**TASK2**

1.Write 3 different java programs to print the following patterns

a) 1

12

123

12345

public class series {

public static void main(String[] args) {

for(int i=1;i<=5;i++)

{

for(int j=1;j<=i;j++)

{

System.out.print(j+"\t");

}

System.out.print("\n");

}

}

}

b) 54321

5432

543

54

5

public class series {

public static void main(String[] args) {

for(int i=1;i<=5;i++)

{

for(int j=5;j>=i;j--)

{

System.out.print(j+"\t");

}

System.out.print("\n");

}

}

}

c) x

xxx

xxxxx

xxxxxxx

xxxxx

xxx

x

import java.util.Scanner;

public class rhombus {

public static void main(String[] args)

{

Scanner sc=new Scanner(System.in);

System.out.println("Enter N : ");

int n=sc.nextInt();

for(int i=1;i<=n;i++)

{

for(int j=1;j<=n-i;j++)

{

System.out.print(" ");

}

for(int j=1;j<=i\*2-1;j++)

{

System.out.print("\*");

}

System.out.println();

}

for(int i=n-1;i>0;i--)

{

for(int j=1;j<=n-i;j++)

{

System.out.print(" ");

}

for(int j=1;j<=i\*2-1;j++)

{

System.out.print("\*");

}

System.out.println();

}

}

}

2. Write a java program to take the input from user and determine if it is a prime number or not.

import java.util.Scanner;

public class primno {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

System.out.println("Enter number :");

int flag=0;

int num=s.nextInt();

for(int i=2;i<=num/2;i++)

{

if(num%i==0)

{

flag=1;

break;

}

}

if(flag==0){

System.out.println("Prime number :");

}

else{

System.out.println("Not prime number :");

}

}

}

3. Write a java program to display the fibonacci series till less than 200 using only 2 variables.

import java.util.Scanner;

public class fibo {

public static void main(String[] args) {

int a=0,b=1, sum=0;

while(a<200)

{

sum=a+b;

System.out.println(a);

a=b;b=sum;

}

}

}

5.Write Java program to check if a name is palindrome.

import java.util.Scanner;

public class palindrom {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

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

String nam=s.next();

char ch[]=nam.toCharArray();

int l=ch.length;int flag=0;

for(int i=0;i<l/2;i++)

{

if(ch[i]!=ch[l-i-1])

{

flag=1;

}

}

if(flag==0){

System.out.println("Palindrome :");

}

else{

System.out.println("Not palindrome :");

}

}

}

6.Write Java program to check if a number is Armstrong number or not? (input 153 output true, 123 output false)

import java.util.Scanner;

public class armstrong {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

System.out.println("Enter number :");

int num=s.nextInt();

int rem,armnum=0,actnum=num;

while(num!=0)

{

rem=num%10;

armnum+=Math.pow(rem, 3);

num/=10;

}

if(actnum==armnum){

System.out.println("Armstrong number :");

}

else{

System.out.println("Not Armstrong number :");

}

}

}

7.How to find factorial of number in Java using iteration?

import java.util.Scanner;

public class factpgm {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

System.out.println("Enter number :");

int num=s.nextInt();

int fact=1;

for(int i=1;i<=num;i++)

{

fact=fact\*i;

}

System.out.println("Factorial :"+fact);

}

}

8.Write a Java code to take a character as a input from user and determine if it is a vowel or a consonant using conditional construct.

import java.util.Scanner;

public class vowelcheck {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

char ch=s.next().charAt(0);

if(ch=='a' || ch=='e'|| ch=='i'|| ch=='o'|| ch=='u'|| ch=='A'|| ch=='E'|| ch=='I'|| ch=='O'|| ch=='U')

{

System.out.println("Character is vowel");

}

else

{

System.out.println("Character is consonant");

}

}

}

9. Write a switch case java code to create calculator with + - / \* functionalities only.

import java.util.Scanner;

public class calc {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

System.out.println("Enter first number");

int a=s.nextInt();

