ASSIGNMENT # 03

Instructor: Dr. Faheem Akhtar Rajput

Submitted by: Madan Lal

Department of Computer Science

Semester VI

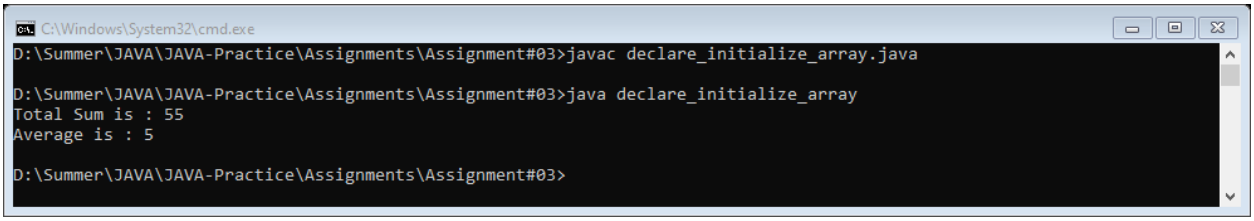
SIBAU

CMS ID: 053-18-0005

Sukkur IBA University, Nisar Ahmed Siddique Road, Sukkur

1. Write a program to declare and initialize an array with 10 values and display Sum and Average of Array Elements Using for Loop.

```java
class declare_initialize_array {

    public static void main(String args[])
    {
        //declaring array
        int[] array;
        //initializing array
        array = new int[]{1,2,3,4,5,6,7,8,9,10};

        int sum = 0;

        for(int i=0; i<10; i++)
        {
            sum+=array[i];
        }
        System.out.println("Total Sum is : "+sum);
        System.out.println("Average is : "+sum/10);
    }
}
```



2. Write programs to perform following operations:
    - Declare an array of size 10 & initialize an array to (55, 63, 78, 98, 10, 24, 32, 55, 20, 47) and print array without loop.
    - Take user input to declare N size of array & take N times input, store in array and print (use loop).
    - Access only 5th value from array
    - Change value of 3rd value to 20.
    - Print ODD VALUES stored in array.
    - Print values which are on ODD INDICES ONLY.
    - Take input from user and find whether it is present in array or not.
    - Take an input from user and print number of values greater than input.
    - Take an input from user and print of values less than input.

```java
import java.util.Scanner;
import java.util.Arrays;

class task2 {

    public static void main(String args[])
    {
        int[] array = {55, 63, 78, 98, 10, 24, 32, 55, 20, 47};
```

```
        //print array without loop
        System.out.print("First Array : "+ Arrays.toString(array) );

        Scanner input = new Scanner(System.in);

        System.out.print("\nEnter array size : ");
        int size = input.nextInt();

        int[] array1 = new int[size];

        //taking input
        for(int i=0; i<array1.length; i++)
        {
            System.out.print("\nEnter "+(i+1)+" Number : ");
            array1[i] = input.nextInt();
        }
        System.out.print("\nNew Array : ");
        //printing array
        for(int j=0; j<array1.length; j++)
        {
            System.out.print(array1[j]+", ");
        }

        //access fifth value from array
        System.out.print("\nFifth value from \'First\' array is : "+array[4]);

        //change value of 3rd value to 20
        array[2] = 20;
        System.out.print("\nFirst array 3rd value is changed to 20.");
        System.out.print("Updated First Array : "+ Arrays.toString(array) );

        //print odd values
        System.out.print("\nOdd values from first array : ");
        for(int k=0; k<array.length; k++)
        {
            if(array[k]%2 != 0)
            {
                System.out.print(array[k]+", ");
            }
        }

        //print odd indices values
        System.out.print("\nOdd Indices Values : ");
        for(int k=1; k<array.length; k+=2)
        {
                System.out.print(array[k]+", ");
        }

        //check input present in array
        System.out.print("\nEnter input to check from Array : ");
        int value = input.nextInt();
```

```java
        boolean flag = false;
        for(int k=0; k<array.length; k++)
        {
            if(array[k] == value)
            {
                flag = true;
            }
        }
        if(flag)
            System.out.print(value+" is present in array.");
        else
            System.out.print(value+" is not present in array.");


        //take input and print greater and less values
        System.out.print("\nEnter input for greater numbers : ");
        int greater = input.nextInt();
        System.out.print("\nEnter input for less numbers : ");
        int less = input.nextInt();

        System.out.print("\nGreater Numbers are : ");
        for(int k=0; k<array.length; k++)
        {
            if(array[k] > greater)
            {
                System.out.print(array[k]+", ");
            }
        }

        System.out.print("\nLess Numbers are : ");
        for(int k=0; k<array.length; k++)
        {
            if(array[k] < less)
            {
                System.out.print(array[k]+", ");
            }
        }
    }
}
```

```
C:\Windows\System32\cmd.exe
D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>javac task2.java

D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>java task2
First Array : [55, 63, 78, 98, 10, 24, 32, 55, 20, 47]
Enter array size : 2

Enter 1 Number : 20

Enter 2 Number : 30

New Array : 20, 30,
Fifth value from 'First' array is : 10
First array 3rd value is changed to 20.Updated First Array : [55, 63, 20, 98, 10, 24, 32, 55, 20, 47]
Odd values from first array : 55, 63, 55, 47,
Odd Indices Values : 63, 98, 24, 55, 47,
Enter input to check from Array : 20
20 is present in array.
Enter input for greater numbers : 20

Enter input for less numbers : 30

Greater Numbers are : 55, 63, 98, 24, 32, 55, 47,
Less Numbers are : 20, 10, 24, 20,
D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>
```

