Chandpur Science and Technology University

Department of Computer Science and Engineering

LAB ASSIGNMENT #5

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Lab Date:

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My BeeCrowd Profile

https://www.beecrowd.com.br/judge/en/profile/932147

Problem No - #1

beecrowd | 1080

Highest and Position

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read 100 integer numbers. Print the highest read value and the input position.

Input

The input file contains 100 distinct positive integer numbers.

Output

Print the highest number read and the input position of this value, according to the given example.

Input Sample	Output Sample
2 113 45 34565 6 ... 8	34565 4

SOURCE CODE

```c
#include <stdio.h>

int main()
{
    int arr[100],i,max,pos;
    for (i=0; i<100; i++)
    {

        scanf("%d",&arr[i]);
    }
       max = arr[0];
    for (i=1; i<100; i++)
    {
        if(max<arr[i])
        {
            max=arr[i];
        }
    }

for (i=0;i<100;i++){
    if(arr[i]==max){
        pos= i+1;
    }
}

    printf("%d\n%d\n",max,pos);
    return 0;
}

```

Problem No - #2

beecrowd | 1095

Sequence IJ 1

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Make a program that prints the sequence like the following example.

Input

This problem doesn't have input.

Output

Print the sequence like the example below.

Input Sample	Output Sample
	I=1 J=60 I=4 J=55 I=7 J=50 ... I=? J=0

SOURCE CODE

```c
#include <stdio.h>

int main() {
   int i =1,j=60;
   while(j>=0){
       printf("I=%d J=%d\n",i,j);
       i=i+3;
       j=j-5;

   }

    return 0;
}
```

Problem No - #3

beecrowd | 1079

Weighted Averages

Adapted by Neilor Tonin, URI 🇧🇷 Brazil

Timelimit: 1

Read an integer N, which represents the number of following test cases. Each test case consists of three floating-point numbers, each one with one digit after the decimal point. Print the weighted average for each of these sets of three numbers, considering that the first number has weight 2, the second number has weight 3 and the third number has weight 5.

Input

The input file contains an integer number **N** in the first line. Each **N** following line is a test case with three floating-point numbers, each one with one digit after the decimal point.

Output

For each test case, print the weighted average according with below example.

Input Sample	Output Sample
3 6.5 4.3 6.2 5.1 4.2 8.1 8.0 9.0 10.0	5.7 6.3 9.3

SOURCE CODE

```c
#include <stdio.h>

int main() {

    int n,i,j;
    float arr[3];
    scanf("%d",&n);


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

        for (j=0;j<3;j++){
            scanf("%f",&arr[j]);
        }

        float avg= (arr[0]*2 + arr[1]*3 + arr[2]*5)/10;
        printf("%.1f\n",avg);
    }

    return 0;
}
```

Problem No - #4

beecrowd | 1114

Fixed Password

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Write a program that keep reading a password until it is valid. For each wrong password read, write the message "Senha inválida". When the password is typed correctly print the message "Acesso Permitido" and finished the program. The correct password is the number 2002.

Input

The input file contains several tests cases. Each test case contains only an integer number.

Output

For each number read print a message corresponding to the description of the problem.

Input Sample	Output Sample
2200	Senha Invalida
1020	Senha Invalida
2022	Senha Invalida
2002	Acesso Permitido

Adjustments by Cássio Favaretto.

SOURCE CODE

```c
#include <stdio.h>

int main() {

    int n;
  while(scanf("%d",&n) != EOF )  {

    if(n==2002){
        printf("Acesso Permitido\n");
        break;
    }
    else{
        printf("Senha Invalida\n");
    }

  }

    return 0;
}
```

Problem No - #5

beecrowd | 1078

Multiplication Table

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read an integer N (2 < N < 1000). Print the multiplication table of N.
1 x N = N 2 x N = 2N ... 10 x N = 10N

Input

The input is an integer **N** (1 < **N** < 1000).

Output

Print the multiplication table of N., like the following example.

Input Sample	Output Sample
140	1 x 140 = 140 2 x 140 = 280 3 x 140 = 420 4 x 140 = 560 5 x 140 = 700 6 x 140 = 840 7 x 140 = 980 8 x 140 = 1120 9 x 140 = 1260 10 x 140 = 1400

SOURCE CODE

```c
#include <stdio.h>

int main() {

   int n;
   scanf("%d",&n);

   for(int i=1;i<=10;i++){
       printf("%d x %d = %d\n",i,n,i*n);
   }

    return 0;
}
```

Problem No - #6

beecrowd | 1075

Remaining 2

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read an integer **N**. Print all numbers between 1 and 10000, which divided by **N** will give the rest = 2.

