```java
import java.util.Scanner;
import java.lang.Math;
import java.util.InputMismatchException;
class Calculator
 {
    int add(int a,int b)
    {
        return a+b;
    }
    double add(double a,double b)
    {
        return a+b;
    }
    float add(float a,float b)
    {
        return a+b;
    }
    int sub(int a,int b)
    {
        return a-b;
    }
    double sub(double a,double b)
    {
        return a-b;
    }
    float sub(float a,float b)
    {
        return a-b;
    }
    int mul(int a,int b)
    {
        return a*b;
    }
    double mul(double a,double b)
    {
        return a*b;
    }
    float mul(float a,float b)
    {
        return a*b;
    }
    int div(int a,int b)
    {
        return a/b;
    }
    double div(double a,double b)
```

```
43      {
44          return a/b;
45      }
46      double div(double a,double b)
47      {
48          return a/b;
49      }
50      float div(float a,float b)
51      {
52          return a/b;
53      }
54      long power(int a,int b) throws
    Exception
55      {
56        if(a<0 || b<0)
57        {
58           throw new Exception("a or b can't
    be negative");
59        }
60        if(a==0 || b==0)
61        {
62           throw new Exception("a or b can't
    be zero");
63        }
64        return (long)Math.pow(a,b);
65      }
66  }
67  class Solution
68  {
69     public static void main(String args[])
70     {
71       System.out.println("Name : V.
    Jahnavi\nSAP ID : 51834788");
72       Scanner sc=new Scanner(System.in);
73       Calculator cal=new Calculator();
74      try
75      {
76       while(true)
77       {
78
79         System.out.println("Choose your
    option\n1.ADDITION\n2.SUBTRACTION\n3.MULTIP
    LICATION\n4.DIVISION\n5.POWER\n6.EXIT");
80         int option=sc.nextInt();
81         switch(option)
82         {
```

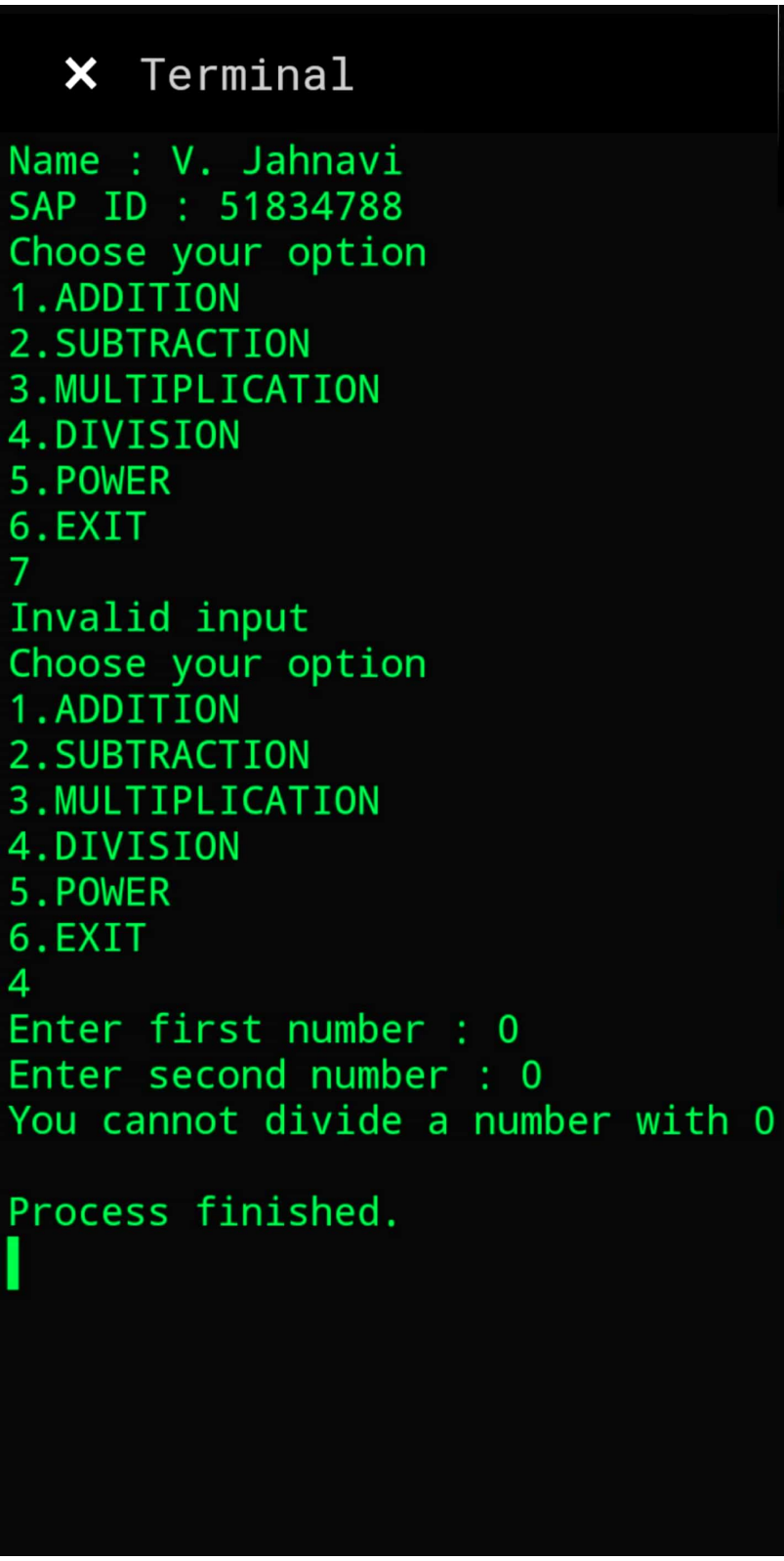
```
80          int option=sc.nextInt();
81          switch(option)
82          {
83            case 1 :
84              System.out.print("Enter first
    number : ");
85              double num1=sc.nextInt();
86              System.out.print("Enter second
    number : ");
87              double num2=sc.nextInt();
88
    System.out.println("Output :"+cal.add(num1,
    num2));
89              break;
90            case 2 :
91              System.out.print("Enter first
    number : ");
92              num1=sc.nextInt();
93              System.out.print("Enter second
    number : ");
94              num2=sc.nextInt();
95
    System.out.println("Output :"+cal.sub(num1,
    num2));
