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**Core Java | Assignment 1**

1. Find out if the given number is an Armstrong number. Logic-if 153 is the Supplied value, then **1³+5^3+3^3=1+125+27=153.**

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

**import** java.util.Scanner;

**import** java.lang.Math;

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

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

**int** n, temp, rem, res = 0, i = 0;

System.***out***.println("Enter the no.: ");

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

n = scanner.nextInt();

temp = n;

**for**(; temp!= 0; temp/= 10)

{

i++;

}

temp = n;

**for**(; temp!= 0; temp/= 10)

{

rem = temp % 10;

res += Math.*pow*(rem, i);

}

**if**(res == n)

{

System.***out***.println(n + " is an ArmStrong no.");

}

**else**

{

System.***out***.println(n + " is not an ArmStrong no.");

}

}

}

Output:

enter the no.:

370

370 is an Armstrong number.

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

**import** java.util.Scanner;

**import** java.lang.Math;

**public** **class** Armstrong\_range {

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

**for**(**int** n = 100; n < 1000; n++)

{

**int** temp, rem, res = 0, i = 0;

temp = n;

**for**(; temp!= 0; temp/= 10)

{

i++;

}

temp = n;

**for**(; temp!= 0; temp/= 10)

{

rem = temp % 10;

res += Math.*pow*(rem, i);

}

**if**(res == n)

{

System.***out***.println(n + " is an Armstrong no.");}}}}

Output:

153 is an Armstrong no.

370 is an Armstrong no.

371 is an Armstrong no.

407 is an Armstrong no.

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

import java.util.Scanner;

import java.lang.Math;

public class Simple\_int {

public static void main(String[] args) {

double rate, amount, years, simple, compound;

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the amt: ");

amount = scanner.nextDouble();

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

rate = scanner.nextDouble();

System.out.println("Enter no. of year: ");

years = scanner.nextDouble();

simple = (rate \* years \* amount)/ 100;

compound = amount \* Math.pow(1 + rate/100, years) - amount;

System.out.println("simple interest : "+simple);

System.out.println("compound interest : "+compound);

}}

Output:

Enter the amt:

5000

Enter the rate:

100

Enter no. of year:

5

simple interest : 25000.0

compound interest : 155000.0

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

* **Condition 1:** All subjects marks is greater than 60 is Passed
* **Condition 2:** Any two subjects marks are greater than 60 is Promoted
* **Condition 3:** Any one subject mark is greater than 60 or all subjects marks less than 60 is failed

**import** java.util.Scanner;

**public** **class** Condition\_Class {

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

**double** sub1, sub2, sub3;

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

System.***out***.println("Enter marks in subject 1: ");

sub1 = scanner.nextDouble();

System.***out***.println("Enter marks in subject 2: ");

sub2 = scanner.nextDouble();

System.***out***.println("Enter marks in subject 3: ");

sub3 = scanner.nextDouble();

**if**(sub1 > 60 && sub2 > 60 && sub3 > 60)

{

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

}

**else** **if**((sub1 >60 && sub2 >60) || (sub2 >60 && sub3 >60) || (sub1 >60 && sub3 >60))

{

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

}

**else**

{

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

}

}

}

Output:

Enter marks in subject 1:

50

Enter marks in subject 2:

50

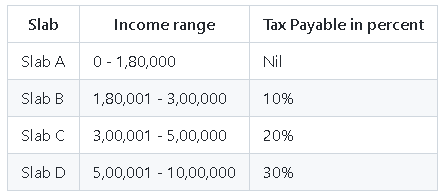
Enter marks in subject 3:

50

Failed

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

**Note:-Assume slab is consider for Male, Female as well as Senior citizen**



* Accept CTC from user and display tax amount

**import** java.util.Scanner;

**public** **class** Income\_tax {

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

**double** tax = 0, CTC;

**try** (Scanner scanner = **new** Scanner(System.***in***)) {

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

CTC = scanner.nextDouble();

}

**if**(CTC <= 180000)

{

tax = 0;

}

**else** **if**(CTC > 180000 && CTC <= 300000)

{

tax = (CTC/100)\*10;

System.***out***.println("Income tax payable is : " + tax);

}

**else** **if**(CTC > 300000 && CTC <= 500000)

{

tax = (CTC/100)\*20;