Input

The input is an integer **N** (**N** < 10000)

Output

Print all numbers between 1 and 10000, which divided by n will give the rest = 2, one per line.

Input Sample	Output Sample
13	2 15 28 41 ...

SOURCE CODE

```c
#include <stdio.h>

int main() {
 int n;
 scanf("%d",&n);

 for(int i=2;i<10000;i++){
     if(i%n==2){
         printf("%d\n",i);
     }
 }

    return 0;
}
```

Problem No - #7

beecrowd | 1073

Even Square

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read an integer **N**. Print the square of each one of the even values from 1 to **N** including **N** if it is the case.

Input

The input contains an integer **N** (5 < **N** < 2000).

Output

Print the square of each one of the even values from 1 to **N**, as the given example.

Be carefull! Some language automaticly print 1e+006 instead 1000000. Please configure your program to print the correct format setting the output precision.

Input Sample	Output Sample
6	2^2 = 4 4^2 = 16 6^2 = 36

SOURCE CODE

```c
#include <stdio.h>

int main() {

    int x;
    scanf("%d",&x);

    for(int i =1;i<=x;i++){
        if(i%2==0){
            printf("%d^2 = %d\n",i,i*i);
        }
    }

    return 0;
}
```

Problem No - #8

beecrowd | 1072

Interval 2

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read an integer **N**. This N will be the number of integer numbers **X** that will be read.

Print how many these numbers **X** are in the interval [10,20] and how many values are out of this interval.

Input

The first line of input is an integer **N** (**N** < 10000), that indicates the total number of test cases.
Each case is an integer number **X** (-10^7 < **X** < 10^7).

Output

For each test case, print how many numbers are in and how many values are out of the interval.

Input Sample	Output Sample
4 14 123 10 -25	2 in 2 out

SOURCE CODE

```c
#include <stdio.h>

int main() {

    int n,in=0,out=0,i;
    scanf("%d",&n);

    int arr[n];

    for(i=0;i<n;i++){
        scanf("%d",&arr[i]);
    }

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

         if (arr[i]>=10 && arr[i]<=20){
             in=in+1;
         }
         else{
             out=out+1;
         }
     }

 printf("%d in\n%d out\n",in,out);
    return 0;
}
```

Problem No - #9

beecrowd | 1052

Month

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read an integer number between 1 and 12, including. Corresponding to this number, you must print the month of the year, in english, with the first letter in uppercase.

Input

The input contains only an integer number.

Output

Print the name of the month according to the input number, with the first letter in uppercase.

Input Sample	Output Sample
4	April

SOURCE CODE

```c
#include <stdio.h>
int main() {
    int monthNumber;


    scanf("%d", &monthNumber);

        switch (monthNumber) {
            case 1:
                printf("January\n");
                break;
            case 2:
                printf("February\n");
                break;
            case 3:
                printf("March\n");
                break;
            case 4:
                printf("April\n");
                break;
            case 5:
                printf("May\n");
                break;
            case 6:
                printf("June\n");
```

Problem No - #10

beecrowd | 1047

Game Time with Minutes

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read the start time and end time of a game, in hours and minutes (initial hour, initial minute, final hour, final minute). Then print the duration of the game, knowing that the game can begin in a day and finish in another day,

Obs.: With a maximum game time of 24 hours and the minimum game time of 1 minute.

Input

Four integer numbers representing the start and end time of the game.

Output

Print the duration of the game in hours and minutes, in this format: "O JOGO DUROU XXX HORA(S) E YYY MINUTO(S)" . Which means: the game lasted XXX hour(s) and YYY minutes.

Input Sample	Output Sample
7 8 9 10	O JOGO DUROU 2 HORA(S) E 2 MINUTO(S)
7 7 7 7	O JOGO DUROU 24 HORA(S) E 0 MINUTO(S)

SOURCE CODE

```c
#include <stdio.h>

int main() {

    int sh , sm, eh,em,gt,gth,gtm;
    scanf("%d %d %d %d",&sh,&sm,&eh,&em);

   sh = sh*60 + sm;
   eh = eh*60 + em;

    if (eh>sh){
       gt = eh - sh;
     gth = gt/60;
     gtm = gt%60;
     printf("O JOGO DUROU %d HORA(S) E %d MINUTO(S)\n",gth,gtm);
    }
    else if(eh<sh){
        gt = 1440 - sh + eh;
         gth = gt/60;
        gtm = gt%60;
        printf("O JOGO DUROU %d HORA(S) E %d MINUTO(S)\n",gth,gtm);
    }
    else if (sh==eh){
        printf("O JOGO DUROU 24 HORA(S) E 0 MINUTO(S)\n");
    }

    return 0;
}
```