96              break;
97            case 3 :
98              System.out.print("Enter first
    number : ");
99              num1=sc.nextInt();
100             System.out.print("Enter second
    number : ");
101             num2=sc.nextInt();
102             if(num1==0 && num2==0)
103             {
104               throw new Exception("Both
    numbers cannot be zero");
105             }
106
    System.out.println("Output :"+cal.mul(num1,
    num2));
107             break;
108           case 4 :
109             System.out.print("Enter first
    number : ");
110             num1=sc.nextInt();
111             System.out.print("Enter second
```

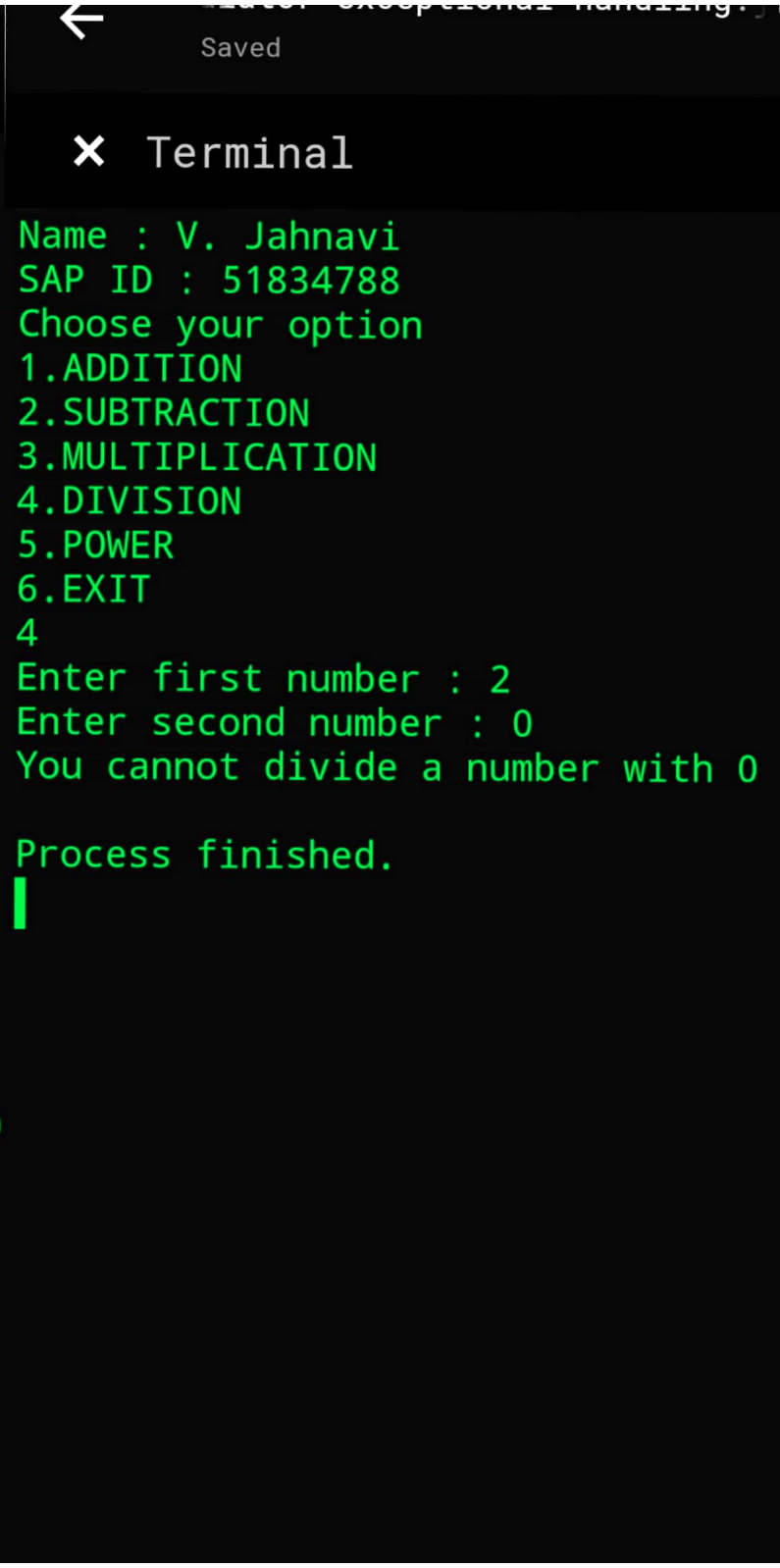
```
109             System.out.print("Enter first
    number : ");
110             num1=sc.nextInt();
111             System.out.print("Enter second
    number : ");
112             num2=sc.nextInt();
113             if(num2==0)
114             {
115               throw new Exception("You
    cannot divide a number with 0");
116             }
117
    System.out.println("Output :"+cal.div(num1,
    num2));
118             break;
119           case 5 :
120             System.out.print("Enter the base
    number : ");
121             int base=sc.nextInt();
122             System.out.print("Enter the