3. Create two arrays arr1, arr2 of N, M integers respectively and store any values. Create third array arr3 of N + M integers which should be empty initially. Create a mergeList(arr1, arr2, arr3) function that merge both arr1, arr2 and store in arr3.

Input:

8	10	20	4	22

23	999	87	51	74

Output:

8	10	20	4	22	23	999	87	51	74

```
public class task3 {

    public static void main(String args[])
    {
        int arr1[] = new int[]{1,2,3,4};
        int arr2[] = new int[]{5,6,7,8,9,10};

        int arraySize = arr1.length+arr2.length;
        int arr3[] = new int[arraySize];

        task3 obj = new task3();
        obj.mergeList(arr1, arr2, arr3);
    }

    void mergeList(int[] arr1, int[] arr2, int[] arr3)
    {
        int count = 0;

        for(int num1 : arr1)
        {
            arr3[count++] = num1;
        }

        for(int num2 : arr2)
        {
            arr3[count++] = num2;
        }

        System.out.print("\nMerger Array is : ");
        for(int i=0; i<count; i++)
        {
            System.out.print(arr3[i]+" ");
        }
    }
}
```

```
C:\Windows\System32\cmd.exe

D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>javac task3.java

D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>java task3

Merger Array is : 1 2 3 4 5 6 7 8 9 10
D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>
```

4. Write a C++ program that ask user to enter 10 integer values. Store those values in one-dimension array. Create another one-dimension array of same size, and store the values of first array in reverse order. Print the results on screen.
Your Program should display output as follows:

#Sample Program Run#1

```
==========================================
          Matrix A – Original
==========================================

12 23 25 4 6 8 2 7 9 11

==========================================
          Matrix A – Reverse
==========================================

11  7 2 8 6 4 25 23 12
```

```java
import java.util.Scanner;

public class task4 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);
        int[] array = new int[10];
        int[] arrayReverse = new int[10];

        //taking input
        for(int i=0; i<10; i++)
        {
            System.out.print("Enter "+(i+1)+" number : ");
            array[i] = input.nextInt();
        }

        System.out.print("\nOriginal Array : ");
        //printing array
        for(int j=0; j<10; j++)
        {
            System.out.print(array[j]+", ");
        }
```

```
        //printing and storing reverse array
        System.out.print("\nReverse Array : ");
        int count =0;
        for(int k=9; k>=0; k--)
        {
            arrayReverse[count++] = array[k];
            System.out.print(array[k]+", ");
        }
    }

}
```

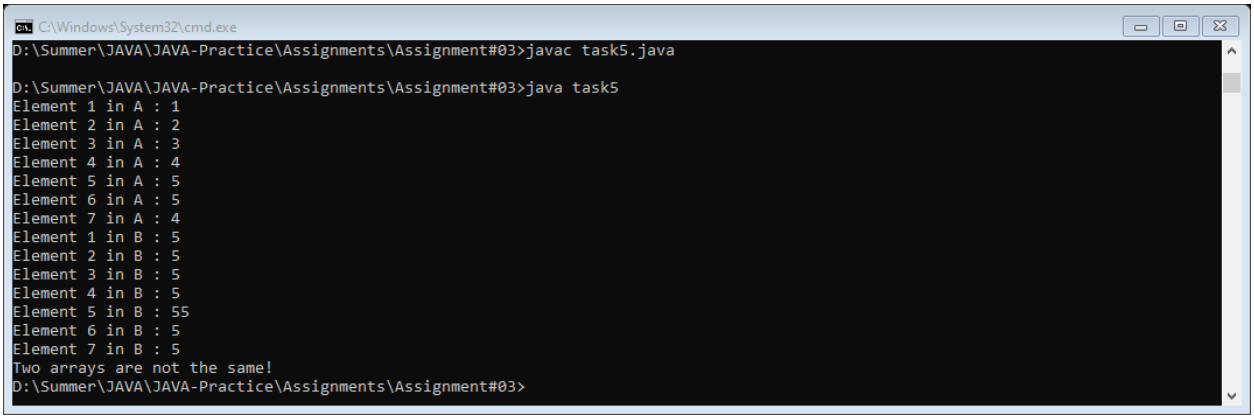
```
C:\Windows\System32\cmd.exe
D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>javac task4.java

D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>java task4
Enter 1 number : 1
Enter 2 number : 2
Enter 3 number : 3
Enter 4 number : 4
Enter 5 number : 5
Enter 6 number : 6
Enter 7 number : 7
Enter 8 number : 8
Enter 9 number : 9
Enter 10 number : 10

Original Array : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
Reverse Array : 10, 9, 8, 7, 6, 5, 4, 3, 2, 1,
D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>
```

