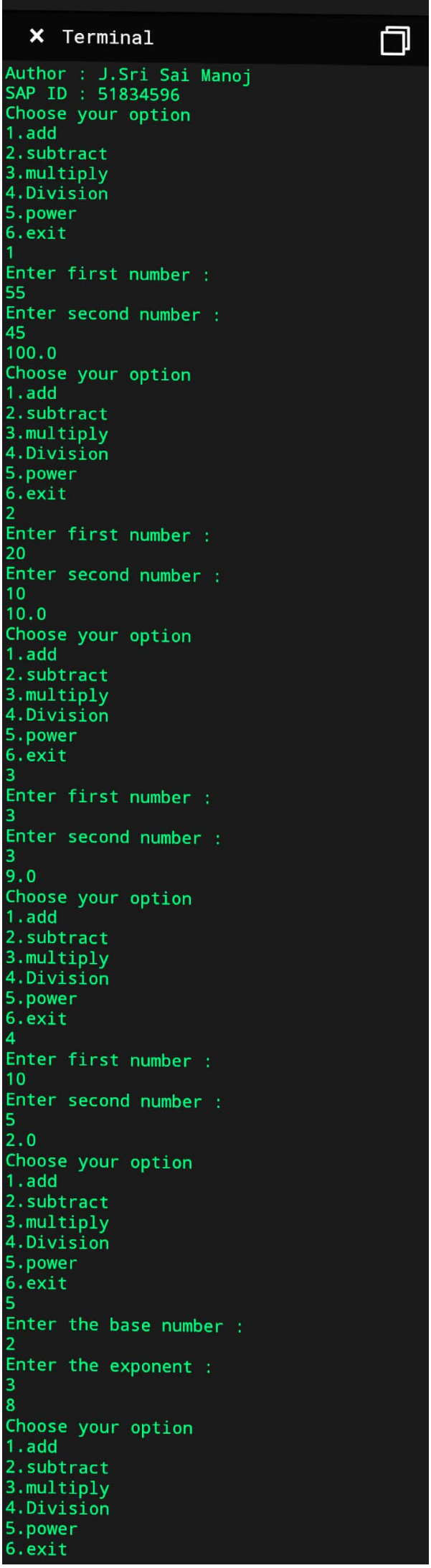
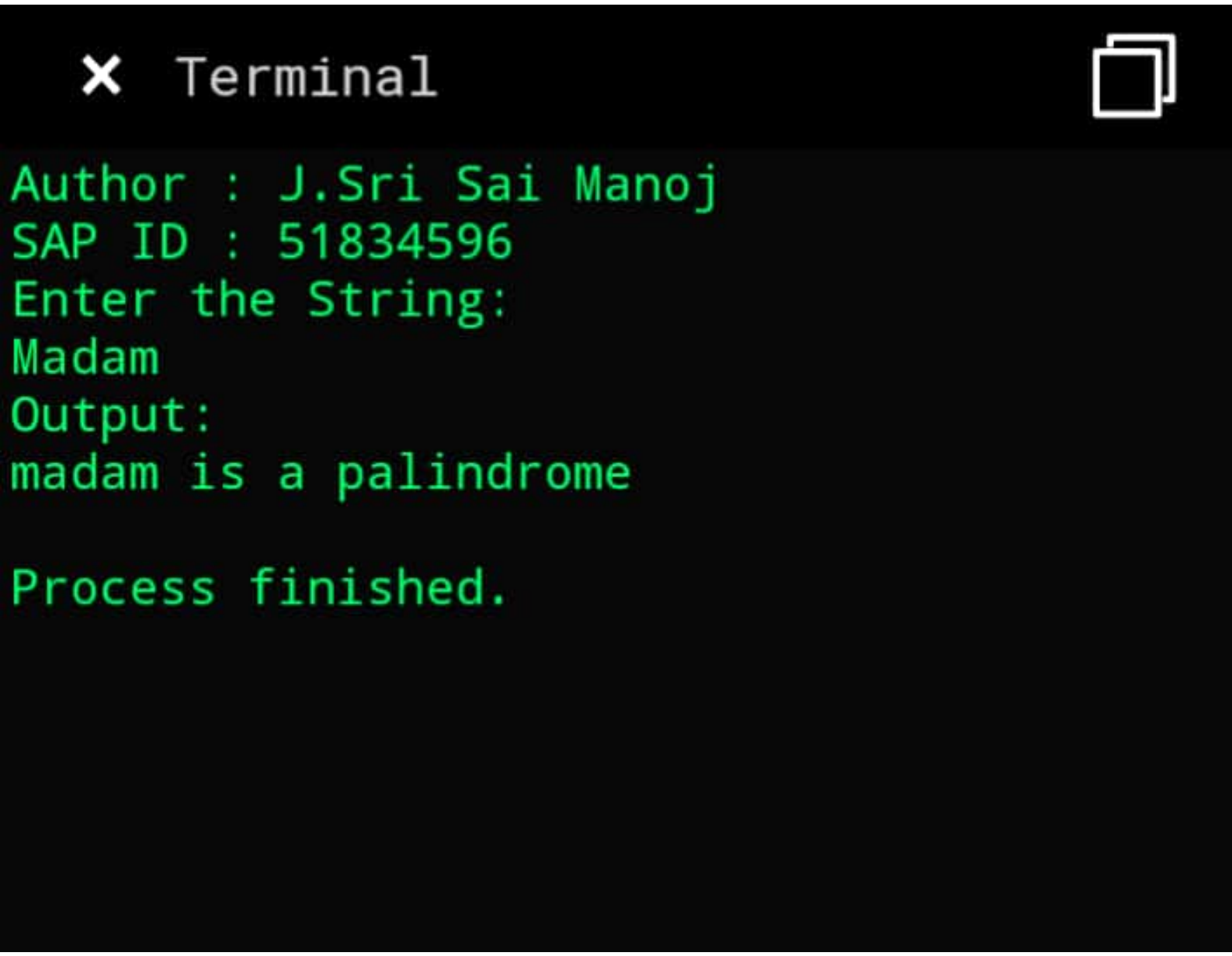
```java
import java.util.Scanner;
import java.lang.Math;
import java.util.InputMismatchException;
class Calculator
 {
    int add(int no1,int no2)
    {
        return no1+no2;
    }
    double add(double no1,double no2)
    {
        return no1+no2;
    }
    float add(float no1,float no2)
    {
        return no1+no2;
    }
    int sub(int no1,int no2)
    {
        return no1-no2;
    }
    double sub(double no1,double no2)
    {
        return no1-no2;
    }
    float sub(float no1,float no2)
    {
        return no1-no2;
    }
    int mul(int no1,int no2)
    {
        return no1*no2;
    }
    double mul(double no1,double no2)
    {
        return no1*no2;
    }
    float mul(float no1,float no2)
    {
        return no1*no2;
    }
    int div(int no1,int no2)
    {
        return no1/no2;
    }
    double div(double no1,double no2)
    {
        return no1/no2;
    }
    float div(float no1,float no2)
    {
        return no1/no2;
    }
    long power(int no1,int no2) throws Exceptior
    {
      if(no1<0 || no2<0)
      {
         throw new Exception("no1 or no2 can't b
      }
      if(no1==0 || no2==0)
      {
         throw new Exception("no1 or no2 can't b
      }
      return (long)Math.pow(no1,no2);
    }
}
```

```
class Dcoder
{
   public static void main(String args[])
   {
     Scanner sc=new Scanner(System.in);
     Calculator c=new Calculator();
     System.out.println("Author : J.Sri Sai Manc
     System.out.println("SAP ID : 51834596");
    try
    {
     while(true)
     {

       System.out.println("Choose your option\n1
       int option=sc.nextInt();
       switch(option)
       {
         case 1 :
           System.out.println("Enter first numbe