    exponent : ");
123             int exp=sc.nextInt();
124
    System.out.println("output :"+cal.power(bas
    e,exp));
125             break;
126           case 6 :
127             System.exit(0);
128           default :
129             System.out.println("Invalid
    input");
130          }
131        }
132      }
133      catch(InputMismatchException i)
134       {
135         System.out.println("Invalid
    input");
136        }
137        catch(ArithmeticException ae)
138        {
139
    System.out.println(ae.getMessage());
140        }
141        catch(Exception e)
142        {
```

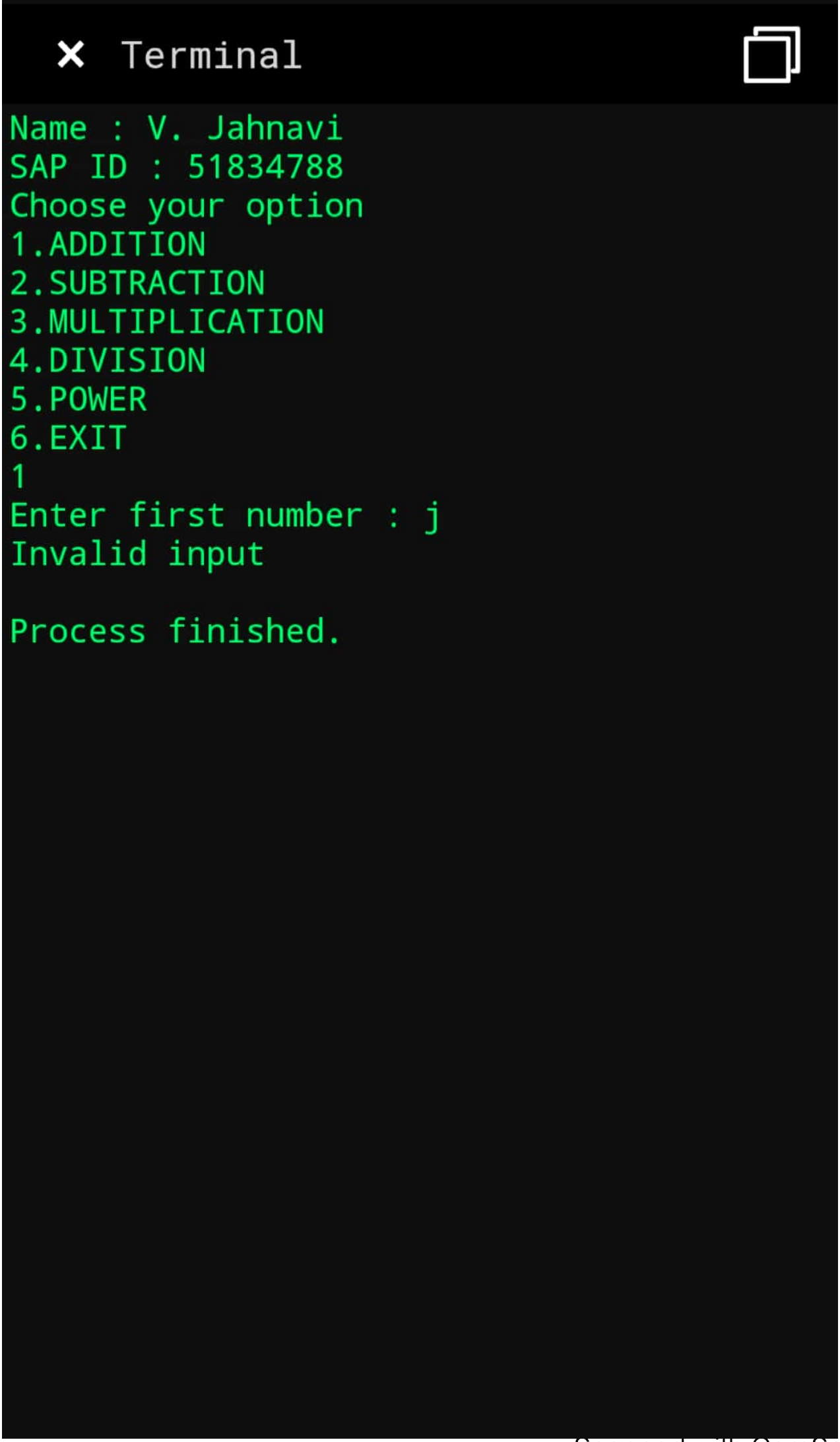
```
112             num2=sc.nextInt();
113             if(num2==0)
114             {
115               throw new Exception("You
    cannot divide a number with 0");
116             }
117
    System.out.println("Output :"+cal.div(num1,
    num2));
118             break;
119           case 5 :
120             System.out.print("Enter the base
    number : ");
121             int base=sc.nextInt();
122             System.out.print("Enter the
    exponent : ");
123             int exp=sc.nextInt();
124
    System.out.println("output :"+cal.power(bas
    e,exp));
125             break;
126           case 6 :
127             System.exit(0);