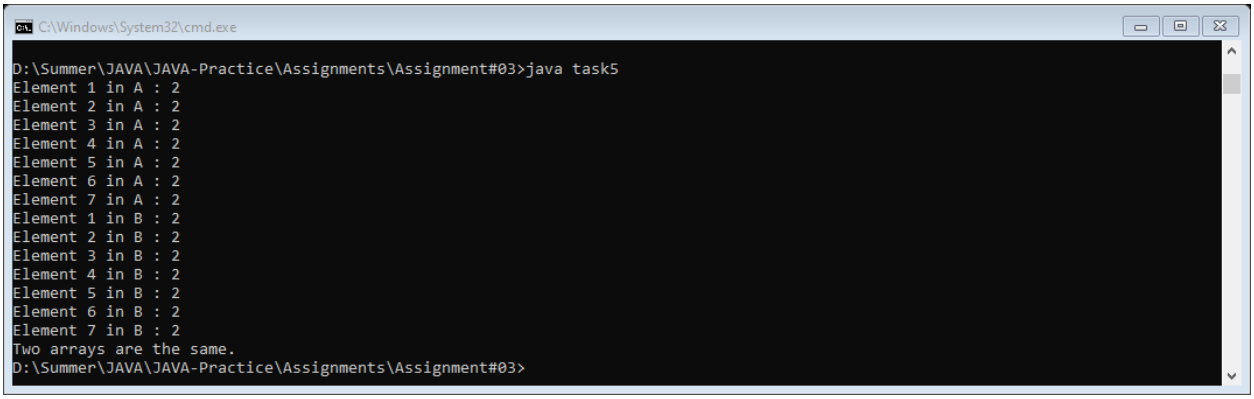
5. Write a C++ Program that checks whether the two arrays are equal or not. Declare two Integer Arrays with 7 elements, and fill up the array with keyboard input. Test if every element in Array 1 is equal to corresponding element in Array 2. For example, the program should check A[0] = B[0], A[1] = B[1], and so for. Your Program should display output as follows:

```
Element 1 in A: 5
Element 2 in A: 3
…
Element 7 in B: 15
Two arrays are the same. (or are not the same)
```

```
import java.util.Scanner;

public class task5 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);
        int[] array1 = new int[7];
        int[] array2 = new int[7];

        //taking Array1 Input
        for(int j=0; j<7; j++)
        {
            System.out.print("Element "+(j+1)+" in A : ");
            array1[j] = input.nextInt();
```

```
        }

        //taking Array2 input
        for(int k=0; k<7; k++)
        {
            System.out.print("Element "+(k+1)+" in B : ");
            array2[k] = input.nextInt();
        }

        //comparing arrays
        boolean flag = false;
        int count = 0;
        while(count<7)
        {
            if(array1[count] == array2[count])
            {
                flag = true;
            }
            else
            {
                flag = false;
                break;
            }
            count++;
        }
        if(flag)
            System.out.print("Two arrays are the same.");
        else
            System.out.print("Two arrays are not the same!");
    }

}
```





6. Write a C++ Program that computes the sum of two matrices. Each matrix is of 2 rows and 2 columns and will be created from user input.

   Output of the program is as follows:

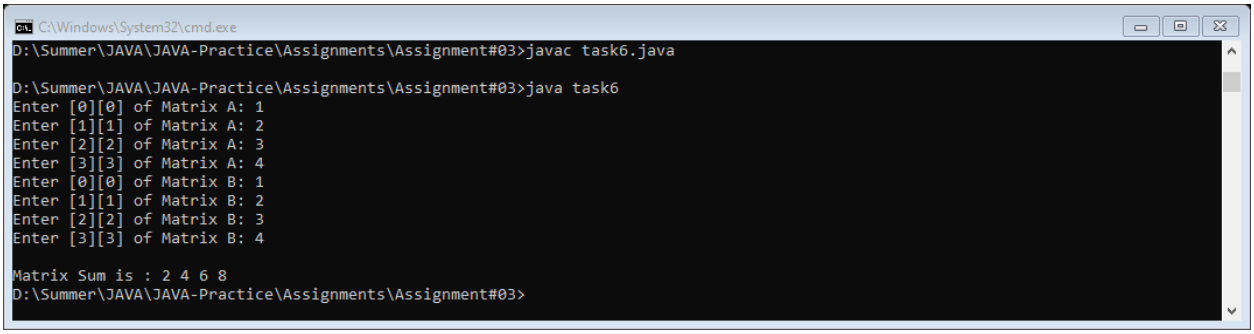
   Enter [0][0] of Matrix A: 2
   Enter [0][1] of matrix A: 3
   Enter [1][0] of matrix A: 4
   Enter [1][1] of matrix A: 5

   Enter [0][0] of Matrix B: 6
   Enter [0][1] of matrix B: 7
   Enter [1][0] of matrix B: 8
   Enter [1][1] of matrix B: 9

