**BASIC DATA STRUCTURE ASSGINMENT:**

**1.**

**package** hello;

**public** **class** Amstrong {

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

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

**int** number = 153, originalNumber, remainder, result = 0;

originalNumber = number;

**while** (originalNumber != 0)

{

remainder = originalNumber % 10;

result += Math.*pow*(remainder, 3);

originalNumber /= 10;

}

**if**(result == number)

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

**else**

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

}

}

**Output:**

153 is an Armstrong number.

**2.**

package hello;

import java.io.BufferedReader;

import java.io.IOException;

import java.io.InputStreamReader;

class AmstrongRange

{

public static void main(String[] arg) throws NumberFormatException, IOException

{

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

int arm;

System.out.println("MIN Range : ");

int i = Integer.parseInt(reader.readLine());

System.out.println("MAX Range : ");

int n = Integer.parseInt(reader.readLine());

while(i<n)

{

arm=armstrongOrNot(i);

if(arm==i)

System.out.println(i);

i++;

}

}

static int armstrongOrNot(int num)

{

int x,a=0;

while(num!=0)

{

x=num%10;

a=a+(x\*x\*x);

num/=10 ;

}

return a;

}

}

**Output:**

MIN Range :

100

MAX Range :

1000

153

370

371

407

**3-1.**

**package** hello;

**import** java.util.Scanner;

**public** **class** SimpleInterest {

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

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

**double** p, r, t, sinterest;

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

System.***out***.print("Enter the Principal : ");

p = scan.nextFloat();

System.***out***.print("Enter the Rate of interest : ");

r = scan.nextFloat();

System.***out***.print("Enter the Time period : ");

t = scan.nextFloat();

scan.close();

sinterest = (p \* r \* t) / 100;

System.***out***.print("Simple Interest is: " +sinterest);

}

}

**Ouput:**

Enter the Principal : 5000

Enter the Rate of interest : 5

Enter the Time period : 4

Simple Interest is: 1000.0

**3-2.**

**package** hello;

**import** java.util .\*;

**public** **class** CompoundInterest {

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

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

**double** pr, rate, t, sim,com;

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

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

pr=sc.nextDouble();

System. ***out***. println("Enter the No.of years:");

t=sc.nextDouble();

System. ***out***. println("Enter the Rate of interest");

rate=sc.nextDouble();

sim=(pr \* t \* rate)/100;

com=pr \* Math.*pow*(1.0+rate/100.0,t) - pr;

System.***out***.println("Simple Interest="+sim);

System.***out***. println("Compound Interest="+com);

sc.close();

}

}

**Output:**

Enter the amount:

5000

Enter the No.of years:

4

Enter the Rate of interest

5

Simple Interest=1000.0

Compound Interest=1077.531250000001

**4.**

**package** hello;

**import** java.util.Scanner;

**public** **class** ResultDeclaration {

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

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

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

System.***out***.println("Subject1 : ");

**int** sub1=scan.nextInt();

System.***out***.println("Subject2 : ");

**int** sub2=scan.nextInt();

System.***out***.println("Subject3 : ");

**int** sub3=scan.nextInt();

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

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

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

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

**else** **if**(sub1<60 || sub2<60 || sub3<60)

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

**else**

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

scan.close();

}

}

**Output:**

Subject1 :

90

Subject2 :

40

Subject3 :

60

Passed

**5.**

**package** hello;

**import** java.util.Scanner;

**public** **class** IncomeTax {

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

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

**double** tax=0,i;

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

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

i=scan.nextDouble();

**if**(i>0 && i<=180000)

tax=0;

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

tax=0.1\*(i-180000);

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

tax=(0.2\*(i-300000))+(0.1\*180000);

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

tax=(0.3\*(i-500000))+(0.2\*300000)+(0.1\*180000);

**else**

tax=(0.4\*(i-100000))+(0.3\*500000)+(0.2\*300000)+(0.1\*180000);

System.***out***.println("INCOME TAX : "+tax);

scan.close();

}

}

**Output:**

Enter Income :

500000

INCOME TAX : 58000.0

**6.**

**package** hello;

**import** java.util.\*;

**public** **class** LoginPage {

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

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

@SuppressWarnings("resource")

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

//String username="ABC";

//String password="123456";

String username=" ",password=" ";

String uname,pssd;

**int** i=1;

**while**(i>0) {

System.***out***.println("Username : ");

uname=sc.next();

