**Java Assignment 4**

**Q1) . Write a program in java to check whether the entered character is alphabet, digit or space character. If it is an alphabet then print whether it is capital or a small alphabet. Also change the alphabet into the reverse case.**

import java.io.\*;

class Check

{

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

{

char ch;

BufferedReader inputstream=new BufferedReader(new InputStreamReader(System.in));

System.out.println("Enter Any Character:-");

ch=(char) inputstream.read();

if(Character.isDigit(ch))

System.out.println("Entered Character is Digit");

else if(Character.isUpperCase(ch))

{

System.out.println("Entered Character is Upper case");

System.out.println("Lower Case Character is:-"+Character.toLowerCase(ch));

}

else if(Character.isLowerCase(ch))

{

System.out.println("Entered Character is Lower Case");

System.out.println("Upper Case Character is:-"+Character.toUpperCase(ch));

}

else

System.out.println("Entered Character is special char");

}

}

**Output:**

Enter Any Character:-

K

Entered Character is Upper case

Lower Case Character is:-k

**Q2) Write a program in java to check whether the entered character is alphabet, digit or space character. If it is an alphabet then print whether it is capital or a small alphabet. Also change the alphabet into the reverse case.**

import java.io.\*;

class ArrayDemo

{

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

{

int j,s,i,k=0,m=0,n;

int r[]=new int[10];

int prime[]=new int[10];

int perfect[]=new int[10];

BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

System.out.println("Enter the Number of Elements:=>");

n=Integer.parseInt(br.readLine());

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

{

System.out.println("Enter the "+i+" Number of the Array:=>");

r[i]=Integer.parseInt(br.readLine());

}

for(j=0;j<10;j++)

{

int flag=0;

if(r[j]==0||r[j]==1)

{

continue;

}

else

{

for(i=2;i<r[j];i++)

{

if(r[j]%i==0)

flag=1;

}

}

if(flag==0)

{

prime[k]=r[j];

k++;

}

s=0;

for(i=1;i<r[j];i++)

{

n=r[j]%i;

if(n==0)

s=s+i;

}

if(s==r[j])

{

perfect[m]=r[j];

m++;

}

}

System.out.println("\nPerfect Numbers are");

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

{

System.out.println(perfect[i]+" ");

}

System.out.println("\nPrime Numbers are");

for(i=0;i<k;i++)

{

System.out.print(prime[i]+" ");

}

}

}

**Output:**

Enter the Number of Elements:=>

4

Enter the 0 Number of the Array:=>

2

Enter the 1 Number of the Array:=>

3

Enter the 2 Number of the Array:=>

6

Enter the 3 Number of the Array:=>

7

Perfect Numbers are

6

Prime Numbers are

2 3 7

**Q3) Write a program in Java to accept name of cities from the user and sort them in ascending order (Use Command Line Argument**

import java.io.\*;

class CitySort

{

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

{

int n,len,len1,c,i,j,k=0,m=0;

String str[]=new String[5];

String s1;

String s2,temp;

BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

for(i=0;i<5;i++)

{

System.out.println("Enter the string "+i+" of the array:");

str[i]=br.readLine();

}

System.out.println("\nSorted Strings are:");

for(i=0;i<5;i++)

{

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

{

if(str[j].compareTo(str[i])<0)

{

temp=str[i];

str[i]=str[j];

str[j]=temp;

}

}

System.out.println(str[i]);

}

}

}

**Output:**

Enter the string 0 of the array:

2

Enter the string 1 of the array:

3

Enter the string 2 of the array:

6

Enter the string 3 of the array:

9

Enter the string 4 of the array:

1

Sorted Strings are:

1

2

3

6

9

**Q6) Write a java program that reads lines of integers. Display each integer and also display sum of all integers**

import java.io.\*;

class SumInt

{

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

{

long sum=0;

String i="";

BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

System.out.println("Enter Line of Integer");

long str=Long.parseLong(br.readLine());

while(str>0)

{

i=i+""+str%10;

sum=sum+str%10;

str=str/10;

}

System.out.println("All integer Digits :->" );

for(int k=i.length()-1;k>=0;k--)

{

System.out.println(i.charAt(k));

}

System.out.println("Summation of all integer Digits :-> "+sum);

}

}

**Output:**

Enter Line of Integer

12345

All integer Digits :->

1

2

3

4

5

Summation of all integer Digits :-> 15

**Q8) Create a package MCA which will have 2 classes as class Mathematics with a methods to add two numbers, add three float numbers and class Maximum with a method to find maximum of three numbers**

import java.io.\*;

class Mathematics

{

float a,b,c;

int p,q;

BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

public int add\_i()

{

try

{

System.out.println("Enter two integers");

p=Integer.parseInt(br.readLine());

q=Integer.parseInt(br.readLine());

}

catch(Exception ex){}

return (p+q);

}

public float add\_f()

{

try

{

System.out.println("Enter three floats");

a=Float.parseFloat(br.readLine());

b=Float.parseFloat(br.readLine());

c=Float.parseFloat(br.readLine());

}

catch(Exception ex1){}

return ( a+b+c);