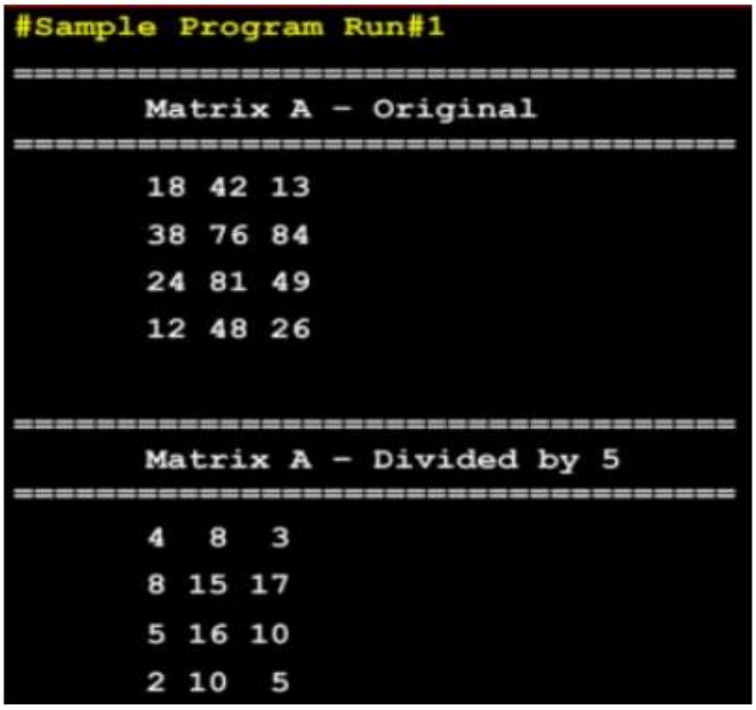
A =	2	3	+	B =	6	7	=	C =	8	10
	4	5			8	9			12	14

```java
import java.util.Scanner;

public class task6 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);
        int[] array1 = new int[4];
        int[] array2 = new int[4];

        //taking Matrix1 Input
        for(int j=0; j<4; j++)
        {
            System.out.print("Enter ["+j+"]["+j+"] of Matrix A: ");
            array1[j] = input.nextInt();
        }

        //taking Matrix2 Input
        for(int k=0; k<4; k++)
```

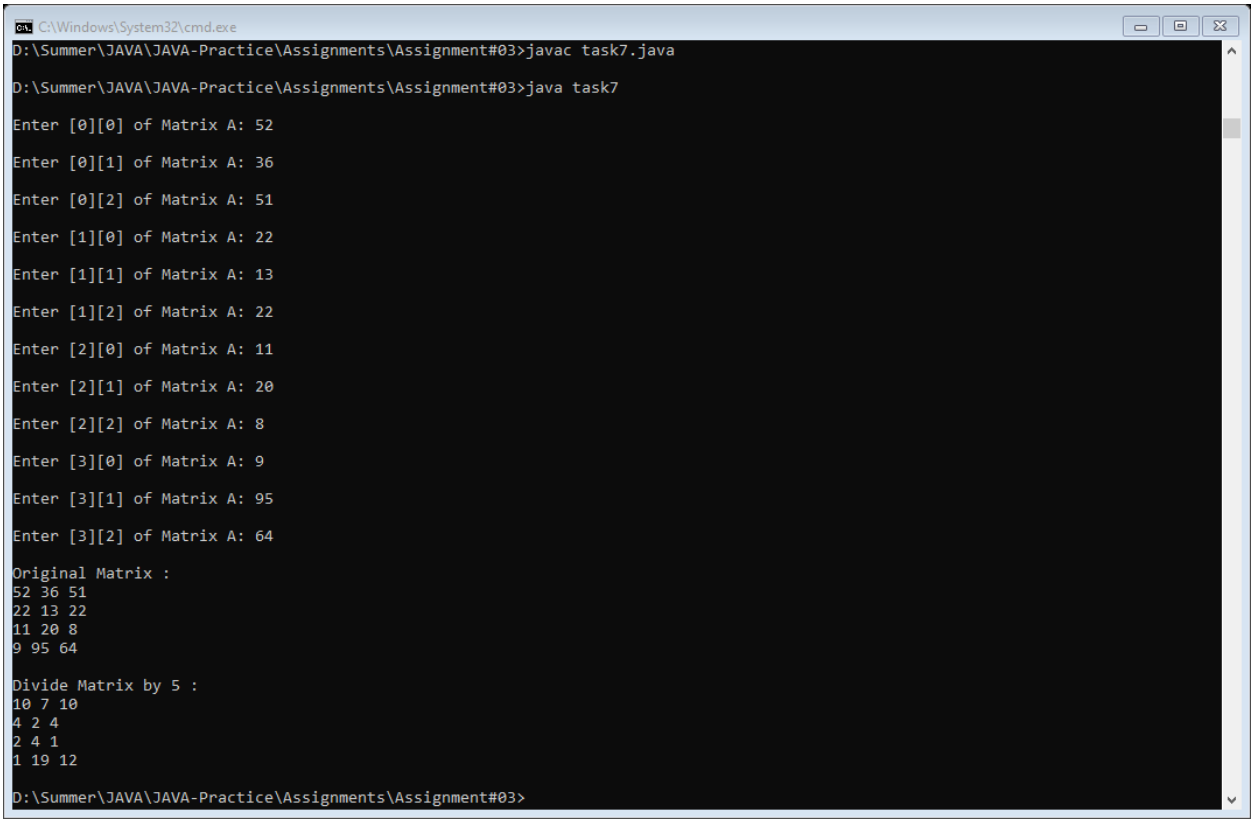
```
        {
            System.out.print("Enter ["+k+"]["+k+"] of Matrix B: ");
            array2[k] = input.nextInt();
        }

        //Matrix Sum...
        System.out.print("\nMatrix Sum is : ");
        for(int s=0; s<4; s++)
        {
            int sum = array1[s]+array2[s];
            System.out.print(sum+" ");
        }
    }

}
```



