) {
59                 idx = i;
60                 break;
61             }
62         }
63
64         System.out.println("idx is: "+idx);
65
66         if(idx == -1) {
67             System.out.println("Sorry! Country Not Found");
68         } else {
69             for(int element : covidCases[idx]) {
70

```

## Step 5: Implement filtration of data and execute it with example data

5.1 When your case wants to filter by the name of the country, like India, it shows the index is 1, and you are also able to extract the data for the country, and it is 100% accurate record that is shown from your index one

```

36 }
37
38 // Filter Covid Cases based on: Country Name, Total Cases, Recovered Cases, Active C
39
40 System.out.println("Filter Covid Case Data");
41 System.out.println("1. Name");
42 System.out.println("2. Total Cases");
43 System.out.println("3. Recovered Cases");
44 System.out.println("4. Active Cases");
45
46 Scanner scanner = new Scanner(System.in);
47 System.out.println("Enter Your Choice:");
48 int choice = scanner.nextInt();
49
50 switch (choice) {
51     case 1:
52         scanner.nextLine();
53         System.out.println("Enter Name of Country: ");
54         String name = scanner.nextLine();
55
56         int idx = -1;
57         for(int i=0;i<countryNames.length;i++) {
58             if(name.equalsIgnoreCase(countryNames[i])) {
59                 idx = i;
60                 break;
61             }
62         }
63
64         System.out.println("idx is: "+idx);
65
66         if(idx == -1) {
67             System.out.println("Sorry! Country Not Found");
68         } else {
69             for(int element : covidCases[idx]) {
70

```

Console Output:

```

<terminated> CovidCases [Java Application] /usr/eclipse/plugins/org.eclipse.justi.openjdk.f
15217280      151987      3676112

France
-----
14172384      9019484 5025933

Filter Covid Case Data
1. Name
2. Total Cases
3. Recovered Cases
4. Active Cases
Enter Your Choice:
1
Enter Name of Country:
india
idx is 1
37380253      35237461      1656310

```



5.2 Similarly, let us implement for the total cases, recovered cases, and active cases as well. You can reuse the same loop for your case 2

```

77
78
79 case 2:
80     System.out.println("Total Cases");
81     System.out.println("-----");
82
83     for(int i=0;i<covidCases.length;i++) {
84
85         System.out.println(countryNames[i]);
86         System.out.println("-----");
87
88         System.out.print(covidCases[i][totalCases]);
89
90
91         System.out.println();
92         System.out.println();
93     }
94
95     break;
96
97 case 3:
98     break;
99
100 case 4:
101     break;
102
103     break;
104
105 default:
106     System.out.println("Invalid Choice :(");
107 }
108
109 scanner.close();
110
111

```

5.3 Run the code and test this case number 2, your choice is number 2, hit enter and you are able to see only the total cases for different countries

```

77
78
79 case 2:
80     System.out.println("Total Cases");
81     System.out.println("-----");
82
83     for(int i=0;i<covidCases.length;i++) {
84
85         System.out.println(countryNames[i]);
86         System.out.println("-----");
87
88         System.out.print(covidCases[i][totalCases]);
89
90
91         System.out.println();
92         System.out.println();
93     }
94
95     break;
96
97 case 3:
98     break;
99
100 case 4:
101     break;
102
103     break;
104
105 default:
106     System.out.println("Invalid Choice :(");
107 }
108
109 scanner.close();
110
111

```

Console Output:

```

<terminated> CovidCases [Java Application] /usr/eclipse/plugins/org.eclipse.justj.openjdk.
2
Total Cases
-----
USA
-----
66995533
-----
India
-----
37380253
-----
Brazil
-----
23006952
-----
UK
-----
15217280

```

## 5.4 Let us implement the same structure for your case number 3

```

93     }
94
95     break;
96
97     case 3:
98
99         System.out.println("Recovered Cases");
100        System.out.println("-----");
101
102        for(int i=0;i<covidCases.length;i++) {
103
104            System.out.println(countryNames[i]);
105            System.out.println("-----");
106
107            System.out.print(covidCases[i][totalRecoveredCases]);
108
109
110            System.out.println();
111            System.out.println();
112        }
113
114        break;
115
116     case 4:
117
118        break;
119
120
121     default:
122        System.out.println("Invalid Choice :(");
123    }
124
125    scanner.close();
126

```

## 5.5 Re-run the code and see what happens if you enter the value as three

```

1  import java.util.Scanner;
2
3  public class CovidCases {
4
5      public static void main(String[] args) {
6
7
8          String[] countryNames = {"USA", "India", "Brazil", "UK", "France"};
9
10         int totalCases = 0;
11         int totalRecoveredCases = 611;
12         int activeCases = 2;
13
14         int [][] covidCases = {
15             {66995533, 43000644, 23031325}, // 0 -> USA
16             {37380253, 35237461, 1656310},  // 1 -> India
17             {23006952, 621099, 675022},     // 2 -> Brazil
18             {15217280, 151987, 3676112},    // 3 -> UK
19             {14172384, 9019484, 5025933},   // 4 -> France
20         };
21
22         System.out.println("Total Cases\tTotal Recoverd\tActive Cases");
23         System.out.println("-----");
24
25         for(int idx=0;idx<covidCases.length;idx++) {
26
27             System.out.println(countryNames[idx]);
28             System.out.println("-----");
29
30             for(int j=0;j<covidCases[idx].length;j++) {
31                 System.out.print(covidCases[idx][j]+"\\t");
32             }
33
34             System.out.println();
35             System.out.println();
36

```

Console Output:

```

<terminated> CovidCases [Java Application] /usr/eclipse/plugins/org.eclipse.justi.openjdk.
India
-----
35237461
Brazil
-----
621099
UK
-----
151987
France
-----
9019484

```

## 5.6 Let us implement the same structure for your case number 4

```

108
109
110     System.out.println();
111     System.out.println();
112 }
113
114
115     break;
116
117 case 4:
118
119     System.out.println("Active Cases");
120     System.out.println("-----");
121
122     for(int i=0;i<covidCases.length;i++) {
123
124         System.out.println(countryNames[i]);
125         System.out.println("-----");
126
127         System.out.print(covidCases[i][activeCases]);
128
129
130         System.out.println();
131         System.out.println();
132     }
133
134     break;
135
136 default:
137     System.out.println("Invalid Choice :{");
138 }
139
140 scanner.close();
141

```

## 5.7 Re-run the code and see what happens if you enter the value as four

```

<terminated> CovidCases [Java Application] /usr/eclipse/plugins/org.eclipse.justi.openjdk.
India
-----
1656310
Brazil
-----
675022
UK
-----
3676112
France
-----
5025933

```

By following the above steps, you have successfully used two-dimensional arrays in Java to depict the various use cases of COVID data.