Core Java Assignment 1

1. Find out if the given number is an Armstrong number.

Logic : - if 153 is the supplied value, the (1^3)+(5^3)+(3^3)=1+125+27=153

This is the same as supplied value hence it is an Armstrong number.

**public** **class** Armstrong {

**public** **static** **void** main(String[] args) {

**int** num = 153, actual\_num, rem;

**int** res = 0;

actual\_num = num;

**while** (actual\_num !=0)

{

rem = actual\_num % 10;

res = res + rem\*rem\*rem;

}

**if** (res == num)

System.***out***.println(num + " is an Armstrong number: ");

**else**

System.***out***.println(num + " is not an Armstrong number: ");

}

}

**Output:**

153 is an Armstrong number:

1. Find out all the Armstrong numbers falling in the range of 100-999

**public** **class** ArmstrongRange {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

**int** i, n, sum, div;

**for**(i=100; i<=999; i++)

{

n=i;

div = 0;

sum = 0;

**while**( n>0)

{

div = n%10;

sum = sum + (div \* div \* div);

n = n / 10;

}

**if** (i==sum)

System.***out***.println(i+ " is Armstrong number");

}

}}

**Output:**

153 is Armstrong number

370 is Armstrong number

371 is Armstrong number

407 is Armstrong number

1. Find out the simple as well as compound interest of supplied value.

package program3;

import java.util.Scanner;

import java.lang.math;

public class simple {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

int n=153;

System.out.print(n+"is the principle");

System.out.print("Enter the rate: ");

double rate = input.nextDouble();

System.out.print("Enter the time: ");

double time = input.nextDouble();

System.out.print("Enter number of times interest is compounded: ");

int number = input.nextInt();

double interest = (n \* time \* rate) / 100;

double amount = n \*Math.pow(1 + (rate /number), time \* number);

double compund = amount-n;

System.out.println("Principal: " + n);

System.out.println("Interest Rate: " + rate);

System.out.println("Time Duration: " + time);

System.out.println("Simple Interest: " + interest);

System.out.println("amount:"+ amount);

System.out.println("coumpound" + compund);

input.close();

}

}

Output:

153is the principleEnter the rate: 2

Enter the time: 1

Enter number of times interest is compounded: 1

Principal: 153

Interest Rate: 2.0

Time Duration: 1.0

Simple Interest: 3.06

amount:459.0

coumpound306.0

1. Supply marks of three subject and declare the result, result declaration is based on below conditions.

Condition 1: All subjects marks are greater than 60 is Passed.

Condition 2: Any two subjects marks are greater than 60 is Promoted.

Condition 3: Any one subject marks is greater than 60 or all subjects marks less than 60 is failed.

**import** java.util.Scanner;

**public** **class** Marks {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter your Marks of Subject 1: ");

**int** marks1 = sc.nextInt();

System.***out***.println("Enter your Marks of Subject 2: ");

**int** marks2 = sc.nextInt();

System.***out***.println("Enter your Marks of Subject 3: ");

**int** marks3 = sc.nextInt();

**if**((marks1>60)&&(marks2>60)&&(marks3>60))

{

System.***out***.println("Passed");

}

**else** **if** (((marks1>60)&&(marks2>60))||((marks2>60)&&(marks3>60))||((marks1>60)&&(marks3>60)))

{

System.***out***.println("Promoted");

}

**else** **if** ((marks1>60)||(marks2>60)||(marks3>60))

{

System.***out***.println("Failed");

}

**else**

{

System.***out***.println("Failed");

}

}

}

**Output:**

Enter your Marks of Subject 1:

65

Enter your Marks of Subject 2:

89

Enter your Marks of Subject 3:

12

Promoted

1. Calculate the income tax on the basis of the following table.

Note: Assume slab is consider for Male, Female as well as Senior Citizen.

|  |  |  |
| --- | --- | --- |
| **Slab** | **Income Range** | **Tax Payable in Percentage** |
| Slab A | 0-1,80,000 | Nil |
| Slab B | 1,81,001-3,00,000 | 10% |
| Slab C | 3,00,001-5,00,000 | 20% |
| Slab D | 5,00,001-10,00,000 | 30% |

Accept CTC from user and display Tax Amount

**import** java.util.Scanner;

**public** **class** TaxAmount {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

**int** ctc;

**double** tax;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter the ctc ");

ctc = sc.nextInt();

**if**(ctc<=180000)

{

tax = 0;

System.***out***.println("Slab A's " + tax + " is the display Tax Amount");

}

**else** **if**((ctc>=181001)&&(ctc<=300000))

{

tax = (ctc/100)\*10;

System.***out***.println("Slab B's " + tax + " is the display Tax Amount");

}

**else** **if**((ctc>=300001)&&(ctc<=500000))

{

tax =(ctc/100)\*20;

System.***out***.println("Slab C's " + tax + " is the display Tax Amount");

}

**else** **if**((ctc>=500001)&&(ctc<=1000000))

{

tax = (ctc/100)\*30;

System.***out***.println("Slab D's " + tax + " is the display Tax Amount");

}

**else**

{

System.***out***.println("Wrong Input");

}

}

}

**Output:**

Enter the ctc

400000

Slab C's 80000.0 is the display Tax Amount

1. Consider a CUI based application, where you are asking a user to enter his Logic name and password, after entering the valid user-id and password it will print the message “Welcome” along with user name. As per the validation is concerned, the program should keep a track of login attempts. After three attempts a message should be flashed saying “Contact Admin”, and the program should terminate.