7. Write a C++ program, that read 12 integer values from user, store values in Matrix of 4 X 3. Create another Matrix of 4 X 3, divide each element of Matrix1 by five, and store the result in the Matrix2.
   Print Matrix A, with heading shown, correctly spaced.
   Print Matrix B, with heading shown, correctly spaced.
   Your Program should display output as follows:



```java
import java.util.Scanner;

public class task7 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);
        int[][] array1 = new int[4][3];
        int[][] array2 = new int[4][3];

        //taking Matrix1 Input
        for(int j=0; j<4; j++)
        {
            for(int a=0; a<3; a++)
            {
                System.out.print("\nEnter ["+j+"]["+a+"] of Matrix A: ");
                array1[j][a] = input.nextInt();
            }
        }

        //original matrix
        System.out.println("\nOriginal Matrix : ");
        for(int j=0; j<4; j++)
        {
            for(int a=0; a<3; a++)
            {
                System.out.print(array1[j][a]+" ");
            }
            System.out.println();
        }

        //divide matrix by 5
        System.out.println("\nDivide Matrix by 5 : ");
        for(int j=0; j<4; j++)
        {
            for(int a=0; a<3; a++)
            {
                array2[j][a] = array1[j][a]/5;
                System.out.print(array2[j][a]+" ");
            }
            System.out.println();
        }
    }
}
```



8. Write a program to declare 3D array of [2][2][4] size to store 16 values. Take 16 values from user and print all values.

```
import java.util.Scanner;

public class task8 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);
        int[][][] array1 = new int[2][2][4];

        //taking Matrix1 Input
        for(int j=0; j<2; j++)
        {
            for(int a=0; a<2; a++)
            {
                for(int b=0; b<4; b++)
                {
                    System.out.print("\nEnter ["+j+"]["+a+"]["+b+"] of Matrix A:
");
                    array1[j][a][b] = input.nextInt();
                }
            }
        }

        //printing values...
        for(int j=0; j<2; j++)
        {
            for(int a=0; a<2; a++)
```

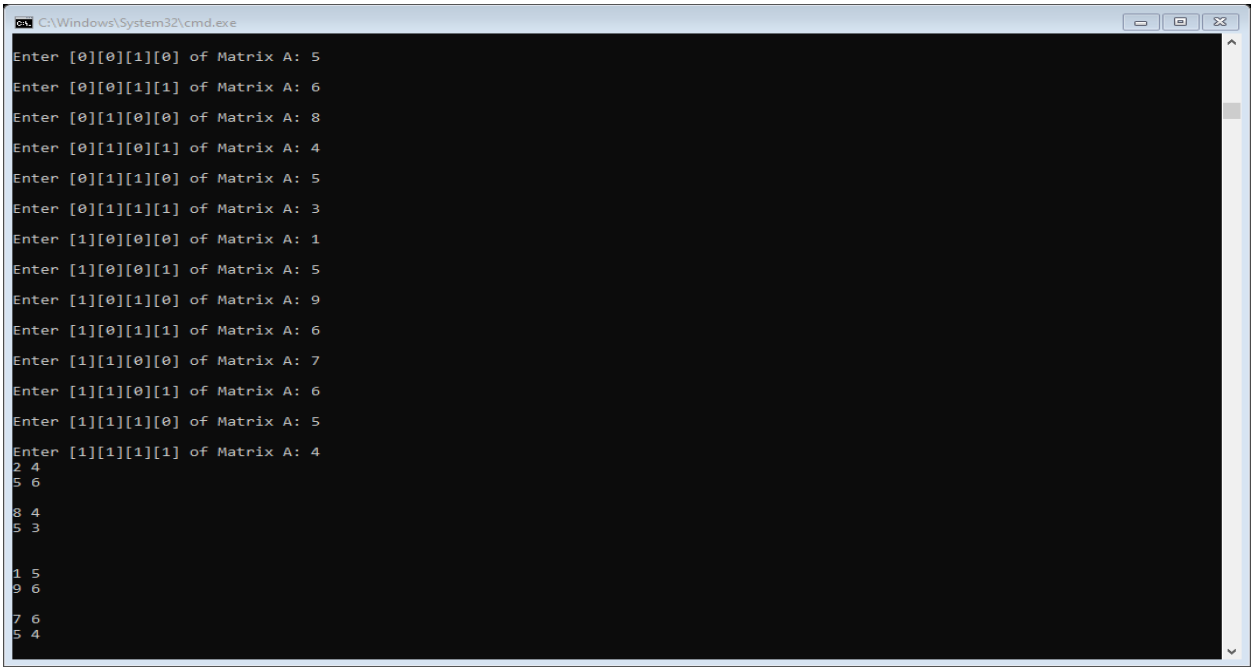
```
            {
                for(int b=0; b<4; b++)
                {
                    System.out.print(array1[j][a][b]+" ");
                }
                System.out.println();
            }
            System.out.println();
        }
    }
}
```

```
C:\Windows\System32\cmd.exe
D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>javac task8.java

D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>java task8

Enter [0][0][0] of Matrix A: 1

Enter [0][0][1] of Matrix A: 2

Enter [0][0][2] of Matrix A: 3

Enter [0][0][3] of Matrix A: 4

Enter [0][1][0] of Matrix A: 5

Enter [0][1][1] of Matrix A: 2

Enter [0][1][2] of Matrix A: 52

Enter [0][1][3] of Matrix A: 5

Enter [1][0][0] of Matrix A: 1

Enter [1][0][1] of Matrix A: 2

Enter [1][0][2] of Matrix A: 2

Enter [1][0][3] of Matrix A: 4

Enter [1][1][0] of Matrix A: 5

Enter [1][1][1] of Matrix A: 4

Enter [1][1][2] of Matrix A: 2

Enter [1][1][3] of Matrix A: 7
1 2 3 4
5 2 52 5

1 2 2 4
5 4 2 7


D:\Summer\JAVA\JAVA-Practice\Assignments\Assignment#03>
```

