DAYANANDA SAGAR COLLEGE OF ENGINEERING
(An Autonomous Institute Affiliated to VTU, Belagavi) Approved by AICTE & ISO 9001:2008 Certified)
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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

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JAVA & J2EE LABORATORY
VI SEMESTER
(19IS6DLJVA)

Faculty Incharge

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1a. Write a Java program to implement linear search.

```
import java.util.Scanner;
Class LinearS
{
Public static void main(String args[])
{
int counter, num, item, array[];
Scanner input =new Scanner(System.in);
System.out.println("Enter number of elements");
num =input.nextInt();
array = new int[num];
System.out.println("Enter "+ num +" integers");
for(counter =0; counter < n; counter++)
array[counter]=input.nextInt();
System.out.println("Enter the search value");
item=input.nextInt();
for(counter =0; counter < n; counter++)
{
if(array[counter]== item)
{
System.out.println(item +" is present at location "+(counter+1));
break;
}
}
if(counter == num)
System.out.println(item +" is not present in array.");
}
}
```

**********OUTPUT**********

```
Enter the number of elements 4
Enter 4 integer 20 52 17 92
Enter search value 17
17 is present at location 3
```

1b. Write a java program for sorting a given list of names.

```
import java.io.*;
class SortingNames
{
public static void main(String[] args) throws IOException
{
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
System.out.print("\nEnter The number of Names :");
int n = Integer.parseInt(br.readLine());
String names[] = new String[n];
System.out.println();
for (int i = 1; i <= n; i++)
{
System.out.print("Enter Name " + i + ":");
names[i-1] = br.readLine();
}
System.out.println("\nNames in Ascending Order");
System.out.println();
for (int j = 0; j < names.length; j++)
{
for (int i = j + 1; i < names.length; i++)
{
if (names[i].compareToIgnoreCase(names[j]) < 0)
{
String temp = names[j];
names[j] = names[i];
names[i] = temp;
}
}
System.out.println(names[j]);
}
}
}
```

**********OUTPUT**********

```
Output:
Enter the number of names:3
Enter name 1: ab
Enter name 2: abc
Enter name 3:a
Names in Ascending Order
a
ab
abc
```

2a. Write a java program that illustrates the multilevel inheritance.

```
class Car{
public Car()
{
System.out.println("Class Car");
}
public void vehicleType()
{
System.out.println("Vehicle Type: Car");
}
}
class Maruti extends Car{
public Maruti()
{
System.out.println("Class Maruti");
}
public void brand()
{
System.out.println("Brand: Maruti");
}
public void speed()
{
System.out.println("Max: 90Kmph");
}
}
public class Maruti800 extends Maruti{

public Maruti800()
{
System.out.println("Maruti Model: 800");
}
public void speed()
{
System.out.println("Max: 80Kmph");
}
public static void main(String args[])
{
Maruti800 obj=new Maruti800();
obj.vehicleType();
obj.brand();
obj.speed();
```

```
}
}
```

**********OUTPUT**********

```
Class Car
Class Maruti
Maruti Model: 800
Vehicle Type: Car
Brand: Maruti
Max: 80Kmph
```

2b.Write a program to implement multiple inheritance using interfaces.

```
import java.io.*;
class student
{
int rno;
void getno(int n)
{
rno = n;
}
void putno()
{
System.out.println("RegNo:"+rno);
}
}
class Test extends student
{
float m1,m2;
void getmarks(float a,float b)
{
m1=a;
m2=b;
}
void putmarks()
{
System.out.println("M1 :"+m1);
System.out.println("M2 :"+m2);
}}
interface sports
{
float sportwt =6.0f;
void putwt();
}
class Results extends Test implements sports
{
float tot;
public void putwt()
{
```

```
System.out.println("Sports wt :"+sportwt);
}
void display()
{
tot = m1+ m2 + sportwt;
putno();
putmarks();
putwt();
System.out.println("Total: " +tot);
}}
class clsmultiple
{public static void main(String args[])
{
Results r = new Results();
r.getno(1001);
r.getmarks(79f,95f);
r.display();
}
}
```