Problem No - #11

URI Online Judge | 1048

Salary Increase

By Neilor Tonin, URI BR Brazil

Timelimit: 1

The company ABC decided to give a salary increase to its employees, according to the following table:

Salary	Readjustment Rate
0 - 400.00	15%
400.01 - 800.00	12%
800.01 - 1200.00	10%
1200.01 - 2000.00	7%
Above 2000.00	4%

Read the employee's salary, calculate and print the new employee's salary, as well the money earned and the increase percentual obtained by the employee, with corresponding messages in Portuguese, as the below example.

Input

The input contains only a floating-point number, with 2 digits after the decimal point.

SOURCE CODE

```c
#include <stdio.h>

int main() {
    float x,total,per,earn;
 scanf("%f",&x);
   if(x>=0 && x<=400){
       per=15;
       earn=x*(per/100);
       total = x+earn;

   }
 else if(x<=800){
     per=12;
       earn=x*(per/100);
       total = x+earn;
 }
 else if(x<=1200){
     per=10;
       earn=x*(per/100);
       total = x+earn;
 }
 else if(x<=2000){
     per=7;
       earn=x*(per/100);
       total = x+earn;
 }
 else if(x>2000){
     per=4;
       earn=x*(per/100);
       total = x+earn;
 }

 printf("Novo salario: %.2f\nReajuste ganho: %.2f\nEm percentual: %.0f %%\n",total,earn,per);
    return 0;
}
```

Problem No - #12

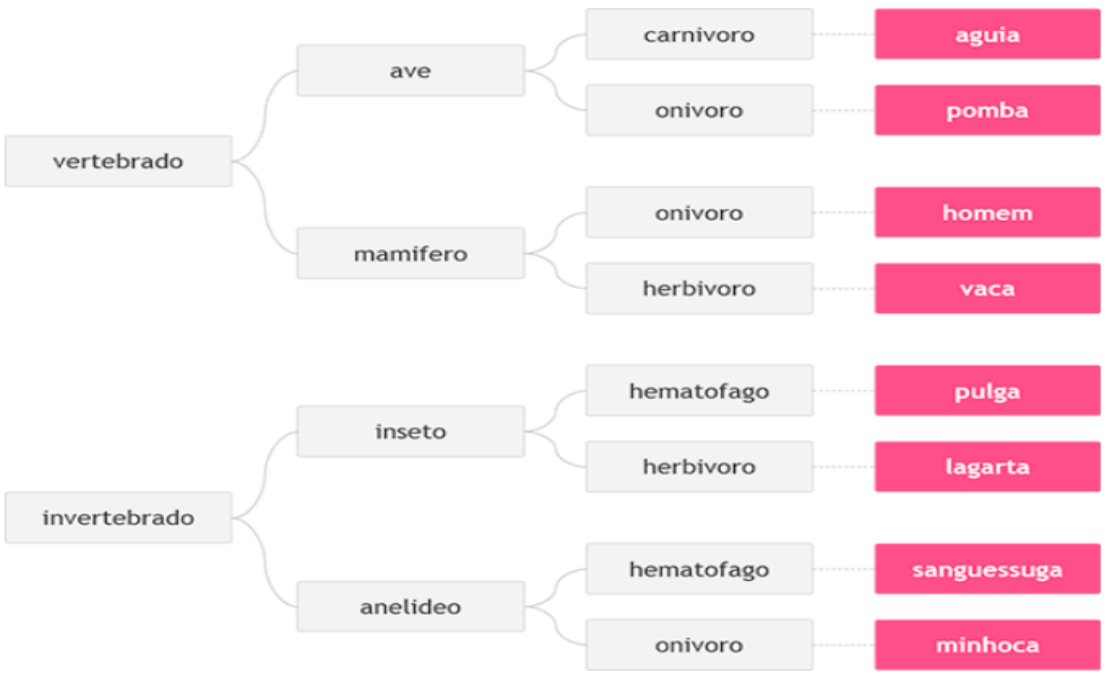
beecrowd | 1049

Animal

By Neilor Tonin, URI Brazil

Timelimit: 1

In this problem, your job is to read three Portuguese words. These words define an animal according to the table below, from left to right. After, print the chosen animal defined by these three words.