9. Write a program to declare 4D array of [2][2][2][2] size to store 16 values. Take 16 values from user and print all values.

```
import java.util.Scanner;

public class task9 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);
        int[][][][] array1 = new int[2][2][2][2];

        //taking Matrix1 Input
        for(int j=0; j<2; j++)
        {
            for(int a=0; a<2; a++)
```

```
            {
                for(int b=0; b<2; b++)
                {
                    for(int c=0; c<2; c++)
                    {
                        System.out.print("\nEnter ["+j+"]["+a+"]["+b+"]["+c+"] of
Matrix A: ");
                        array1[j][a][b][c] = input.nextInt();
                    }
                }
            }
        }

        //printing values...
        for(int w=0; w<2; w++)
        {
            for(int x=0; x<2; x++)
            {
                for(int y=0; y<2; y++)
                {
                    for(int z=0; z<2; z++)
                    {
                        System.out.print(array1[w][x][y][z]+" ");
                    }
                    System.out.println();
                }
                System.out.println();
            }
            System.out.println();
        }
    }
}
```

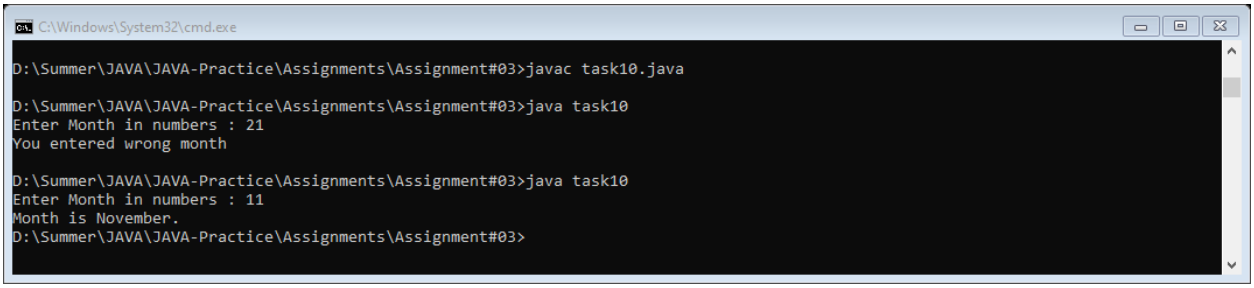


10. Write a C++ Program that contains one user defined function month().
    In main() function:
    - Read an integer input in between (1 to 12) and store it in month_of_year.
    - Call month(month_of_year)