System.out.println("Enter second number");

int b=s.nextInt();

System.out.println("Enter ur option");

String opt=s.next();

int res;

switch(opt){

case "+" : res=a+b;

System.out.println("Sum = "+res);

break;

case "-" : res=a-b;

System.out.println("Difference = "+res);

break;

case "\*" : res=a\*b;

System.out.println("Product = "+res);

break;

case "/" : res=a/b;

System.out.println("Sum = "+res);

break;

}

}

}

10. Write a java code to copy one array into another.

import java.util.Scanner;

public class arrcpy {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

System.out.println("Enter size of array");

int n=s.nextInt();

int num1[]=new int[n];

int num2[]=new int[n];

System.out.println("Enter array");

for(int i=0;i<n;i++)

{

num1[i]=s.nextInt();

}

for(int i=0;i<n;i++)

{

num2[i]=num1[i];

}

for(int val:num2)

System.out.println(val);

}

}

11. Write a java code to compare the length of two arrays and display the longer array.

import java.util.Scanner;

public class arrcpy {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

System.out.println("Enter size of first array");

int n=s.nextInt();

String nam1[]=new String[n];

System.out.println("Enter size of second array");

int m=s.nextInt();

String nam2[]=new String[m];

System.out.println("Enter the first array");

for(int i=0;i<n;i++)

{

nam1[i]=s.next();

}

System.out.println("Enter the second array");

for(int i=0;i<m;i++)

{

nam2[i]=s.next();

}

if(nam1.length>nam2.length)

{

for(String arr1:nam1)

System.out.println(arr1);

}

else

{

for(String arr1:nam2)

System.out.println(arr1);

}

}

}

12. Write a java code to display a reverse String array.

import java.util.Scanner;

public class arrcpy {

public static void main(String[] args) {

Scanner s=new Scanner(System.in);

System.out.println("Enter size of array");

int n=s.nextInt();

String nam1[]=new String[n];

String nam2[]=new String[n];

System.out.println("Enter the array");

for(int i=0;i<n;i++)

{

nam1[i]=s.next();

}

for(int i=0;i<n;i++)

{

nam2[i]=nam1[n-i-1];

}

System.out.println("Reverse of array :");

for(String arr1:nam2)

System.out.println(arr1);

}

}

13. Write the difference between checked and unchecked exception with example code

Checked exceptions are those that can be checked during compile time and can be handled by compiler. All the classes other than RuntimeException are checked exceptions.Eg.ClassNotFoundException,IOException etc.Unchecked exceptions are checked only during runtime.All classes that are subclases of RuntimeException class are unchecked exceptions.eg.ArrayIndexOutOfBoundsException,ArithmeticException.

Checked Exception

import java.io.FileNotFoundException;

import java.io.FileReader;

import java.io.IOException;

public class exp2 {

public static void main(String args[]) throws FileNotFoundException, IOException

{

FileReader fr=new FileReader("D://java//tt.txt");

int k;

while((k=fr.read())!= -1)

{

System.out.print((char)k);

}

}

}

Unchecked Exception

public class exp2 {

public static void main(String args[])

{

int a=10,b=0;

int res=a/b;

System.out.println("Result is "+res);

}

}

14. Write the difference between throw and throws with example code.

Throw is used to throw exception explicitly.this is usually given inside method.Syntax is throw throwableobject.eg.throw new IOException.Throws is used to specify exceptions that a method can throw which it is not handling and handled by caller of this method.It is given in method declaration.Multiple exceptions can be given after throws statement.

