Computer Organization and Architecture.

Assignment 2-Groupwork.

Members.

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Question1.

#include <iostream>

using namespace std;

int decimalToBinary(int n)

{

// 32 bits

for (int i = 31; i >= 0; i--) {

int k = n >> i;

if (k & 1)

cout << "1";

else

cout << "0" ;

}

}

void decToHexa(int m)

{

char hexaDeciNum[100];

int i = 0;

while(m!=0)

{

int temp = 0;

temp = m % 16;

if(temp < 10)

{

hexaDeciNum[i] = temp + 48;

i++;

}

else

{

hexaDeciNum[i] = temp + 55;

i++;

}

m = m/16;

}

for(int j=i-1; j>=0; j--)

cout << hexaDeciNum[j] << endl;

}

int main()

{

int m = 2;

decToHexa(m);

int n = 2;

decimalToBinary(n);

return 0;

}

Text

Description automatically generated

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i++;

}

m = m/16;

}

for(int j=i-1; j>=0; j--)

cout << hexaDeciNum[j] << endl;

}

int main()

{

int m = 3;

decToHexa(m);

int n = 3;

decimalToBinary(n);

return 0;

}

Text

Description automatically generated

Question 2.

Java program.

package com.example.coa;

import java.util.Arrays;

import java.util.Scanner;

import java.util.Random;

public class COA {

public static void main(String[] args){

Scanner scan;

int num;

double num2,fractionalPart= 0,number;

int selection;

int rem=0,integralPart,k,y;

StringBuilder s=new StringBuilder();

StringBuilder v= new StringBuilder();

scan = new Scanner(System.in);

System.out.println("Select 1 for whole number conversion 2 for fractional conversion");

selection = Integer.parseInt(scan.nextLine());

if (selection ==1){

// // Generate random integers in range 0 to 999

// int rand\_int1 = rand.nextInt(1000);

// int rand\_int2 = rand.nextInt(1000);

// System.out.println("\nEnter Number");

// num = Integer.parseInt(scan.nextLine());

String hexa;

String binary;

int randomNumber;

final int[] ints = new Random().ints(1, 50).distinct().limit(30).toArray();

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

for(int j=0;j<ints.length;j++){

randomNumber = ints[j];

System.out.println("Decimal Value :" + randomNumber);

hexa = Integer.toHexString(ints[j]);

System.out.println("To hexadecimal :" + hexa);

binary = Integer.toBinaryString(ints[j]);

System.out.println("Binary is :" + binary);

System.out.println("\n" +

"New line");

}

// String hexa = Integer.toHexString(num);

// System.out.println("HexaDecimal Value is :" + hexa);

// String binary = Integer.toBinaryString(num);

// System.out.println("Binary is :" + binary);

}else if(selection == 2) {

String hexa;

double randomNumber;

final double[] doubles = new Random().doubles(1.0, 50.0).distinct().limit(30).toArray();

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

// System.out.println("Enter number upto which precision is required with 5 being maximum");

k = 5;

for (int j = 0; j < doubles.length; j++){

randomNumber = doubles[j];

System.out.print("Binary is ");

int n = (int) randomNumber;

fractionalPart = randomNumber - n;

while (n != 0) {

rem = n % 2;

n = n / 2;

s.insert(0, rem);

v.insert(0,rem);

}

System.out.print(s + ".");

s = new StringBuilder();

while (k != 0) {

integralPart = (int) (fractionalPart \* 2);

s.append(integralPart);

number = fractionalPart \* 2;

fractionalPart = number - integralPart;

k--;

}

System.out.println(s);

hexa = Double.toHexString(randomNumber);

System.out.println("Hexadecimal :" + hexa);

System.out.println("Decimal Value :" + randomNumber);

// System.out.println("Equivalent is"+v);

System.out.println("\n" +

"New line");

k = 5;

}

// System.out.println("\nEnter the number");

// num2=scan.nextDouble();

// System.out.println("Enter number upto which precision is required with 5 being maximum");

// k=scan.nextInt();

// System.out.print("Binary is ");

// int n=(int) num2;

// fractionalPart=num2-n;

// while(n!=0) {

// rem=n%2;

// n=n/2;

// s.insert(0,rem);

// }

// System.out.print(s+".");

// s=new StringBuilder();

// while(k!=0) {

// integralPart=(int) (fractionalPart\*2);

// s.append(integralPart);

// number=fractionalPart\*2;

// fractionalPart=number-integralPart;

// k--;

// }

// String hexa = Double.toHexString(num2);

// System.out.println(s);

// System.out.println("HexaDecimal Value is :" + hexa);

// }

}else{

System.out.println("Wrong selection");

}

}

}

NOTE

-outputs ARE in a different word document named COAproof …will be sent together.