    In month() function:
    - Print the corresponding month of year in month().
    - Example: Value of parameter is 4... Print "April".

```
import java.util.Scanner;

public class task10 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter Month in numbers : ");
        int month = input.nextInt();

        task10 obj = new task10();
        if(month == 1 || month == 2 || month == 3 || month == 4 || month == 5 ||
month == 6 || month == 7 || month == 8 || month == 9 || month == 10 || month == 1
1 || month == 12)
            obj.month(month);
        else
            System.out.println("You entered wrong month");
    }

    void month(int month_of_year)
    {
        if(month_of_year == 1)
            System.out.print("Month is January.");
        else if(month_of_year == 2)
            System.out.print("Month is Febuary.");
        else if(month_of_year == 3)
            System.out.print("Month is March.");
        else if(month_of_year == 4)
            System.out.print("Month is April.");
        else if(month_of_year == 5)
            System.out.print("Month is May.");
        else if(month_of_year == 6)
            System.out.print("Month is June.");
        else if(month_of_year == 7)
            System.out.print("Month is July.");
        else if(month_of_year == 8)
            System.out.print("Month is August.");
        else if(month_of_year == 9)
            System.out.print("Month is September.");
        else if(month_of_year == 10)
            System.out.print("Month is Octomber.");
        else if(month_of_year == 11)
```

```
            System.out.print("Month is November.");
        else if(month_of_year == 12)
            System.out.print("Month is December.");
    }
}
```

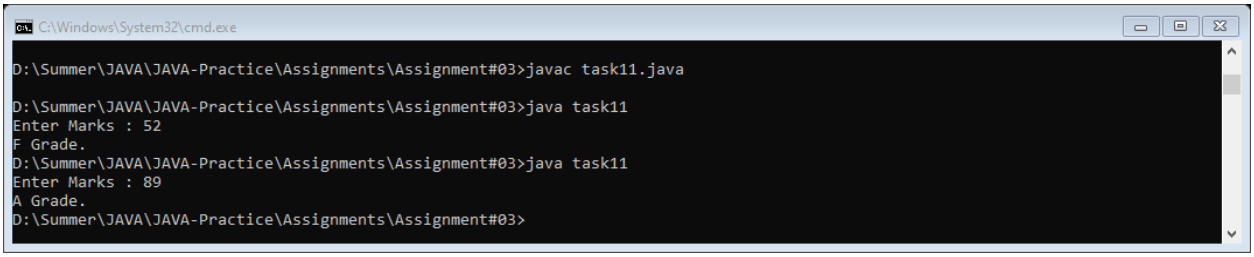


11. Write a C++ Program that contains one user defined function cal_grades().
    In main() function:
    - Prompt user to enter obtained(0 - 100) marks for one subject.
    - Call cal_grades(marks_subject).
    - Print the corresponding Grade with respect to Marks.

    In user defined function:
    - Perform conditioning with else if statement return char value.
    - Function must return value.

```
import java.util.Scanner;

public class task11 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter Marks : ");
        int marks_subject = input.nextInt();

        task11 obj = new task11();

            obj.cal_grades(marks_subject);
    }

    void cal_grades(int marks_subject)
    {
        if(marks_subject < 0 || marks_subject > 100)
            System.out.print("Your entered wrong marks.");
        else if(marks_subject < 60)
            System.out.print("F Grade.");
        else if(marks_subject >= 60 && marks_subject < 70)
            System.out.print("C Grade.");
        else if(marks_subject >= 70 && marks_subject < 80)
            System.out.print("B Grade.");
        else if(marks_subject >= 80 && marks_subject < 90)
```

```
            System.out.print("A Grade.");
        else if(marks_subject >= 90 && marks_subject <= 100)
            System.out.print("A+ Grade.");
    }
}
```

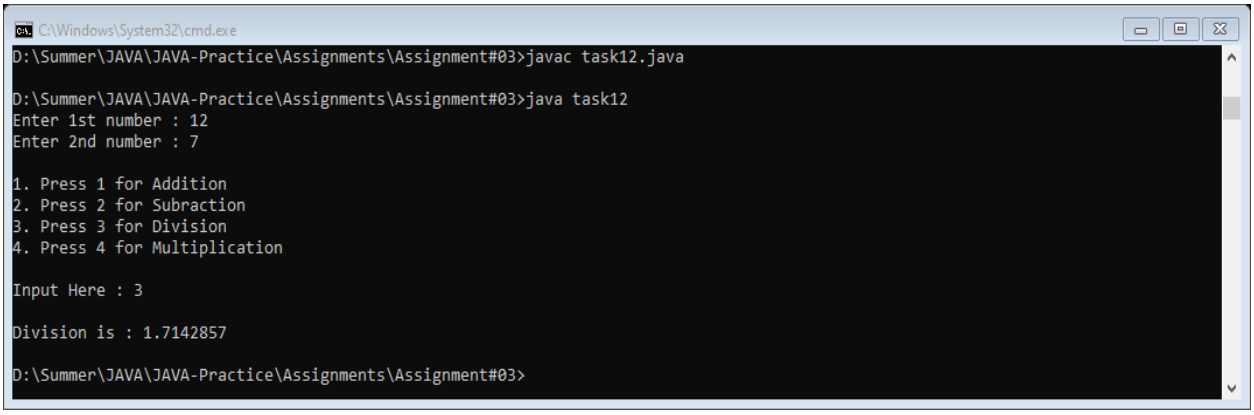


12. Write a C++ Program that contains four user defined function(s) addition(), subtraction(), division(), multiplication(). Develop a calculator as follows
In main() function:
    - A menu with choices addition, subtraction, division and multiplication must be displayed.
    - Get two numbers and a choice from user
    - Call the respective functions with user given number as parameter using switch statement
    - Print the result from addition(), subtraction(), division(), multiplication().