System.***out***.println("Password : ");

pssd=sc.next();

**int** count=1;

**if**(count<=3) {

**if**(username.equals(uname) && password.equals(pssd))

{

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

**break**;

}

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

//break;

}

**else**

{

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

**break**;

}

**break**;

}

sc.close();

}

}

**Output:**

Username :

ABC

Password :

123456

Welcome ABC

**7.**

**package hello;**

**import java.util.\*;**

**import java.util.Scanner;**

**@SuppressWarnings("unused")**

**public class ArraySearch {**

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

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

**@SuppressWarnings("resource")**

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

**int i,n,search,flag=0;**

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

**n = sc.nextInt();**

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

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

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

**{**

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

**}**

**System.out.println("Enter the element to be search : ");**

**search = sc.nextInt();**

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

**{**

**if(a[i]==search)**

**{**

**System.out.println("Element "+search+" found at "+i+" position");**

**flag=1;**

**break;**

**}**

**}**

**if(flag==0)**

**{**

**System.out.println("Element "+search+" not found");**

**}**

**}**

**}**

**Output:**

Enter the number of elements :

15

Enter the elements :

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

Enter the element to be search :

19

Element 19 found at 5 position

**8.**

**package** hello;

**import** java.util.Scanner;

**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) {

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

System.***out***.print("Enter the number of elements you want to store: ");

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

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

System.***out***.println("Enter the elements of the array: ");

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

{

arr[a]=sc.nextInt();

}

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

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

{

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

}

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

*bubbleSort*(arr);

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

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

{

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

}

sc.close();

}

}

**Output:**

Enter the number of elements you want to store: 5

Enter the elements of the array:

43

23

80

100

1

Array Before Bubble Sort

43 23 80 100 1

Array After Bubble Sort

1 23 43 80 100

**9.**

**package** hello;

**import** java.util.Scanner;

**public** **class** AverageScore {

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

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

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

System.***out***.println("Enter Marks of student1 : ");

System.***out***.println("A : ");

**int** A1=scan.nextInt();

System.***out***.println("B : ");

**int** B1=scan.nextInt();

System.***out***.println("c : ");

**int** C1=scan.nextInt();

System.***out***.println("Enter Marks of student2 : ");

System.***out***.println("A : ");

**int** A2=scan.nextInt();

System.***out***.println("B : ");

**int** B2=scan.nextInt();

System.***out***.println("c : ");

**int** C2=scan.nextInt();

System.***out***.println("Enter Marks of student3 : ");

System.***out***.println("A : ");

**int** A3=scan.nextInt();

System.***out***.println("B : ");

**int** B3=scan.nextInt();

System.***out***.println("c : ");

**int** C3=scan.nextInt();

**int** sum1=A1+B1+C1;

**int** sum2=A2+B2+C2;

**int** sum3=A3+B3+C3;

**int** Avg1=sum1/3;

**int** Avg2=sum2/3;

**int** Avg3=sum3/3;

**int** A\_subTotal=A1+A2+A3;

**int** B\_subTotal=B1+B2+B3;

**int** C\_subTotal=C1+C2+C3;

**int** A\_avg=A\_subTotal/3;

**int** B\_avg=B\_subTotal/3;

**int** C\_avg=C\_subTotal/3;

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

System.***out***.println("Student1 Total : "+sum1+" and Average Marks : "+Avg1);

System.***out***.println("Student2 Total : "+sum2+" and Average Marks : "+Avg2);

System.***out***.println("Student3 Total : "+sum3+" and Average Marks : "+Avg3);

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

System.***out***.println("Subject A Total : "+A\_subTotal+" and Average Marks "+A\_avg);

System.***out***.println("Subject B Total : "+B\_subTotal+" and Average Marks "+B\_avg);

System.***out***.println("Subject C Total : "+C\_subTotal+" and Average Marks "+C\_avg);

scan.close();

}

}

**Output:**

Enter Marks of student1 :

A :

90

B :

85

c :

87

Enter Marks of student2 :

A :

50

B :

65

c :

89

Enter Marks of student3 :

A :

77

B :

71

c :

88

Student1 Total : 262 and Average Marks : 87

Student2 Total : 204 and Average Marks : 68

Student3 Total : 236 and Average Marks : 78

Subject A Total : 217 and Average Marks 72

Subject B Total : 221 and Average Marks 73

Subject C Total : 264 and Average Marks 88