}

}

class Maximum

{

int x,y,z,max;

BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

public int check\_max()

{

try

{

System.out.println("Enter three integers");

x=Integer.parseInt(br.readLine());

y=Integer.parseInt(br.readLine());

z=Integer.parseInt(br.readLine());

if(x>y&&x>z)

max=x;

else if(y>z)

max=y;

else

max=z;

}

catch(Exception ex3){}

return max;

}

}

class Test

{

public static void main(String args[])

{

Mathematics m=new Mathematics();

System.out.println("Addition of two integers is "+m.add\_i());

System.out.println("Addition of three floats is "+m.add\_f());

Maximum m1=new Maximum();

System.out.println("Maximum amongst three integers is "+m1.check\_max());

}

}

**Output:**

Enter two integers

3

4

Addition of two integers is 7

Enter three floats

13.3

4.5

5.5

Addition of three floats is 23.3

Enter three integers

2

3

5

Maximum amongst three integers is 5

**Q16) WAP to read a string and a character and count the occurrence if a particular character in a string.**

class JavaExample {

static void countEachChar(String str)

{

int counter[] = new int[256];

int len = str.length();

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

counter[str.charAt(i)]++;

char array[] = new char[str.length()];

for (int i = 0; i < len; i++) {

array[i] = str.charAt(i);

int flag = 0;

for (int j = 0; j <= i; j++) {

if (str.charAt(i) == array[j])

flag++;

}

if (flag == 1)

System.out.println("Occurrence of char " + str.charAt(i)

+ " in the String is:" + counter[str.charAt(i)]);

}

}

public static void main(String[] args)

{

String str = "kausain";

countEachChar(str);

}

}

**Output:**

Occurrence of char k in the String is:1

Occurrence of char a in the String is:2

Occurrence of char u in the String is:1

Occurrence of char s in the String is:1

Occurrence of char i in the String is:1

Occurrence of char n in the String is:1

**Q17) WAP which read a string and rewrite it in an alphabetical order.Eg.STRING = GINRST**

import java.io.\*;

import java.util.\*;

class Alphabetic

{

String alphaOrder(String str)

{

char[] charArray=str.toCharArray();

Arrays.sort(charArray);

String aString=new String(charArray);

return aString;

}

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

{

System.out.println("Enter the String->");

BufferedReader br=new BufferedReader(new

InputStreamReader(System.in));

String inputString=br.readLine();

Alphabetic obj=new Alphabetic();

String alphaString=obj.alphaOrder(inputString);

System.out.println("String in the Alphabetic Order :" +alphaString);

}

}

**Output:**

Enter the String->

kausain

String in the Alphabetic Order :aaiknsu

**Q19) Create a superclass, Student, and two subclasses, Undergrad and Grad. The superclass Student should have the following data members: name, ID, grade, age, and address. The superclass, Student should have at least one method: boolean isPassed (double grade) The purpose of the isPassed method is to take one parameter, grade (value between 0 and 100) and check whether the grade has passed the requirement for passing a course. In the Student class this method should be empty as an abstract method. The two subclasses, Grad and Undergrad, will inherit all data members of the Student class and override the method isPassed. For the UnderGrad class, if the grade is above 70.0, then isPassed returns true, otherwise it returns false. For the Grad class, if the grade is above 80.0, then isPassed returns true, otherwise returns false. Create a test class for your three classes. In the test class, create one Grad object and one Undergrad object. For each object, provide a grade and display the results of the isPassed method.**

import java.util.Scanner;

class Grade extends Student

{

boolean isPassed(double grade) {

if(grade>80)

return true;

else

return false;

}

}

public class Program19 {

public static void main(String[] args) {

Scanner scan=new Scanner(System.in);

Grade g=new Grade();

System.out.println("=========Grade===========");

System.out.println("Enter id, name, city, age :-");

g.setData(scan.nextInt(), scan.next(), scan.next(), scan.nextInt());System.out.println("Enter Grade :-");

if((g.isPassed(scan.nextDouble()))==true)

System.out.println("You passed the exam.");

else

System.out.println("You have not passed the exam.");

UnderGrade ug=new UnderGrade();

System.out.println("===========Undergrade============");

System.out.println("Enter id, name, city, age :-");

ug.setData(scan.nextInt(), scan.next(), scan.next(), scan.nextInt());

System.out.println("Enter Grade :-");

if((ug.isPassed(scan.nextDouble()))==true)

System.out.println("You passed the exam.");

else

System.out.println("You have not passed the exam.");

}

}

abstract class Student

{

private String name,address;

private double grade;

private int id,age;

void setData(int id,String name,String address,int age){

this.id=id;

this.name=name;

this.age=age;

this.address=address;

}

abstract boolean isPassed(double grade);

}

class UnderGrade extends Student

{

boolean isPassed(double grade) {

if(grade>70)

return true;

else

return false;

}

}

**Output:**

Enter id, name, city, age :-

121

Ejaz

pune

51

Enter Grade :-

70

You have not passed the exam.

===========Undergrade============

Enter id, name, city, age :-

102

Hussain

mumbai

22

Enter Grade :-

80

You passed the exam.