Throw

import java.io.FileNotFoundException;

import java.io.FileReader;

import java.io.IOException;

public class exp1 {

static void meth()

{

try{

throw new NullPointerException();

}

catch(NullPointerException ne){

System.out.println("caught inside method.");

}

}

public static void main(String args[])

{

try

{

meth();

}

catch(NullPointerException e)

{

System.out.println("Caught inside main.");

}

}

}

Throws

import java.io.FileNotFoundException;

import java.io.FileReader;

import java.io.IOException;

public class exp1 {

static void meth()

{

throw new NullPointerException();

}

public static void main(String args[])

{

try

{

meth();

}

catch(NullPointerException e)

{

System.out.println("Caught inside main.");

}

}

}

15. Write a note or nested try…catch block with example code.

Nested try catch block is a try...catch block inside another try block.

try{

statements

try{

statements

}catch(Exception e2){

exception message

}

catch(Exception e1){

exception message

}

if an exception occurs in inner try block it will first check the inner catch and if exception is not handled there is is passed to outer catch block If it is not handled there program ends abruptly.

import java.io.FileNotFoundException;

import java.io.FileReader;

import java.io.IOException;

public class exp2 {

public static void main(String args[])

{

try{

try{

int a=10,b=0;

int res=a/b;

System.out.println(res);

}catch(ArithmeticException ae){

System.out.println("inside nested block");

}

}catch(Exception ae){

System.out.println("inside outer block");

}

}

}

16. Write a note on MultiThreading and MultiTasking.

Multitasking refers to different processes that are run simultaneosly.It is a feature of OS.For example writing to word document ,running java application etc.Multitasking is heavyweight as processes occupy different memory location.Multithreading refers to same process which has different tasks and different threads run simultaneosly to handle the tasks. In case of gaming application different threads are used to implement different functionalities like audio video etc.Multithrteading is lightweight.

17. Write a short note on Deque and give example code.

Deque is short for Double Ended Queue that means elements can be added or removed from either of ends.It is a subtype of Queue.It can be FIFO or LIFO .ArrayDeque, ConcurrentLinkedDeque, LinkedBlockingDeque, LinkedList are classes that implement deque.Deque can be of fixed size or without any limitation on number of elements.It has methods addFirst(),addLast(),removeFirst() and removeLast().

import java.util.ArrayDeque;

public class Ardeque {

public static void main(String ar[])

{

ArrayDeque<Integer> obj=new ArrayDeque<Integer>();

Integer iob1=new Integer(10);

Integer iob2=new Integer(20);

Integer iob3=new Integer(30);

Integer iob4=new Integer(40);

obj.add(iob1);

obj.add(iob2);

obj.add(iob3);

obj.add(iob4);

System.out.println("ArrayDeque size= "+obj.size());

obj.addFirst(iob1);

obj.addLast(iob4);

System.out.println("ArrayDeque size= "+obj.size());

obj.removeFirst();

obj.removeLast();

System.out.println("ArrayDeque size= "+obj.size());

}

}

19. Write a short note on Map Interface.

A map stores values as key and value pair.It cannot have duplicate keys and each key maps to single valeIt is not a true collection as it does not extend Collection interface.Implementations of Map are HashMap, TreeMap, and LinkedHashMap .It uses put() method to add elements and get() is used to retrieve value corresponding to key.

20. Write the difference between LinkedList and ArrayList.

LinkedList and ArrayList are implementations of the List interface.ArrayList manages an array internally.So adding or removing elemnts at end is faster here.ArrayList is better for storing and accessing data.Manipulation with ArrayList is slow because it internally uses array. If any element is removed from the array, all the bits are shifted in memory.In LinkedList internally uses doubly linked list and elements have reference to previous and next element.So adding or removing elements anywhere is faster in LinkedList.LinkedList is better for manipulating data.Manipulation with LinkedList is faster than ArrayList because it uses doubly linked list so no bit shifting is required in memory.

21. Write a note on Dynamic array in java.

Dynamic array, that is an array that can grow and shrink as needed.Dynamic arrays overcome a limit of static arrays, which have a fixed capacity that needs to be specified at allocation.It does not store the actual data, but will store references to the data that resides in other areas of memory. ArrayList supports dynamic array.