**import** java.util.Scanner;

**public** **class** LoginUser {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

String uname, pwd;

**int** count = 0, atmp;

**while**(count<3)

{

Scanner sc = **new** Scanner(System.***in***);

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

uname = sc.nextLine();

System.***out***.println("Enter password : ");

pwd = sc.nextLine();

**if**(uname.equals("Ritambhara") && pwd.equals("chatterjee"))

{

System.***out***.println("Welcome Ritambhara");

}

**else**

{

count++;

atmp = 3 – count;

System.***out***.println("Try Again. Remaining attempts " + atmp);

If(atmp == 0)

{

System.***out***.println("Contact Admin");

}}}

}

}

**Output:**

Enter the login name :

Admin

Enter password :

Admin@1

Welcome Admin

1. There is an Array which is of the size 15, which may or may not be sorted. You should write a program to accept a number and search if it in contained in the array.

Example:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | 12 | 14 | 6 | 78 | 19 | 1 | 23 | 26 | 35 | 37 | 7 | 52 | 86 | 47 |

**Value to be search is 19**

**import** java.util.Scanner;

**public** **class** LinearSearch {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

**int** i,n,s,arr[];

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter number of elements");

n = sc.nextInt();

arr = **new** **int**[n];

System.***out***.println("Enter the " + n + " elements");

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

{

arr[i]=sc.nextInt();

}

System.***out***.println("Enter the search value");

s = sc.nextInt();

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

{

**if**(arr[i]==s)

{

System.***out***.println(s + " is present");

**break**;

}

}

**if**(i==n)

System.***out***.println(s + " is not present");

}

}

**Output:**

Enter number of elements

15

Enter the 15 elements

5

12

14

6

78

19

1

23

26

35

37

7

52

86

47

Enter the search value

19

19 is present

1. Using the above table write a method apply sorting **Bubble Sort.**

**public** **class** BubbleSort {

**static** **void** bubblesort(**int**[]arr) {

**int** n = arr.length;

**int** temp = 0;

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

{

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

{

**if**(arr[j-1] > arr[j])

{

temp = arr[j-1];

arr[j-1] = arr[j];

arr[j]=temp;

}

}

}

}

**public** **static** **void** main(String[] args) {

**int** arr[]= {23,78,9,12,56,34,55};

System.***out***.println("Array Before Bubble Sort");

**for**(**int** i = 0; i < arr.length; i++)

{

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

}

System.***out***.println();

*bubblesort*(arr);

System.***out***.println("array After Bubble Sort");

**for**(**int** i=0; i<arr.length;i++) {

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

}

}

}

**Output:**

Array Before Bubble Sort

23

78

9

12

56

34

55

array After Bubble Sort

9

12

23

34

55

56

78

1. Accept the marks of three students for the subject A,B,C. Find the total scored and the average in all the subjects. Also Find theTotal and Average scored by students in each respective Subject.

**import** java.util.Scanner;

**public** **class** AverageMarks {

**public** **static** **void** main(String[] args) {

Scanner sc = **new** Scanner(System.***in***);

**int** a[][] = **new** **int**[3][3];

**int** i, j;

**int** total = 0;

System.***out***.println("Enter the marks ");

**for** (i=0;i<3;i++)

{

**for** (j=0;j<3;j++)

{

a[i][j]=sc.nextInt() ;

}

}

**for** (i=0;i<3;i++)

{

**for** (j=0;j<3;j++)

{

total=total+a[i][j];

}}

System. ***out***. println("Total marks in all subjects is: "+ total);

System. ***out***. println("Average marks in all subjects is: "+ total/9) ;

total = 0;

**for** (i=0;i<3;i++)

{

total=0;

**for** (j=0;j<3;j++)

{

total=total+a[i][j];

}

System.***out***.println();

System. ***out***. println("Total marks for each student is: "+ total) ;

System. ***out***. println("Average marks for each student is: "+ total/3);

System.***out***.println();

total = 0;

}

}

}

**Output:**

Enter the marks

25

65

78

78

12

69

35

75

14

Total marks in all subjects is: 451

Average marks in all subjects is: 50

Total marks for each student is: 168

Average marks for each student is: 56

Total marks for each student is: 159

Average marks for each student is: 53

Total marks for each student is: 124

Average marks for each student is: 41