128           default :
129             System.out.println("Invalid
    input");
130          }
131        }
132      }
133      catch(InputMismatchException i)
134       {
135         System.out.println("Invalid
    input");
136        }
137        catch(ArithmeticException ae)
138        {
139
    System.out.println(ae.getMessage());
140        }
141        catch(Exception e)
142        {
143
    System.out.println(e.getMessage());
144        }
145    }
146 }
```

```
Terminal
Name : V. Jahnavi
SAP ID : 51834788
Choose your option
1.ADDITION
2.SUBTRACTION
3.MULTIPLICATION
4.DIVISION
5.POWER
6.EXIT
1
Enter first number : 2
Enter second number : 3
Output :5.0
Choose your option
1.ADDITION
2.SUBTRACTION
3.MULTIPLICATION
4.DIVISION
5.POWER
6.EXIT
2
Enter first number : 3
Enter second number : 4
Output :-1.0
Choose your option
1.ADDITION
2.SUBTRACTION
3.MULTIPLICATION
4.DIVISION
5.POWER
6.EXIT
3
Enter first number : 2
Enter second number : 5
Output :10.0
```

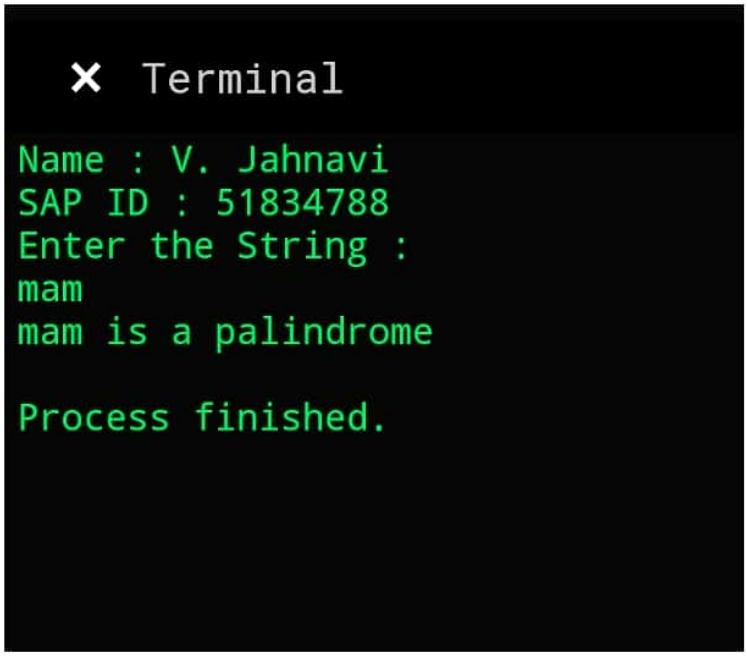
```
Terminal
Enter first number : 2
Enter second number : 5
Output :10.0
Choose your option
1.ADDITION
2.SUBTRACTION
3.MULTIPLICATION
4.DIVISION
5.POWER
6.EXIT
4
Enter first number : 2
Enter second number : 6
Output :0.3333333333333333
Choose your option
1.ADDITION
2.SUBTRACTION