           double first=sc.nextInt();
           System.out.println("Enter second numb
           double second=sc.nextInt();
           System.out.println(first+second);
           break;
         case 2 :
           System.out.println("Enter first numbe
           first=sc.nextInt();
           System.out.println("Enter second numb
           second=sc.nextInt();
           System.out.println(first-second);
           break;
         case 3 :
           System.out.println("Enter first numbe
           first=sc.nextInt();
           System.out.println("Enter second numb
           second=sc.nextInt();
           if(first==0 && second==0)
           {
             throw new Exception("Both numbers c
           }
           System.out.println(first*second);
           break;
         case 4 :
           System.out.println("Enter first numbe
           first=sc.nextInt();
           System.out.println("Enter second numb
           second=sc.nextInt();
           if(second==0)
           {
             throw new Exception("You cannot div
           }
           System.out.println(first/second);
           break;
         case 5 :
           System.out.println("Enter the base nu
           int base=sc.nextInt();
           System.out.println("Enter the exponer
           int exp=sc.nextInt();
           System.out.println(c.power(base,exp))
           break;
         case 6 :
           System.out.println("Invalid input");
         default :
           System.out.println("Invalid input");
        }
       }
      }
      catch(InputMismatchException ime)
       {
         System.out.println("Invalid input");
       }
       catch(ArithmeticException ae)
       {
         System.out.println(ae.getMessage());
       }
