| **Experiment No.3** |
| --- |
| Write a program in Java for find AXB where A is a matrix of 3X3 and B is a matrix of 2X3. |

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**Branch:- CSE-IOT** **Section/Group:- A**
**Semester:-3rd** **Date of Performance:- 18/09/2021**
**Subject Name:- Java Lab** **Subject Code:- 20CSP-235**

**1. Aim/Overview of the practical:** - understand the concept of using standard java types of java in single class with array.

**2. Task to be done:-** Write a program in Java for find AXB where A is a matrix of 3X3 and B is a matrix of 2X3.

**3. Apparatus**(For applied/experimental sciences/materials based labs)**:-** PC with any IDE installed on it (Intelli-J or Netbeans)

**4. Algorithm/Flowchart** (For programming based labs)**:-**

Step.1 – START

Step.2 – Defining rows and columns

Step.3 – Declaring int[][] a = new int[3][3]; int[][] b = new int[3][3]; & int[][] c = new int[3][3]; to store the values of elements in the matrix entered by the user.

Step.4 – Using "System.out.println" to prompt the user to enter the desired elements of 1st and 2nd matrix row wise.

Step.5 – Storing the values of 1st matrix elements in a new matrix a[i][j] = input.nextInt();

Step.6 – Storing the values of 2nd matrix elements in a new matrix b[i][j] = input.nextInt();

Step.7 – Finally the program will multiply both the matrix a & b and the value of AXB is displayed on output screen. (c[i][j] = c[i][j] + a[i][k] * b[k][j];)

Step.8 – END

**5. Theme/Interests definition**( For creative domains)0**:-** Learning to write a java program for matrix multiplication and displaying the result AXB on output screen.

**6. Steps for experiment/practical:**

```
import java.util.Scanner;
public class Main {
public static void main(String args[])
{
int n;
Scanner input = new Scanner(System.in);
int[][] a = new int[3][3];
int[][] b = new int[3][3];
int[][] c = new int[3][3];
System.out.println("Enter the elements of 1st martix row wise \n");
for (int i = 0; i< 3; i++)
{
```

```
for (int j = 0; j < 3; j++)
{
a[i][j] = input.nextInt();
}
}
System.out.println("Enter the elements of 2nd martix row wise \n");
for (int i = 0; i< 3; i++)
{
for (int j = 0; j < 3; j++)
{
b[i][j] = input.nextInt();
}
}
System.out.println("Multiplying the matrices...");
for (int i = 0; i< 3; i++)
{
for (int j = 0; j < 3; j++)
{
for (int k = 0; k < 2; k++)
{

c[i][j] = c[i][j] + a[i][k] * b[k][j];
}
}
}
System.out.println("The product is:");
for (int i = 0; i< 3; i++)
{
for (int j = 0; j < 3; j++)
{
System.out.print(c[i][j] + " ");
}
System.out.println();
}
}}
```

## 7. Observations/Discussions(For applied/experimental sciences/materials based labs):-

```
Enter the elements of 1st martix row wise

2
4
3
5
6
7
9
8
1
Enter the elements of 2nd martix row wise

3
5
6
7
8
2
9
1
4
Multiplying the matrices...
The product is:
34 42 20
57 73 42
83 109 70


...Program finished with exit code 0
Press ENTER to exit console.
```

## 8. Percentage error (if any or applicable):- NA

**9. Calculations/ Chemical Reactions / Theorems /Formulas used etc :-** After entering the elements of matrix 1 and matrix 2, the multiplication process carried out and the program successfully displayed the result of AXB on the output screen.

**Learning outcomes (What I have learnt):**

1. To understand the concept of standard java types in single java class.
2. To write a java program to carry out matrix multiplication and find the value of AXB on output screen.
3. Concept of OOPS in java programming.
4. Concept of arrays in java programming.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| | | | |