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24MCA0242

PMCA502P - JAVA PROGRAMMING LAB

DATE: 13-SEP-2024

Q1: Develop three Java files to implement the serialization and deserialization. a. Create a Bank Account class which represents account number, name and balance amount. Design methods to get input and print the details. b. Create a Java file to serialize 'n' objects of the Bank Account class. c. Create another Java file to deserialize those 'n' objects and print the details along with the interest amount for the balance money in the account. 5% of interest to be offered for everyone.

CODE:

BankAccount.java FILE:

```
import java.util.Scanner;

import java.io.*;

public class BankAccount implements Serializable{

	int accNo,balAmt=0;

	String name;

	public void getData(){

		Scanner sc=new Scanner(System.in);

		System.out.println("Enter Account Number: ");

		accNo=sc.nextInt();

		sc.nextLine();

		System.out.println("Enter the name: ");

		name=sc.nextLine();

		System.out.println("Enter Account Balance: ");

		balAmt=sc.nextInt();

	}
```

```
	public void printData(){
		System.out.println("----------Account Details----------");
		System.out.println("Account Balance: " +accNo);
		System.out.println("Enter Account Name: " +name);
		System.out.println("Enter Account Balance: " +balAmt);
	}
}
```

BankSerialize.java FILE:

```
import java.util.Scanner;
import java.io.*;
public class BankSerialize {
	public static void main(String[] args) throws IOException, FileNotFoundException,
ClassNotFoundException{
		FileOutputStream fos = new FileOutputStream("bank_details.txt");
		ObjectOutputStream oos = new ObjectOutputStream(fos);
		int i,n;
		Scanner inp=new Scanner(System.in);
		System.out.println("Enter the number of Accounts: ");
		n=inp.nextInt();
		BankAccount []objs=new BankAccount[n];
		for(i=0;i<n;i++){
			objs[i] = new BankAccount();
			objs[i].getData();
			oos.writeObject(objs[i]);
		}
```

```
            System.out.println("Data inserted into file bank_details.txt");
            oos.close();
            fos.close();
        }
}
```

BankDeserialize.java FILE:

```
import java.util.Scanner;
import java.io.*;
public class BankDeSerialize {
        public static void main(String[] args) throws IOException, FileNotFoundException,
ClassNotFoundException{
            FileInputStream fis = new FileInputStream("bank_details.txt");
            ObjectInputStream ois = new ObjectInputStream(fis);
            BankAccount obj1;
            System.out.println("Data read from file bank_details.txt");
            while(fis.available() >0){
                obj1=(BankAccount)ois.readObject();
                obj1.printData();
            }
            ois.close();
            fis.close();

        }
}
```

OUTPUTS:

```
C:\Users\batch1\Desktop\24MCA0242>javac BankAccount.java
```

SERIALIZE:

```
C:\Users\batch1\Desktop\24MCA0242>javac BankSerialize.java

C:\Users\batch1\Desktop\24MCA0242>java BankSerialize
Enter the number of Accounts:
5
Enter Account Number:
101
Enter the name:
Gopu
Enter Account Balance:
5000
Enter Account Number:
102
Enter the name:
Tamilkumaran
Enter Account Balance:
6000
Enter Account Number:
103
Enter the name:
Ranjith
Enter Account Balance:
7000
Enter Account Number:
104
Enter the name:
Akash
Enter Account Balance:
10000
Enter Account Number:
105
Enter the name:
Nishant
Enter Account Balance:
6000
Data inserted into file bank_details.txt

C:\Users\batch1\Desktop\24MCA0242>
```

DESERIALIZE

```
C:\Users\batch1\Desktop\24MCA0242>javac BankDeSerialize.java

C:\Users\batch1\Desktop\24MCA0242>java BankDeSerialize
Data read from file bank_details.txt
----------Account Details----------
Account Balance: 101
Enter Account Name: Gopu
Enter Account Balance: 5000
----------Account Details----------
Account Balance: 102
Enter Account Name: Tamilkumaran
Enter Account Balance: 6000
----------Account Details----------
Account Balance: 103
Enter Account Name: Ranjith
Enter Account Balance: 7000
----------Account Details----------
Account Balance: 104
Enter Account Name: Akash
Enter Account Balance: 10000
----------Account Details----------
Account Balance: 105
Enter Account Name: Nishant
Enter Account Balance: 6000

C:\Users\batch1\Desktop\24MCA0242>
```

2. Develop a package called mathprocess which has a class to do the following. a. Define a static method to find factorial for the given parameter and it returns it. b. Define another non-static method which takes array of integer as parameter and finds the average of the array. It returns the average value to the invoked program. Design a test program in Java to import this package and demonstrate the methods.