3.MULTIPLICATION
4.DIVISION
5.POWER
6.EXIT
5
Enter the base number : 2
Enter the exponent : 3
output :8
Choose your option
1.ADDITION
2.SUBTRACTION
3.MULTIPLICATION
4.DIVISION
5.POWER
6.EXIT
6

Process finished
```

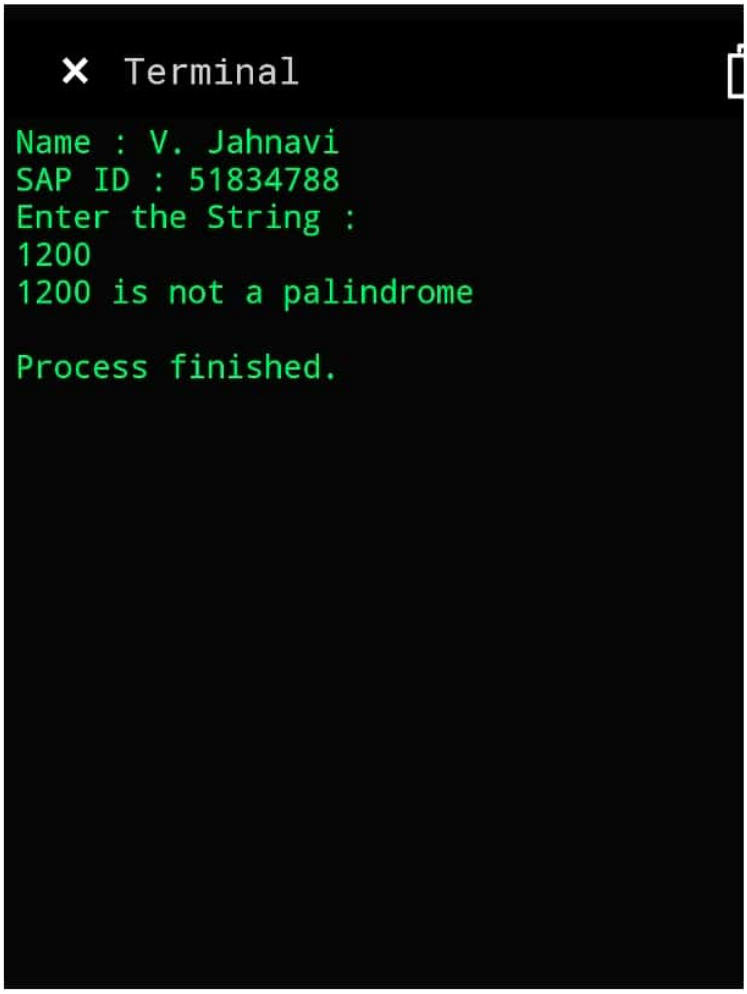


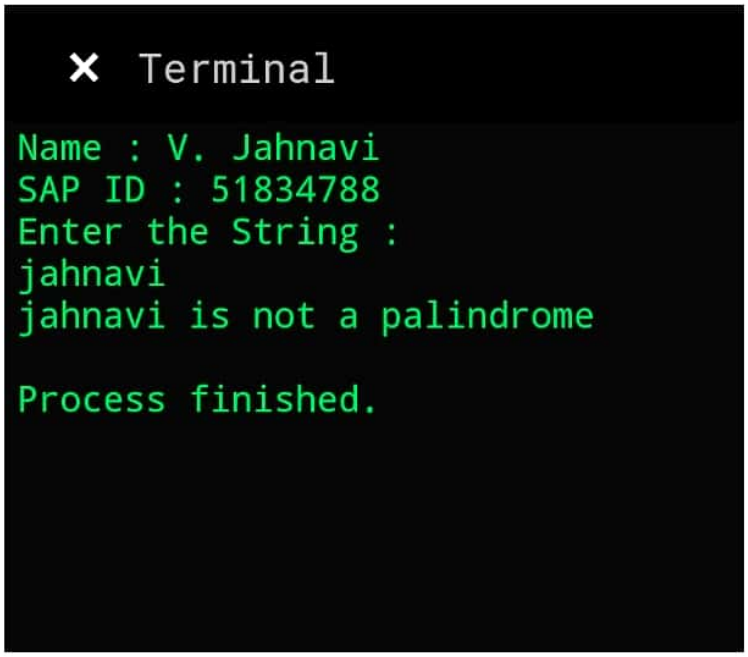


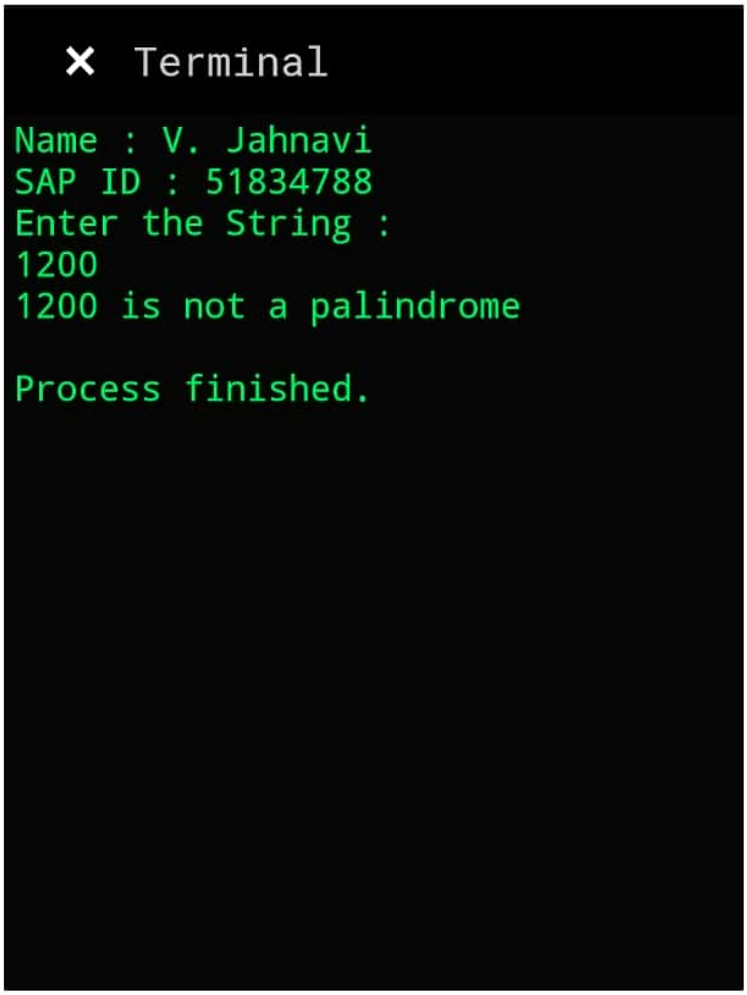


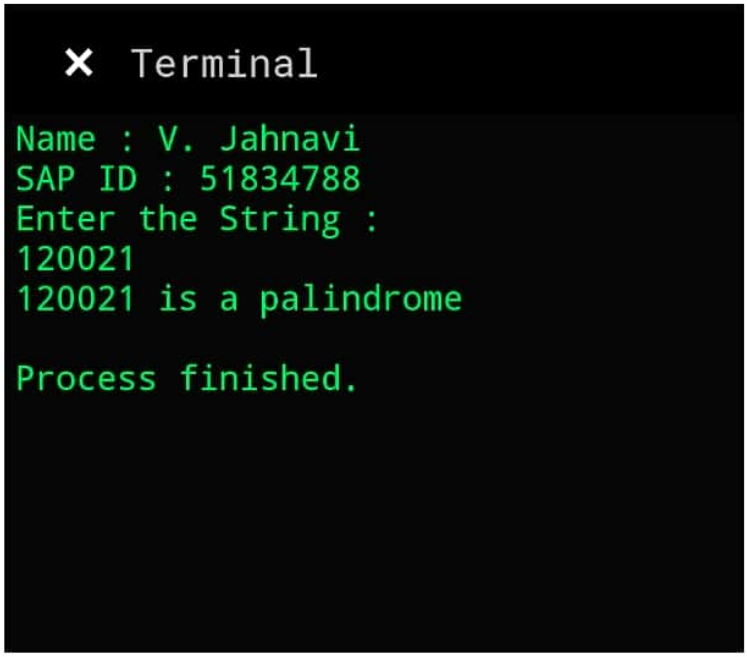
```java

import java.util.Scanner;
public class RecursivePalindromeJava
{
   // to check if string is palindrome using recursion
   public static boolean checkPalindrome(String str)
   {
      if(str.length() == 0 || str.length() == 1)
         return true;
      if(str.charAt(0) == str.charAt(str.length() - 1))
         return checkPalindrome(str.substring(1, str.length() - 1));
      return false;
   }
   public static void main(String[]args)
   {

System.out.println("Name :V.Jahnavi\nSAP ID : 51834788");
      Scanner sc = new Scanner(System.in);
      System.out.println("Please enter a string : ");
      String strInput = sc.nextLine();
      if(checkPalindrome(strInput))
      {
         System.out.println(strInput + " is palindrome");
      }
      else
      {
         System.out.println(strInput + " not a palindrome");
      }
      sc.close();
   }
}
```