**********OUTPUT**********

```
RegNo:1001
M1 :79.0
M2 :95.0
Sports wt :6.0
Total: 180.0
D:\JAVA>
```

40

3a.Write a Java program to implement the concept of importing classes from user defined package.

```
/*Source code of package p1 under the directory C:\jdk1.6.0_26\bin>p1\edit Student.java */
package p1;
public class Student
{
int regno;
String name;
public void getdata(int r,String s)
{
regno=r;
name=s;
}
public void putdata()
{
System.out.println("regno = " +regno);
System.out.println("name = " + name);
}
}

/* Source code of the main function under C:\jdk1.6.0_26\bin>edit StudentTest.java */
import p1.*;
class StudentTest
{
public static void main(String arg[])
{
student s=new student();
s.getdata(123,"xyz");
s.putdata();
}
}
```

**********OUTPUT**********

```
regno = 123
name = xyz
```

3b. Write a Java program that reads a line of integers and then displays each intege sum of all integers. (use StringTokenizer class)

```
import java.util.*;
class StringTokenizerDemo {
public static void main(String args[])
{
int n;
int sum = 0;
Scanner sc = new Scanner(System.in);
System.out.println("Enter integers with one space gap:");
String s = sc.nextLine();
StringTokenizer st = new StringTokenizer(s, " ");
while (st.hasMoreTokens()) {
String temp = st.nextToken();
n = Integer.parseInt(temp);
System.out.println(n);
sum = sum + n;
}
System.out.println("sum of the integers is: " + sum);
sc.close();
}
}
```

**********OUTPUT**********

```
Enter integers with one space gap:
10 20 30 40 50
10
20
30
40
50
sum of the integers is: 150
```

4a. Write a program to perform arithmetic operations using static members.

```
import java.util.Scanner;
class stclass
{
static int num1, num2;
static int add( int a, int b)
{
return a+b;
}
static int sub( int a, int b)
{
return a-b;
}
static int mul( int a, int b)
{
return a*b;
}
static int div( int a, int b)
{
return a/b;
}
static int modulus( int a, int b)
{
return a%b;
}
static int increment( int a)
{
return ++a;
}
static int decrement( int a)
{
return --a;
}

public static void main(String args[])
{
Scanner input = new Scanner(System.in);
System.out.println("Enter two numbers:");
num1 = input.nextInt();
num2 = input.nextInt();
System.out.println("\nThe two numbers are: " + num1 + "," + num2 +"\nAdditon: " + add(num1,
num2) + "\nSubstraction: " + sub(num1, num2)+"\nMultiplication: " +mul(num1, num2) +
"\nDivision: " + div(num1, num2) +"\nModulus: " + modulus(num1, num2) +"\n Increment of 1st
num: "+ increment(num1) +"\nDecrement of 2nd num" + decrement(num2));
}
}
```

**********OUTPUT**********

Enter two numbers:
40
4
The numbers are : 40,4
Addition: 44
Substraction: 36
Multiplication: 160
Division: 10
Modulus: 0
Incremented 1st num: 41
Decremented 2nd num: 3

4b.Write a program to read and print n numbers using arrays.

```
import java.io.*;
class clsarray1
{
public static void main(String args[])throws IOException
{
BufferedReader br= new BufferedReader(new
InputStreamReader(System.in));
int i,n;
int a[] = new int[100];
System.out.println("Enter the value of n");
n=Integer.parseInt(br.readLine());
System.out.println("Enter the values");
for(i=0;i<n;i++)
{
a[i]=Integer.parseInt(br.readLine());
}
System.out.println("The values are");
for(i=0;i<n;i++)
{
System.out.println(a[i]);
}
}
}
```

**********OUTPUT**********

```
Enter the value of n
3
Enter the values
1
2
3
The values are
1
2
3
30
```

5a. Write a Java program to demonstrate String class and its methods.

```
import java.lang.String;
class stringdemo
{
public static void main(String arg[])
{
String s1=new String("ISE DSCE BANGALORE");
String s2="ISE DSCE BANGALORE";
System.out.println(" The string s1 is : " +s1);
System.out.println(" The string s1 is : " +s2);
System.out.println(" Length of the string s1 is : " +s1.length());
System.out.println(" The first occurence of r is at the position : " +s1.indexOf('r'));
System.out.println(" The String in Upper Case : " +s1.toUpperCase());
System.out.println(" The String in Lower Case : " +s1.toLowerCase());
System.out.println(" s1 equals to s2 : " +s1.equals(s2));
System.out.println(" s1 equals ignore case to s2 : " +s1.equalsIgnoreCase(s2));
int result=s1.compareTo(s2);
System.out.println("After compareTo()");
if(result==0)
System.out.println( s1 + " is equal "+s2);
else if(result>0)
System.out.println( s1 + " is greater than "+s2);
else
System.out.println( s1 + " is smaller than to "+s2);
System.out.println(" Character at an index of 6 is :" +s1.charAt(6));
String s3=s1.substring(4,12);
System.out.println(" Extracted substring is :"+s3);
System.out.println(" After Replacing g with a in s1 : " + s1.replace('g','a'));
String s4=" This is a book ";
System.out.println(" The string s4 is :"+s4);
System.out.println(" After trim() :"+s4.trim());
}
}
```