Code:

Demo:

```
package mathprocess;

public class demo{

   static int fact=1;

        static int avg;

        public static int factorial(int n)
```

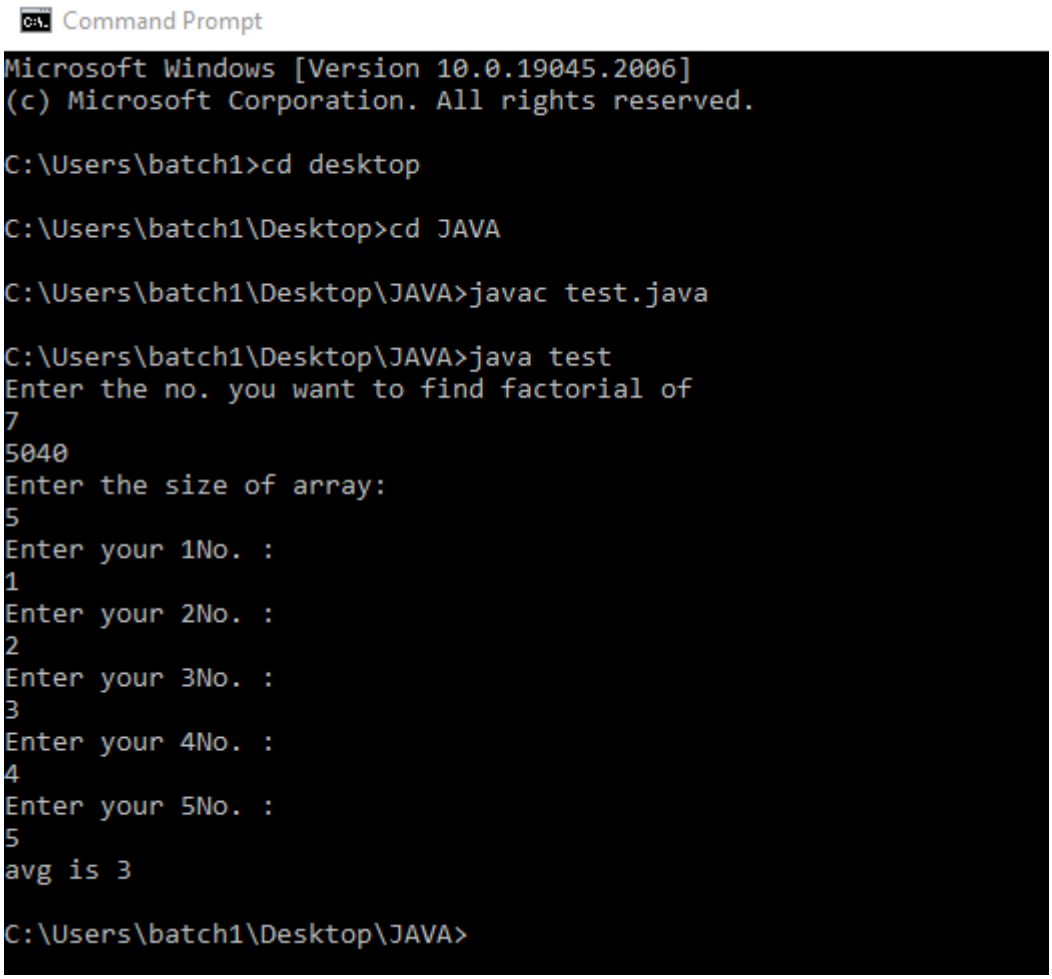
```
	{
		for(int i=1;i<=n;++i)
		{
			fact*=i;
		}
		return fact;
	}
	public int avg(int arr[])
	{
		for(int i=0;i<arr.length;i++)
		{
			avg=avg+arr[i];
		}
		avg=avg/arr.length;
		return avg;
	}
}
```

Test:

```
import mathprocess.*;
import java.util.Scanner;
class test{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		demo f1 =new demo();
```

```
            System.out.println("Enter the no. you want to find factorial of ");
            int n=sc.nextInt();
            System.out.println(f1.factorial(n));
            System.out.println("Enter the size of array: ");
            int size=sc.nextInt();
            int arr[]=new int[size];
            for(int i=0;i<size;i++)
            {
                  System.out.println("Enter your "+(i+1)+"No. : ");
                  arr[i]=sc.nextInt();
            }
            System.out.println("avg is "+f1.avg(arr));
      }
}
```

OUTPUT:


Command Prompt
Microsoft Windows [Version 10.0.19045.2006]
(c) Microsoft Corporation. All rights reserved.
C:\Users\batch1>cd desktop
C:\Users\batch1\Desktop>cd JAVA
C:\Users\batch1\Desktop\JAVA>javac test.java
C:\Users\batch1\Desktop\JAVA>java test
Enter the no. you want to find factorial of
7
5040
Enter the size of array:
5
Enter your 1No. :
1
Enter your 2No. :
2
Enter your 3No. :
3
Enter your 4No. :
4
Enter your 5No. :
5
avg is 3
C:\Users\batch1\Desktop\JAVA>