System.***out***.println("Income tax payable is : " + tax);

}

**else** **if**(CTC > 500000 && CTC <= 1000000)

{

tax = (CTC/100)\*30;

System.***out***.println("Income tax payable is : " + tax);

}

}

}

Output:

Enter income :

400000

Income tax payable is : 80000.0

1. Consider a CUI based application, where you are asking a user to enter his Login 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** Login {

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

String name, password;

**int** count = 0, itr, track = 0;

**while**(count<3 && track == 0)

{

**try** (Scanner scanner = **new** Scanner(System.***in***)) {

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

name = scanner.nextLine();

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

password = scanner.nextLine();

}

**if**(name.equals("Lutika") && password.equals("1234"))

{

track = 1;

System.***out***.println("Welcome " + name);

}

**else**

{

count++;

itr = 3-count;

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

**if**(itr == 0)

{

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

}

}

}

}

}

Output 1:

Enter the login name :

Lutika

Enter password :

kolhe

Try Again. Remaining attempts 2

Exception in thread "main" Enter the login name :

java.util.NoSuchElementException: No line found

at java.base/java.util.Scanner.nextLine(Scanner.java:1651)

at Login.main(Login.java:14)

Output 2:

Enter the login name :

Lutika

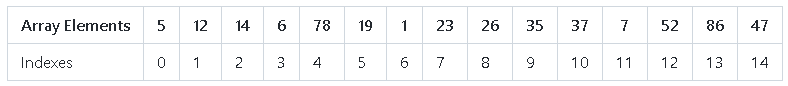
Enter password :

1234

Welcome Lutika

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:



**Value to be search is 19**

**import** java.util.Arrays;

**import** java.util.Scanner;

**public** **class** Array {

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

//initialize array

**int** arr[] = {5,12,14,6,78,19,1,23,26,35,37,7,52,86,47};

//display array and user input

System.***out***.println(Arrays.*toString*(arr));

**try** (Scanner scanner = **new** Scanner(System.***in***)) {

System.***out***.println("Enter a number to search in array : ");

**int** n = scanner.nextInt();

//array search

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

{

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

{

System.***out***.println(n + " is found in the array at " + i + "th index.");

}

}

}

}

}

Output:

[5, 12, 14, 6, 78, 19, 1, 23, 26, 35, 37, 7, 52, 86, 47]

Enter a number to search in array :

35

35 is found in the array at 9th index.

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

**import** java.util.Arrays;

**public** **class** Bubble {

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

**int** arr[] = {5,12,14,6,78,19,1,23,26,35,37,7,52,86,47}, temp;

System.***out***.println(Arrays.*toString*(arr));

**for**(**int** i = 0; i < arr.length-1; i++)

{

**for**(**int** j = 0; j < arr.length - i - 1; j++)

{

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

{

temp = arr[j];

arr[j] = arr[j+1];

arr[j+1] = temp;

}

}

}

System.***out***.println("Sorted Array :");

System.***out***.println(Arrays.*toString*(arr));

}

}

Output:

[5, 12, 14, 6, 78, 19, 1, 23, 26, 35, 37, 7, 52, 86, 47]

Sorted Array :

[1, 5, 6, 7, 12, 14, 19, 23, 26, 35, 37, 47, 52, 78, 86]

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

**import** java.util.Scanner;

**public** **class** Average {

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

**try** (

Scanner scanner = **new** Scanner(System.***in***)) {

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

**double** total = 0;

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

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

{

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

{

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

}

}

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

{

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

{

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

{

total=0;

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

{

total += a[i][j];

}

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

System. ***out***. println("Total marks for student "+ (i+1) +" of each subject is: "+ total) ;

System. ***out***. println("Average marks for student "+ (i+1) +" of each subject is: "+ total/3);

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

total = 0;

}

}

}

}

Enter the marks

40

50

40

30

10

90

50

80

30

Total marks in all subjects is: 420.0

Average marks in all subjects is: 46.666666666666664

Total marks for student 1 of each subject is: 130.0

Average marks for student 1 of each subject is: 43.333333333333336

Total marks for student 2 of each subject is: 130.0

Average marks for student 2 of each subject is: 43.333333333333336

Total marks for student 3 of each subject is: 160.0

Average marks for student 3 of each subject is: 53.333333333333336