**BASIC DATA STRUCTURE ASSIGNMENTS**

**MADHU MANEPALLI**

**Q1.**

import java.util.Scanner;

public class Armstrong {

public static void main(String[] args) {

int num, number, temp, total = 0;

System.out.println("Enter 3 Digit Number");

Scanner scanner = new Scanner(System.in);

num = scanner.nextInt();

scanner.close();

number = num;

for( ;number!=0;number /= 10)

{

temp = number % 10;

total = total + temp\*temp\*temp;

}

if(total == num)

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

else

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

}

}

**Q2.**

**MADHU MANEPALLI**

import java.util.Scanner;

public class Armstrong

{

public static void main (String [] args)

{

for (int k = 100 ; k <= 1000 ; k++)

{

int n = k;

int d = 0;

int s = 0;

while (n > 0)

{

d = n % 10;

s = s + (d \* d \* d);

n = n / 10;

}

if (k == s)

{

System.out.println (k + ” is Armstrong number”);

}

}

}

}

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**Q3.**

import java.util.Scanner;

public class SI {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

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

double p = input.nextDouble();

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

double r = input.nextDouble();

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

double n = input.nextDouble();

double i = (p \* n \* r) / 100;

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

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

System.out.println("Terms of loan: " + n);

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

input.close();

}

}

**Q7.**

import java.util.Arrays;

public class GFG {

public static void main(String[] args)

{

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

Arrays.sort(arr,1,9);

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

}

}

**Q8.**

public class BubbleSort

{

void bubbleSort(int arr[])

{

int n = arr.length;

for (int i = 0; i < n-1; i++)

for (int j = 0; j < n-i-1; j++)

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

{

int temp = arr[j];

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

arr[j+1] = temp;

}

}

void printArray(int arr[])

{

int n = arr.length;

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

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

System.out.println();

}

public static void main(String args[])

{

BubbleSort ob = new BubbleSort();

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

ob.bubbleSort(arr);

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

ob.printArray(arr);

}

}

**Q9.**

import java.util.Scanner;

public class KboatSDAMarks

{

public static void main(String args[]) {

Scanner in = new Scanner(System.in);

System.out.print("Enter number of students: ");

int n = in.nextInt();

String name[] = new String[n];

int totalmarks[] = new int[n];

int grandTotal = 0;

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

in.nextLine();

System.out.print("Name of student " + (i+1) + ": ");

name[i] = in.nextLine();

System.out.print("marks of studentA " + (i+1) + ": ");

System.out.print("marks of studentB " + (i+1) + ": ");

System.out.print("marks of studentC " + (i+1) + ": ");

totalmarks[i] = in.nextInt();

grandTotal += totalmarks[i];

}

double avg = grandTotal / (double)n;

System.out.println("Average = " + avg);

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

System.out.println("Deviation for " + name[i] + " = "

+ (totalmarks[i] - avg));

}

}

}