22. What is the purpose of the System class?

System class is included in java.lang package.It contains standard inputstream System.in,standard output stream System.out and standard error stream System.err.

23. Which is the abstract parent class of FileWriter ?

Writer

24. Which class is used to read streams of characters from a file?

FileReader

25. Which class is used to read streams of raw bytes from a file?

FileInputStream

26. What are the differences between FileInputStream/FileOutputStream and RandomAccessFile.

FileInputStream/FileOutputStream are byte streams that read and write data in binary format that is exactly 8-bit bytes. RandomAccessFile is used to both read and write without closing the streams for each read or write. It also has options to write primitive data to the files.It has a pointer and has seek() method to access any position directly.It does not inherit from InputStream or OutputStream. It implements the DataInput and DataOutput interfaces.

28. What is the difference between System.out ,System.err and System.in?

System.out represents standard output and is used to print output of a program.System.err represents the error output and is used to print error in a program.System.in represents the standard input which represents the keyboard inputs.

35. Write a note on PreparedStatement and ResultSetMetaData interfaces with code snippets.

PreparedStatement extends Statement interface and is used to pass run time parameters to query.The performance of the application will be faster if you use PreparedStatement interface because query is compiled only once.The prepareStatement() method of Connection interface is used to create the object of PreparedStatement which takes query as parameter.run time value is passed as placeholder and it value is set befor executing the query.Consider a table Student with fields roll and name .To retrieve details of a particular student based on roll number entered during runtime use the following code.

String query="select \* from student where roll=?"

PreparedStatement ps=con.prepareStatement(query); //con-connection object

ps.setInt(1,1);

ResultSet rs=ps.executeQuery();

ResultSetmetadata is the metadata interface used to get the details about the ResultSet like numbers of columns ,names and datatypes of columns etc.Object of

ResultSetmetadata is created by calling getMetadata() of ResultSet object.

ResultSetmetadata rsmd=rs.getMetaData();

36. Write a note on DDL, DML, DQL, DDL with code snippets.

DDL -- Data Definition Language

These statements are used to create ,alter and delete database objects.DDL statements are

CREATE -create database objects like table view etc.

Create table <tablename>(field1 datatype,field2 datatype....fieldn datatype);

ALTER - add, delete, or modify columns in an existing table.

alter table <tablename> add column\_name datatype;

alter table <tablename> drop column\_name ;

alter table <tablename> alter column column\_name datatype;

DROP - delete database object.

drop table <tablename>

DML -- Data Manipulation Language. It is used to add, modify, delete data in database

INSERT -- add data to table

insert into <tablename>(field1,field2,....,fieldn) values(val1,val2,....valn)

UPDATE -- modify data in a table

update <tablename> set column1 = value1, column2 = value2...., columnN = valueN where [condition]; //where is optional.

DELETE -- delete data from table

delete from <tablename>

DQL - Data Query Language .It is used to retrieve data from the database.

SELECT -- retrieve data from the database table

select field1,field2 | \* from <tablename>

DCL - Data Control Language used to control access to data stored in a database

GRANT – allow users access privileges to database

REVOKE – withdraw users access privileges given by using the GRANT command

34. Write a note on Channels and Buffer with example

Java NIO Channels are similar to streams.It is possible to both read and write to Channels. Streams are one-way (read or write).

Channels can be read and written asynchronously.Channels always read to, or write from, a Buffer.

Channel implementations in Java NIO are

FileChannel -- reads data from and to files.

DatagramChannel -- can read and write data over the network via UDP.

