

# Lab-3 Solutions

## Problem1:

/\* The program calculates whether given three numbers are in A.P or not. Since we dont know the order of the numbers

\* we verify the formula for each of the numbers and if any one of them satisfies then the numbers are in A.P\*\*/

```
class Arithprog
{
    public static void main(String args[])
    {
        int a=-2,b = 0,c = 2;

        /*the '||' operator makes if condition true if atleast one of them is true.*/

        if ((a==(b+c)/2)||b==(a+c)/2)||c==(a+b)/2)
            System.out.println("The nummbers are in Arithmetic progression");
        else
            System.out.println("The numbers are not in ap");
    }
}
```

## Problem2:

/\* The program prints the calendar of the month given startdate and noofdays\*/

```
class Calendar
{
    public static void main(String args[])
    {
        int startdate=2,noofdays=31;

        /**\t' makes the println to start writing from next tab sapace.**/
        System.out.println("SUN\tMON\tTUE\tWED\tTHU\tFRI\tSAT");

        /*this loop is to print inital spaces*/
        for(int j=0;j<startdate;j++)
            System.out.print("\t");
    }
}
```

```

/**this loop is to print the numbers. (startdate+i)%7==0 marks the saturday.**/
for(int i=1;i<=noofdays;i++)
{
    if((startdate+i)%7==0) /*'\t' is used so that the starting of the number is from next tab space*/
        System.out.println(i+"\t");
    else
        System.out.print(i+"\t");
}

/**this loop is to print final spaces*/
for(int j = startdate+noofdays;j<35;j++)
    System.out.print("\t");
    System.out.println();
}
}

```

### Problem 3:

/\*\* The program below is to find given a number n, there exists a r suchthat  $n = r!$ \*\*/

```

class Factorialtest
{
    public static void main(String atgs[])
    {
        int num=125,i,factorial=1; // intialize num to n, factorial to 1

        /* the loop starts calculating factorial from 1 and continues till the factorial is equal or exceeds the
        number*/

        for(i=1;factorial<num;i++)
        {
            factorial = factorial*i;
        }

        if(factorial==num)
            System.out.println("There exists a number " + (i-1)); //if a number exists print the number
        else
            System.out.println("No number Exists");
    }
}

```

Exploratory Problem:

```
class Zero
```

```
{  
    public static void main(String args[])  
    {  
        int i,j;  
        i = 2;  
        j = -2;  
  
        // i+j+i+j is printed since it is enclosed in double quotes and whole thing is treated as single string.  
        System.out.println("i+j+i+j");  
  
        System.out.println("i+j"+"i+j");           // i+ji+j is concatenation of two strings "i+j".  
  
        /*Concatenation of string "i+j" and i,j. the '+' operator not treated as arithmetic operator since we  
        already using it as concatenation operator.*/  
        System.out.println("i+j"+i+j);  
  
        /*Since we have parenthesis the '+' operator is treated as arithmetic operator, the result is  
        concatenated to "i+j"*/  
        System.out.println("i+j"+(i+j));  
  
        /*Since there are no strings in all the statements below the '+' operator is treated as arithmetic  
        operator and result is calculated.*/  
        System.out.println((i+j)+i+j);  
        System.out.println(i+j+(i+j));  
        System.out.println((i+j)+(i+j));  
        System.out.println((i+j+i+j));  
        System.out.println(i+j+i+j);  
    }  
}
```