********** OUTPUT **********

```
$ javac stringdemo.java
$ java stringdemo
 The string s1 is : ISE DSCE BANGALORE
 The string s1 is : ISE DSCE BANGALORE
 Length of the string s1 is : 18
 The first occurence of r is at the position : -1
 The String in Upper Case : ISE DSCE BANGALORE
 The String in Lower Case : ise dsce bangalore
 s1 equals to s2 : true
 s1 equals ignore case to s2 : true
After compareTo()
ISE DSCE BANGALORE is equal ISE DSCE BANGALORE
 Character at an index of 6 is :C
```

Extracted substring is :DSCE BAN
After Replacing g with a in s1 : ISE DSCE BANGALORE
The string s4 is : This is a book
After trim() :This is a book

5b. Write a Java program to demonstrate String Buffer class and its methods.

```
import java.lang.String;
class stringbufferdemo
{
public static void main(String arg[])
{
StringBuffer sb=new StringBuffer("This is my college");
System.out.println("This string sb is : " +sb);
System.out.println("The length of the string sb is : " +sb.length());
System.out.println("The capacity of the string sb is : " +sb.capacity());
System.out.println("The character at an index of 6 is : " +sb.charAt(6));
sb.setCharAt(3,'x');
System.out.println("After setting char x at position 3 : " +sb);
System.out.println("After appending : " +sb.append(" in gulbarga "));
System.out.println("After inserting : " +sb.insert(19,"gpt "));
System.out.println("After deleting : " +sb.delete(19,22));
}
}
```

**********OUTPUT**********

```
This string sb is : This is my college
The length of the string sb is : 18
The capacity of the string sb is : 34
The character at an index of 6 is : s
After setting char x at position 3 : Thix is my college
After appending : Thix is my college in gulbarga
After inserting : Thix is my college gpt in gulbarga
After deleting : Thix is my college in gulbarga
```

6. Write a java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

```
class RandomGenThread implements Runnable
{
double num;
public void run()
{
try {
SquareThread sqt = new SquareThread();
Thread squareThread = new Thread(sqt);
CubeThread cbt = new CubeThread();
Threadcube Thread = new Thread(cbt);
squareThread.start();
cubeThread.start();
for(int i=0;i<10;i++)
{
System.out.println("t1-"+i);
if(i%2 == 0)
{
sqt.setNum(new Double(i));
}
else
{
cbt.setNum(new Double(i));
}
Thread.sleep(1000);
}
} catch (InterruptedException e)
{
e.printStackTrace();
}
}

}
class SquareThread implements Runnable
{
Double num;
public void run()
{
try {

int i=0;
do{
i++;
```

```
if(num != null&&num %2 ==0)
{
System.out.println("t2--->square of "+num+"="+(num*num));
num = null;
}
Thread.sleep(1000);
}while(i<=5);
}
catch (Exception e)
{
e.printStackTrace();
}
}

public Double getNum()
{
return num;
}
public void setNum(Double num)
{
this.num = num;
}
}

class CubeThread implements Runnable
{
Double num;
public void run()
{
try {
int i=0;
do{
i++;
if(num != null&&num%2 !=0)
{
System.out.println("t3-->Cube of "+num+"="+(num*num*num));
num=null;
}
Thread.sleep(1000);
}
while(i<=5);

}
catch (Exception e)
{
e.printStackTrace();
}
```

```
}
public Double getNum()
{
return num;
}
public void setNum(Double num)
{
this.num = num;
}
}
public class MultiThreaded
{
public static void main(String[] args) throws InterruptedException
{
Thread randomThread = new Thread(new RandomGenThread());
randomThread.start();
}
}
```

**********OUTPUT**********