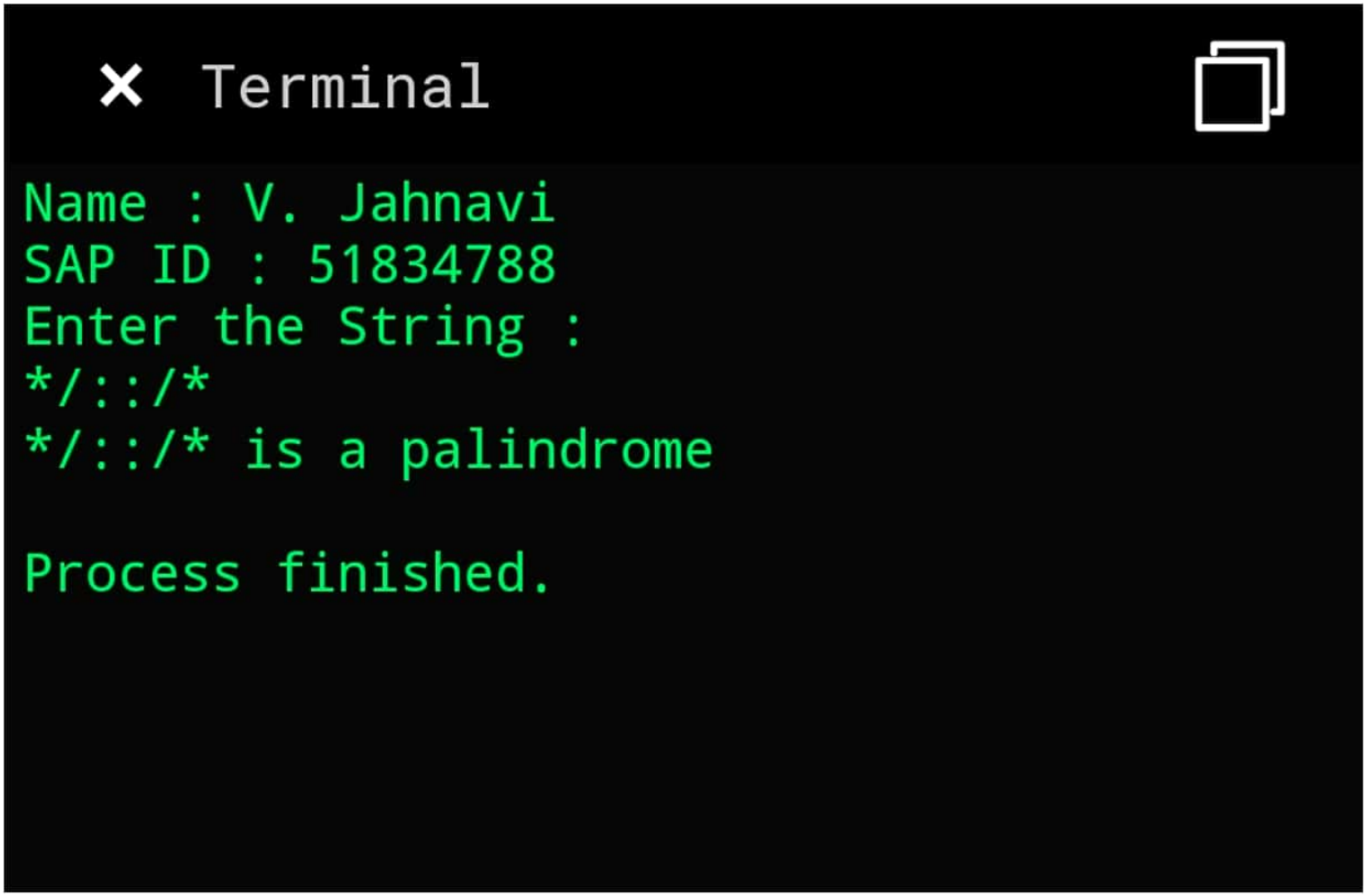


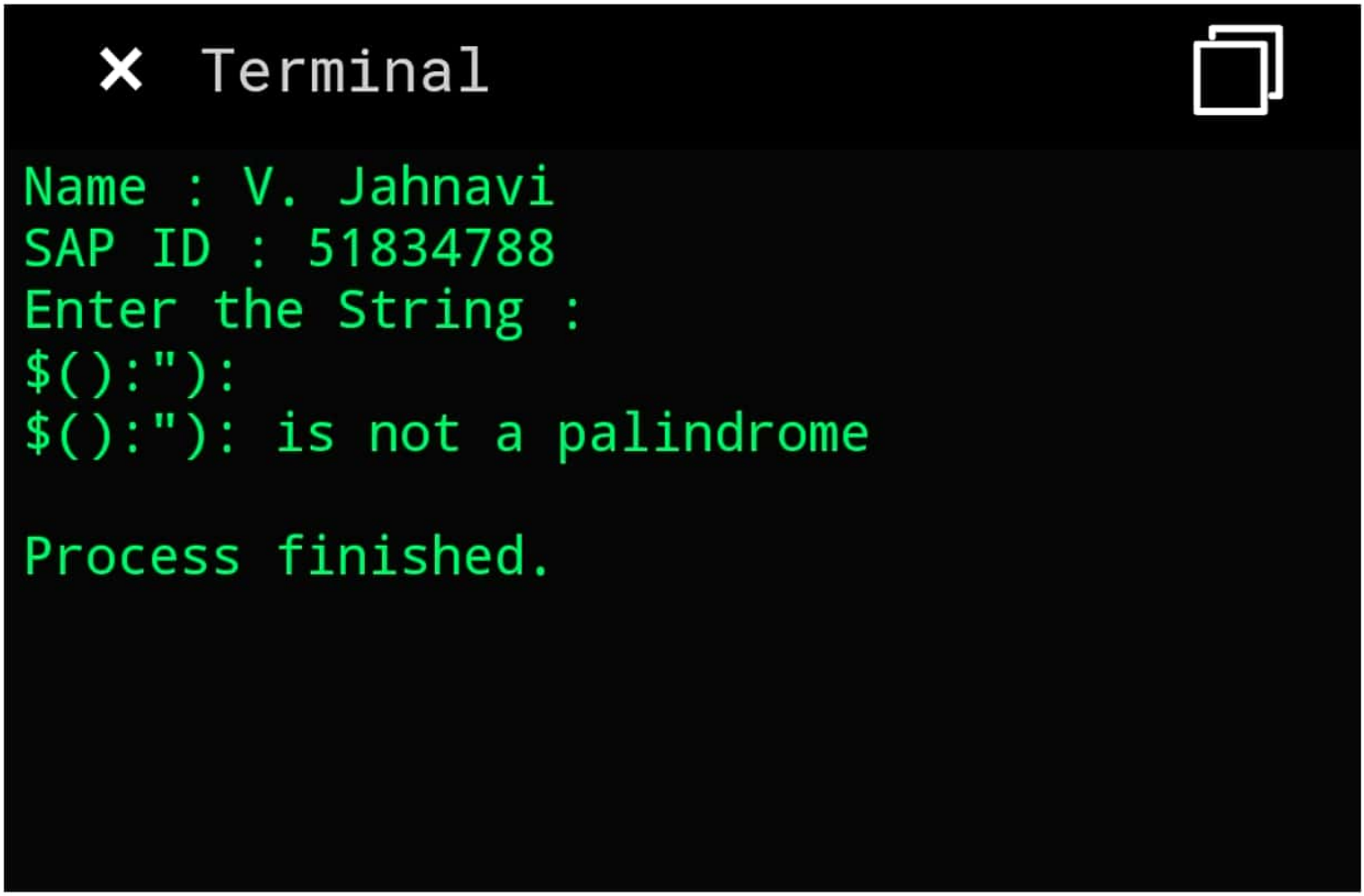




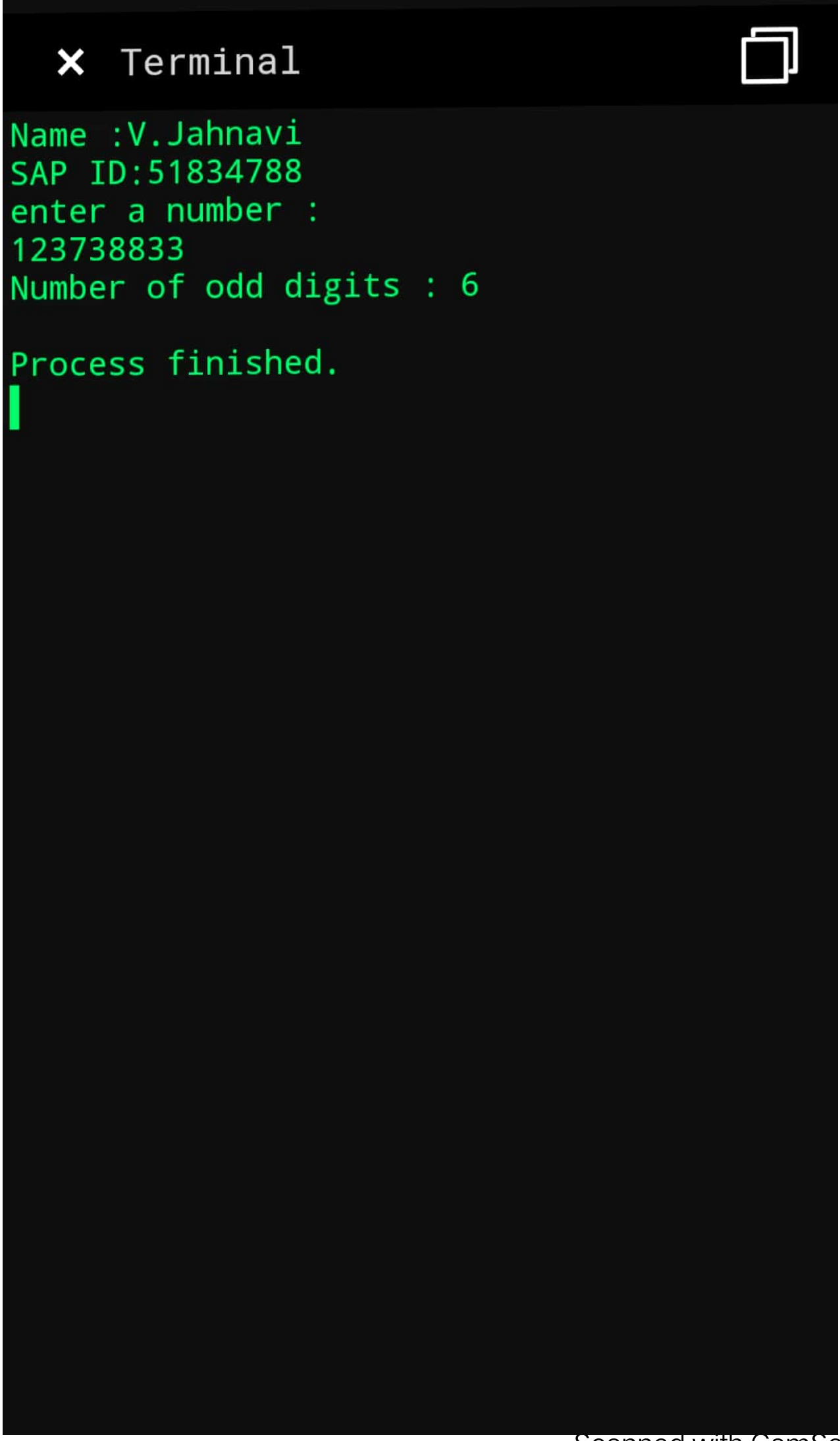






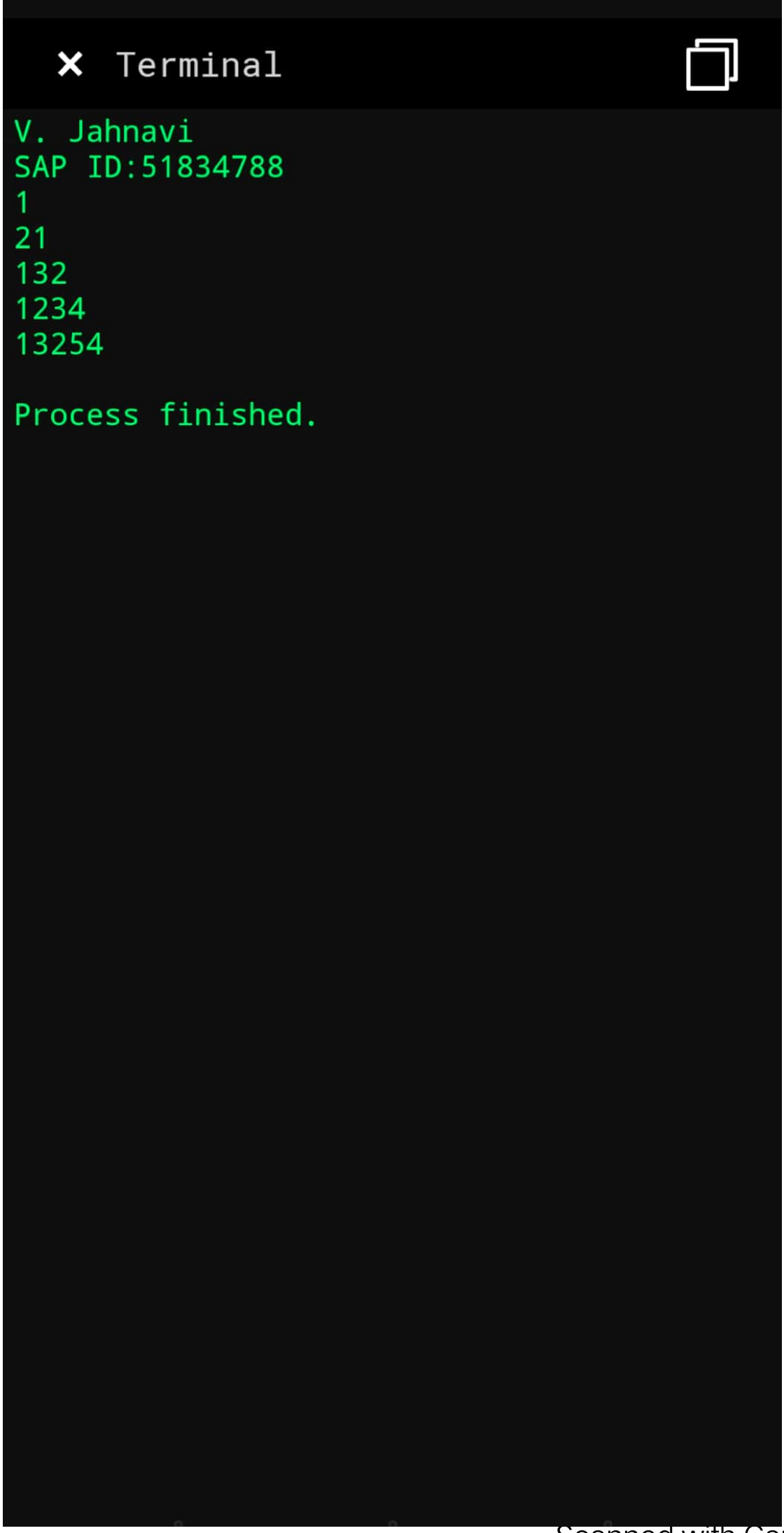


```java
import java.util.Scanner;
public class Main
{
  public static void main (String[] args)
  {
    System.out.println("Name :V.Jahnavi\nSAP ID:51834788");
    int count=0;
    int rem=0 ;
    Scanner sc=new Scanner(System.in);
    System.out.println("enter a number :");
    int n= sc.nextInt();
    while(n>0)
    {
      rem=n%10;
      if(rem%2!=0)
      {
        count++;
      }
      n=n/10;
    }
    System.out.println("Number of odd digits : "+count);
  }
}
```



```
class Pattern
 {
   public static void main(String args[])
   {
     System.out.println("V. Jahnavi\nSAP ID:
51834788");
      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
          {
```

```
8       {
9         for(int j=1;j<=i;j++)
10        {
11          if(j==1)
12          {
13            k=j;
14          }
15          if(i!=4)
16          {
17            if(i%2==0)
18            {
19              if(j%2!=0)
20              {
21                k=j+1;
22                System.out.print(k);
23                k=k-1;
24              }
25              else
26              {
27                System.out.print(k);
28              }
29            }
30            else
31            {
32              if(j%2==0)
33              {
34                k=j+1;
35                System.out.print(k);
36                k=k-1;
37              }
38              else
39              {
40                System.out.print(k);
41              }
42            }
43          }
44          else
45          {
46            System.out.print(j);
47          }
48        }
49        System.out.println();
50      }
51    }
52  }
53
```



```java
import java.util.Scanner;
public class Demo
{
  public static void main(String []args)
  {
    System.out.println("Name :V. Jahnavi\nSAP ID:51843788");
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter Size :");
    int n = sc.nextInt();
    sc.nextLine();
    String[] str = new String[n];
    System.out.println("enter "+n+" elements : ");
    for (int i=0;i<n;i++)
    {
      str[i]=sc.nextLine();
    }
    for (int i=0;i<n;i++)
    {
      for (int j=i+1;j<n;j++)
      {
         if (str[i].compareTo(str[j])>0)
         {
            String temp = str[j];
            str[j] = str[i];
            str[i] = temp;
         }
      }
     }
     System.out.println("Sorted string : ");
     for (int i=0;i<n;i++)
     {
        System.out.println(str[i]);
     }
    }
}
```