       catch(Exception e)
       {
         System.out.println(e.getMessage());
       }
   }
}
```



```java
import java.util.Scanner;
class Palindrome
{
    public static boolean isPal(String str)
    {
        if(str.length() == 0 || str.length() ==
            return true;
        if(str.charAt(0) == str.charAt(str.lengt
        return isPal(str.substring(1, str.length
        return false;
    }
    public static void main(String[]args)
    {
        Scanner scanner = new Scanner(System.in)
        System.out.println("Author : J.Sri Sai M
        System.out.println("SAP ID : 51834596");
        System.out.println("Enter the String:");
        String string = scanner.nextLine();
        string = string.toLowerCase();
        System.out.println("Output: ");
        if(isPal(string))
            System.out.println(string + " is a p
        else
            System.out.println(string + " is not
    }
}
```

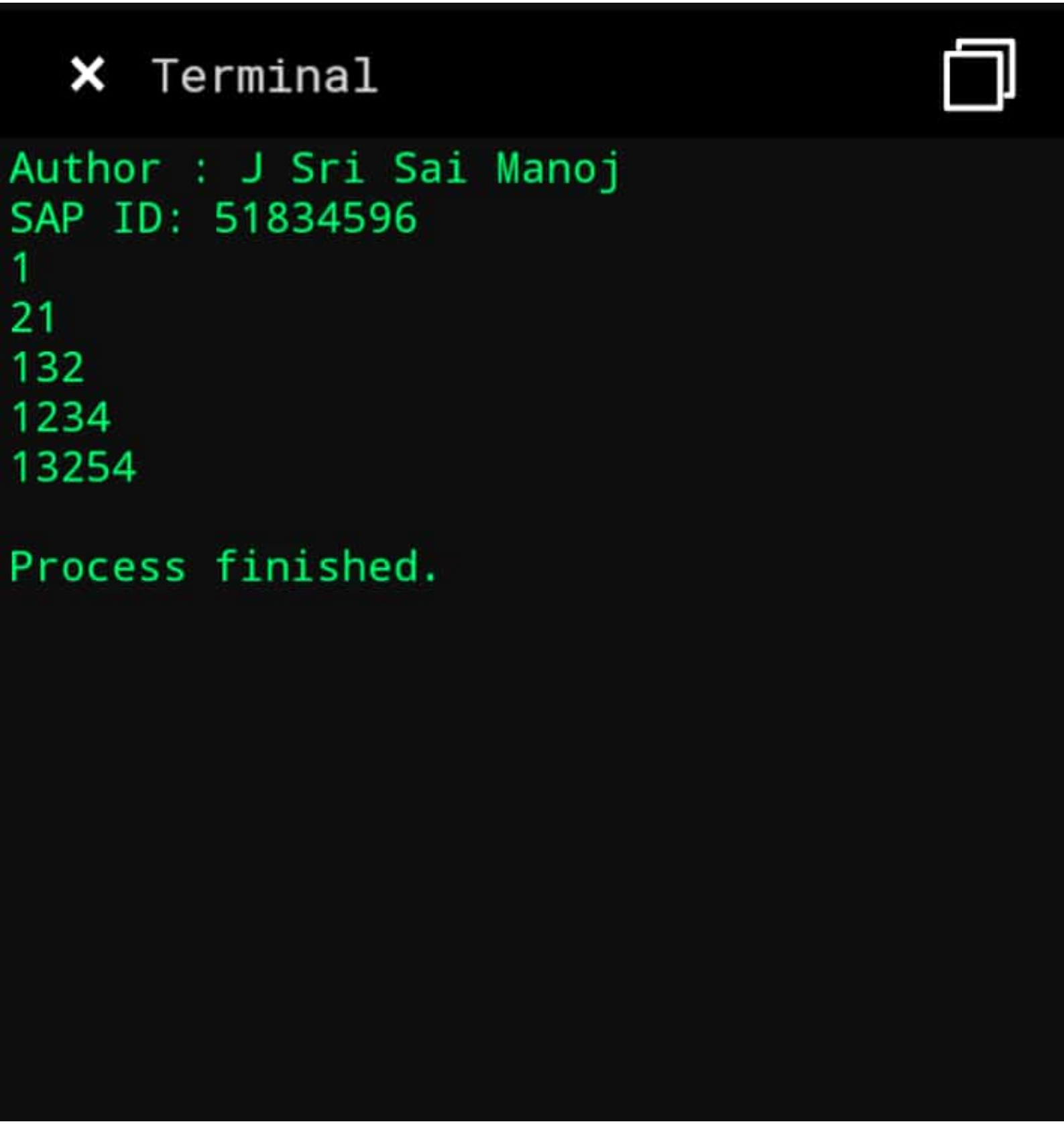


```java
import java.util.*;
public class OddNumbers
{
  public static void main (String[] args)
  {
    System.out.println("Author : J Sri Sai Manoj
    System.out.println("SAP ID : 51834596");
    int count=0;
    int rem=0 ;
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter a number: ");
    int n= sc.nextInt();
    while(n>0)
    {
      rem=n%10;
      if(rem%2!=0)
      {
        count++;
      }
      n=n/10;
    }
    System.out.println("Odd numbers in given num

  }
}
```

Terminal

```
Author : J Sri Sai Manoj
SAP ID : 51834596
Enter a number:
912873465
Odd numbers in given number are: 5

Process finished.
```

```java
class Pattern
 {
   public static void main(String args[])
   {
     System.out.println("Author : J Sri Sai Manoj
     System.out.println("SAP ID: 51834596");
     int k=1;
