1.Read an Employee data with idno, name and mobilenumber (regular expression) and compare the mobile number must have only 10 digits name can consists of only alphabets , space character idno number consists of 5 digits

```
package nikki.com;

import java.util.Scanner;
import java.util.regex.Pattern;
public class Employee_validator {
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);


//Regular Expression Pattern

String mobilePattern = "\\d{10}";   // 10 digits
String namePattern = "[A-Za-z ]+";    // alphabets and space characters

System.out.println("Enter Employee ID:");
String id = sc.next();
System.out.println("Enter Employee name:");
String name = sc.next();
System.out.println("Enter Employee Mobilenumber:");
String mobile = sc.next();



// Validating mobile number

if (!Pattern.matches(mobilePattern, mobile)) {
System.out.println("Invalid mobile number!");
return;
}
```

```
// Validating name

if (!Pattern.matches(namePattern, name)) {
System.out.println("Invalid name!");
return;
}
System.out.println("Employee data is valid!");
}
}
```

Output:

```
Enter Employee ID:
2256
Enter Employee name:
Nikitha
Enter Employee Mobile number:
9948970135
Employee data is valid!
```

2. Write a mutithreading program, thread 1 : to display all perfect numbers, thread 2 : to display factorial value of numbers from 1 to 10.

```
package nikki.com;
class PerfectNumberThread implements Runnable {
@Override
public void run() {
System.out.println("Perfect Numbers:");
for (int i = 1; i <= 1000; i++) {
try {
if (isPerfectNumber(i)) {
System.out.println(i);
}
} catch (Exception e) {
System.out.println("An exception occurred: " + e.getMessage());
}
}
}
private boolean isPerfectNumber(int number) throws Exception {
if (number < 1) {
throw new Exception("Number must be greater than 0.");
}
int sum = 0;
for (int i = 1; i < number; i++) {
if (number % i == 0) {
sum += i;
```

```
}
}
return sum == number;
}
}

//factorial
class FactorialThread implements Runnable {
@Override
public void run() {
//System.out.println("Factorial Values:");
for (int i = 1; i <= 10; i++) {
try {
Thread.sleep(2000);
System.out.println("Factorial value :");
System.out.println(i + "! = " + calculateFactorial(i));
} catch (Exception e) {
System.out.println("An exception occurred: " + e.getMessage());
}
}
}
private int calculateFactorial(int number) throws Exception {
if (number < 0) {
throw new Exception("Number must be non-negative.");
}
if (number == 0) {
return 1;
}
int factorial = 1;
for (int i = 1; i <= number; i++) {
factorial *= i;
}
return factorial;
}
}

public class Multithreading {
```

```
public static void main(String[] args) {
Thread perfectNumberThread = new Thread(new
PerfectNumberThread());
Thread factorialThread = new Thread(new FactorialThread());
perfectNumberThread.start();
factorialThread.start()
}
}
```

Output:

```
Perfect Numbers:
6
28
496

Factorial value :
1! = 1
2! = 2
3! = 6
4! = 24
5! = 120
6! = 720
7! = 5040
8! = 40320
9! = 362880
10! = 3628800
```

3. Write a program to read the data from file

```
package nikki.com;
import java.io.*;
public class Readdata_file {
public static void main(String[] sun) throws IOException

{
FileReader fr=new FileReader("d:\\nikitha\\textfile.txt");
BufferedReader br=new BufferedReader(fr);
String str=null;
while( true )
{
try
{
str=br.readLine(); // read from file
if(str.equals(null))
break;
System.out.println(str);
}
catch(NullPointerException e)
{ break; }
}
br.close();
fr.close();
}
}
```

Output:

Enter File Input:

Java is a platform-independent language

4. Write a program to write the content to file in append mode

```
package nikki.com;
import java.io.*;
public class Write_data {

public static void main(String[] args) throws IOException
{
DataInputStream dis = new DataInputStream(System.in);

//FileWriter fw = new FileWriter("filename and path",appendmode);

FileWriter fw = new FileWriter("d:\\nikitha\\textfile.txt",true);

//Used to write data to file with the help of filewriter object

BufferedWriter br=new BufferedWriter(fw);
String str=null;
int size;
while( true )
{
System.out.println("Enter file input");
str=dis.readLine();
if(str.equals("null"))
break;
size=str.length();
br.write(str,0,size);
//write to file
br.write("\n");
}
br.close();
fw.close();
}
}
```

Output:

Enter File Input:

Java is a platform-independent language