In user defined functions:
    - Plus and Minus function get two integer values and return integer.
    - Multiply and Divide functions get two integer values and return float.

```
import java.util.Scanner;

public class task12 {

    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter 1st number : ");
        float num1 = input.nextFloat();
        System.out.print("Enter 2nd number : ");
        float num2 = input.nextFloat();

        System.out.println("\n1. Press 1 for Addition");
        System.out.println("2. Press 2 for Subraction");
        System.out.println("3. Press 3 for Division");
        System.out.println("4. Press 4 for Multiplication");
        System.out.print("\nInput Here : ");
        int value = input.nextInt();

        task12 obj = new task12();

        switch (value)
        {
```

```
            case 1:
                float result1 = obj.sum(num1,num2);
                System.out.println("\nSum is : "+result1);
                break;

            case 2:
                float result2 = obj.sub(num1,num2);
                System.out.println("\nSubraction is : "+result2);
                break;

            case 3:
                float result3 = obj.div(num1,num2);
                System.out.println("\nDivision is : "+result3);
                break;

            case 4:
                float result4 = obj.mul(num1,num2);
                System.out.println("\nMultiplication is : "+result4);
                break;

        }
    }

    float sum(float a,float b)
    {
        return a+b;
    }

    float sub(float a,float b)
    {
        return a-b;
    }

    float div(float a,float b)
    {
        return a/b;
    }

    float mul(float a,float b)
    {
        return a*b;
    }

}
```



13. Write a C++ that calculate price of purchased fruits.
    A shopkeer supplies following fruits.
    Apple, Banana, Mango, Peach and Grapes
    Unit of each fruit per kg is:
    - Apple = 160
    - Banana = 120
    - Mango = 110
    - Peach = 100
    - Grapes = 130

Ask user to enter purchased quantity of each fruits. Store values in variables.
Write a function Cal_Pric (int, int, int& total) that calculate the price for each fruit.
- For example Cal_Price(160,2,total) saves 320 in variable total.

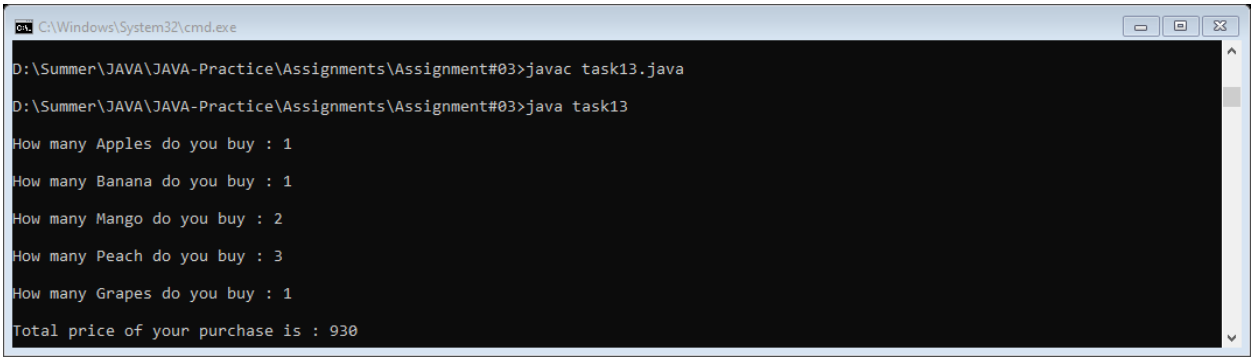
Print the results from main():

#Sample Run

```
====================================
How many Apples did you buy : 2
How many Banana did you buy : 1
How many Mango did you buy : 3
How many Peach did you buy : 4
How many Grapes did you buy : 2
====================================
Price for Apple: 2 * 160 = 320
Price for Banana 1 * 120 = 120
Price for Mango: 3 * 110 = 330
Price for Peach: 4 * 100 = 400
Price for Grapes: 2 * 130 = 260
****************************************
Total Price of your purchase is: 1430
****************************************
```

```java
import java.util.Scanner;

public class task13 {
```

```java
    public static void main(String args[])
    {
        Scanner input = new Scanner(System.in);

        System.out.print("\nHow many Apples do you buy : ");
        int apple = input.nextInt();
        System.out.print("\nHow many Banana do you buy : ");
        int banana = input.nextInt();
        System.out.print("\nHow many Mango do you buy : ");
        int mango = input.nextInt();
        System.out.print("\nHow many Peach do you buy : ");
        int peach = input.nextInt();
        System.out.print("\nHow many Grapes do you buy : ");
        int grapes = input.nextInt();


        task13 obj = new task13();

        obj.Cal_Price(apple,banana,mango,peach,grapes);

    }

    void Cal_Price(int apple, int banana, int mango, int peach, int grapes)
    {
        int total = apple*160+banana*120+mango*110+peach*100+grapes*130;
        System.out.println("\nTotal price of your purchase is : "+total);
    }

}
```



End of Assignment#03