     for(int i=1;i<=5;i++)
     {
       for(int j=1;j<=i;j++)
       {
         if(j==1)
         {
           k=j;
         }
         if(i!=4)
         {
           if(i%2==0)
           {
             if(j%2!=0)
             {
               k=j+1;
               System.out.print(k);
               k=k-1;
             }
             else
             {
               System.out.print(k);
             }
           }
           else
           {
             if(j%2==0)
             {
               k=j+1;
               System.out.print(k);
               k=k-1;
             }
             else
             {
               System.out.print(k);
             }
           }
         }
         else
         {
           System.out.print(j);
         }
       }
       System.out.println();
     }
   }
}
```



```java
class BubbleSort
{
    public static void main (String[] args)
    {
        System.out.println("Author : J Sri Sai M
        System.out.println("SAP ID: 51834596");
        int a[] = {12, 16, 3, 20, 33, 42, 19};
        for(int j = 0; j<a.length; j++)
        {
            boolean swapped = false;
            int i = 0;
            while(i<7-1)
            {
                if (a[i] > a[i+1])
                {
                    int temp = a[i];
                    a[i] = a[i+1];
                    a[i+1] = temp;
                    swapped = true;
                }
                i++;
            }
            if (!swapped)
                break;
        }
        System.out.println("After Bubble Sorting
        for(int x : a)
        {
            System.out.print(x+" ");
        }
    }
}
```

Terminal

```
Author : J Sri Sai Manoj
SAP ID: 51834596
After Bubble Sorting:
3 12 16 19 20 33 42
Process finished.
```