Input

The input contains 3 words, one by line, that will be used to identify the animal, according to the above table, with all letters in lowercase.

Output

Print the animal name according to the given input.

Input Samples	Output Samples
vertebrado mamifero onivoro	homem

```c
#include <stdio.h>
#include <string.h>
int main() {

    char w1[50],w2[50],w3[50];

    scanf("%s",w1);
    scanf("%s",w2);
    scanf("%s",w3);

 char grp[150];
    snprintf(grp, sizeof(grp), "%s %s %s", w1, w2, w3);

    if (strcmp(grp, "vertebrado ave carnivoro") == 0) {
        printf("aguia\n");
    }
     if (strcmp(grp, "vertebrado ave onivoro") == 0) {
        printf("pomba\n");
    }
     if (strcmp(grp, "vertebrado mamifero onivoro") == 0) {
        printf("homem\n");
    }
     if (strcmp(grp, "vertebrado mamifero herbivoro") == 0) {
        printf("vaca\n");
    }


     if (strcmp(grp, "invertebrado inseto hematofago") == 0) {
        printf("pulga\n");
    }
     if (strcmp(grp, "invertebrado inseto herbivoro") == 0) {
        printf("lagarta\n");
    }
     if (strcmp(grp, "invertebrado anelideo hematofago") == 0) {
        printf("sanguessuga\n");
    }
     if (strcmp(grp, "invertebrado anelideo onivoro") == 0) {
        printf("minhoca\n");
    }
```

Problem No - #13

beecrowd | 1178

Array Fill III

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read a number **X**. Put this X at the first position of an array **N** [100]. In each subsequent position (1 up to 99) put half of the number inserted at the previous position, according to the example below. Print all the vector **N**.

Input

The input contains a double precision number with four decimal places.

Output

For each position of the array **N** print "N[*i*] = Y", where *i* is the array position and **Y** is the number stored in that position. Each number of **N**[...] must be printed with 4 digits after the decimal point.

Input Sample	Output Sample
200.0000	N[0] = 200.0000 N[1] = 100.0000 N[2] = 50.0000 N[3] = 25.0000 N[4] = 12.5000 ...

SOURCE CODE

```c
#include <stdio.h>

int main() {

    double n[100],x;
    scanf("%lf",&x);

    for(int i=0;i<100;i++){
        n[i]=x;
        printf("N[%d] = %.4lf\n",i,n[i]);
        x=x/2;
    }


    return 0;
}
```

Problem No - #14

beecrowd | 1045

Triangle Types

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read 3 double numbers (A, B and C) representing the sides of a triangle and arrange them in decreasing order, so that the side A is the biggest of the three sides. Next, determine the type of triangle that they can make, based on the following cases always writing an appropriate message:

- if $A \geq B + C$, write the message: **NAO FORMA TRIANGULO**
- if $A^2 = B^2 + C^2$, write the message: **TRIANGULO RETANGULO**
- if $A^2 > B^2 + C^2$, write the message: **TRIANGULO OBTUSANGULO**
- if $A^2 < B^2 + C^2$, write the message: **TRIANGULO ACUTANGULO**
- if the three sides are the same size, write the message: **TRIANGULO EQUILATERO**
- if only two sides are the same and the third one is different, write the message: **TRIANGULO ISOSCELES**

Input

The input contains three double numbers, A (0 < A) , B (0 < B) and C (0 < C).

Output

Print all the classifications of the triangle presented in the input.

Input Samples	Output Samples
7.0 5.0 7.0	TRIANGULO ACUTANGULO TRIANGULO ISOSCELES

SOURCE CODE

```c
#include <stdio.h>

int main() {

    double a,b,c;
 scanf("%lf %lf %lf",&a,&b,&c);

    if (a>=b+c || b>=a+c || c>=a+b){
       printf("NAO FORMA TRIANGULO\n");
  return 0;
    }
    if(a*a==b*b+c*c || c*c==a*a+b*b || b*b==c*c+a*a ){
     printf("TRIANGULO RETANGULO\n") ;
    }
 if (a*a>b*b+c*c || b*b>a*a+c*c || c*c>a*a+b*b ){
     printf("TRIANGULO OBTUSANGULO\n");
 }
 if (a*a<b*b+c*c && b*b<a*a+c*c && c*c<a*a+b*b){
     printf("TRIANGULO ACUTANGULO\n");
 }
 if(a==b && b==c){
     printf("TRIANGULO EQUILATERO\n");
 }
 if(a==b && b!=c || b==c && c!=a || a==c && c!=b){
     printf("TRIANGULO ISOSCELES\n");
 }


    return 0;
}

```

Problem No - #15

beecrowd | 1042

Simple Sort

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read three integers and sort them in ascending order. After, print these values in ascending order, a blank line and then the values in the sequence as they were readed.