SocketChannel -- can read and write data over the network via TCP

ServerSocketChannel -- allows you to listen for incoming TCP connections, like a web server does. For each incoming connection a SocketChannel is created.

import java.io.FileNotFoundException;

import java.io.FileReader;

import java.io.IOException;

import java.io.RandomAccessFile;

import java.nio.ByteBuffer;

import java.nio.channels.FileChannel;

public class exp1 {

public static void main(String args[]) throws FileNotFoundException, IOException

{

RandomAccessFile aFile = new RandomAccessFile("D://java//tt.txt", "rw");

FileChannel inChannel = aFile.getChannel();

ByteBuffer buf = ByteBuffer.allocate(12);

int bytesRead = inChannel.read(buf);

while (bytesRead != -1) {

System.out.println("Read " + bytesRead);

buf.flip();

while(buf.hasRemaining()){

System.out.print((char) buf.get());

}

buf.clear();

bytesRead = inChannel.read(buf);

}

aFile.close();

}

}

Buffers are defined in java.nio package. It represents a block of memory into which we can write data from which it can be read again later. The memory block is

wrapped with a NIO buffer object, which provides easier methods to work with the memory block.In Java NIO the core Buffer used are :

CharBuffer

DoubleBuffer

IntBuffer

LongBuffer

ByteBuffer

ShortBuffer

FloatBuffer

get() method is used to read data from buffer.put() method is used to write data to buffer.

37. Write a note on HTML , CSS and Javascript.

HTML stands for HyperText Markup Language.

HyperText is the method by which you move around on the web — by clicking on special text called hyperlinks which bring you to the next page. The fact that it is hyper

just means it is not linear — i.e. you can go to any place on the Internet whenever you want by clicking on links — there is no set order to do things in.

Markup is what HTML tags do to the text inside them. They mark it as a certain type of text (italicised text, for example).

HTML is a Language, as it has code-words and syntax like any other language.

CSS stands fro Cascading Style Sheets

It describes how HTML elements are to be displayed on screen.It can control the layout of multiple web pages all at once.External stylesheets are stored in CSS

files.CSS defines the styles for web pages, including the design, layout and variations in display for different devices and screen sizes. It removed the style

formatting from the HTML page.The style definitions can be saved in external .css files and can change the look of an entire website by changing just one file.

JavaScript

It is used to program the behavior of web pages.It is a scripting language used to develop web pages.It is the programming language of HTML and the Web.It can validate

user input before sending the page to the server which saves server traffic and so less load on your server.

38. Write a code to fetch the data from H2 and put it in any collection object and display it.

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.sql.Statement;

import java.util.ArrayList;

import java.util.Iterator;

class student{

int roll;

String name;

student(int roll,String name){

this.roll=roll;

this.name=name;

}

public int getRoll() {

return roll;

}

public void setRoll(int roll) {

this.roll = roll;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

}

public class H2ex {

public static void main(String[] args) {

ArrayList<student> ar=new ArrayList<student>();

String url="jdbc:h2:tcp://localhost/~/test";

String user="sa";

String pass="";

String q="select \* from stud";

try(Connection con=DriverManager.getConnection(url, user, pass);

Statement st =con.createStatement();

ResultSet rs=st.executeQuery(q);)

{

while(rs.next())

{

String s1=rs.getString(1);

String s2=rs.getString(2);

System.out.println(s1 +s2);

student s=new student(Integer.parseInt(s1),s2);

ar.add(s);

}

}

catch(SQLException e){

e.printStackTrace();

}

Iterator itr=ar.iterator();

while(itr.hasNext()){

student s=(student)itr.next();

System.out.println("Student Name= "+s.getName()+"Student Roll= "+s.getRoll());

}

}

}

39. Describe the different approaches of String processing.

String is a sequence of characters.It is an immutable objectthat cannot be changed after it is created.It can be created as string literal or using new keyword.

String s1="Hello";

String s2=new String("Hello");

String class provides a lot of methods to perform operations on string.Some of the methods of String class

1.String concat(String str) - concatinate a specified string

2.boolean equals(Object another)- compare teo string objects

3.int length() - length of string

4.char charAt(int index) - returns character at particular index.

5.int indexOf(int ch) - returns index of particular character.

6.String toLowerCase() - convert string to lower case.

7.String toUpperCase() - convert string to upper case.

8.String replace(char old, char new) - replace a character with new character.