Input

The input contains three integer numbers.

Output

Present the output as requested above.

Input Sample	Output Sample
7 21 -14	-14 7 21 7 21 -14

SOURCE CODE

```c
#include <stdio.h>

int main() {

    int arr[3],carr[3],i,j,temp;
    for(i=0;i<3;i++){
        scanf("%d",&arr[i]);
    }
    for (i=0;i<3;i++){
        carr[i]=arr[i];
    }

    for(i=0;i<2;i++){
        for(j=0;j<2-i;j++){
            if(arr[j]>arr[j+1]){
               temp = arr[j+1];
               arr[j+1]=arr[j];
               arr[j]=temp;
            }
        }
    }

    for(i=0;i<3;i++){
        printf("%d\n",arr[i]);
    }

    printf("\n");

    for(i=0;i<3;i++){
        printf("%d\n",carr[i]);
    }

    return 0;
}
```

Problem No - #16

beecrowd | 1021

Banknotes and Coins

By Neilor Tonin, URI Brazil

Timelimit: 1

Read a value of floating point with two decimal places. This represents a monetary value. After this, calculate the smallest possible number of *notes* and *coins* on which the value can be decomposed. The considered notes are of 100, 50, 20, 10, 5, 2. The possible coins are of 1, 0.50, 0.25, 0.10, 0.05 and 0.01. Print the message "NOTAS:" followed by the list of notes and the message "MOEDAS:" followed by the list of coins.

Input

The input file contains a value of floating point **N** ($0 \leq N \leq 1000000.00$).

Output

Print the minimum quantity of banknotes and coins necessary to change the initial value, as the given example.

Input Sample	Output Sample
576.73	NOTAS: 5 nota(s) de R$ 100.00 1 nota(s) de R$ 50.00 1 nota(s) de R$ 20.00 0 nota(s) de R$ 10.00 1 nota(s) de R$ 5.00 0 nota(s) de R$ 2.00 MOEDAS: 1 moeda(s) de R$ 1.00 1 moeda(s) de R$ 0.50 0 moeda(s) de R$ 0.25 2 moeda(s) de R$ 0.10 0 moeda(s) de R$ 0.05 3 moeda(s) de R$ 0.01

SOURCE CODE

```c
#include <stdio.h>
#include <math.h>

int main()
{
    float val;
    scanf("%f", &val);

    // Convert the floating-point value to cents (integer)
    int cents = (int)(val * 100);

    int note[] = {100, 50, 20, 10, 5, 2};
    int coin[] = {100, 50, 25, 10, 5, 1};  // Represented in cents

    printf("NOTAS:\n");
    for (int i = 0; i < 6; i++)
    {
        printf("%d nota(s) de R$ %d.00\n", cents / (note[i] * 100), note[i]);
        cents %= note[i] * 100;
    }

    printf("MOEDAS:\n");
    for (int j = 0; j < 6; j++)
    {
        printf("%d moeda(s) de R$ %.2f\n", cents / coin[j], coin[j] / 100.0);
        cents %= coin[j];
    }

    return 0;
}

```

Problem No - #17

beecrowd | 1036

Bhaskara's Formula

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Read 3 floating-point numbers. After, print the roots of bhaskara's formula. If it's impossible to calculate the roots because a division by zero or a square root of a negative number, presents the message *"Impossivel calcular"*.

Input

Read 3 floating-point numbers (double) A, B and C.

Output

Print the result with 5 digits after the decimal point or the message if it is impossible to calculate.

Input Samples	Output Samples
10.0 20.1 5.1	R1 = -0.29788 R2 = -1.71212
0.0 20.0 5.0	Impossivel calcular

SOURCE CODE

```c
#include <stdio.h>
#include <math.h>

int main() {

    double A,B,C,d;
    scanf("%lf %lf %lf",&A,&B,&C);
    d = pow(B,2)-4*A*C;

    if (A==0 || d<0 ){
        printf("Impossivel calcular\n");
    }
    else{
        printf("R1 = %.5lf\n",(-B+sqrt(d))/(2*A));
         printf("R2 = %.5lf\n",(-B-sqrt(d))/(2*A));
    }

    return 0;
}
```

Problem No - #18

beecrowd | 1017

Fuel Spent

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Little John wants to calculate and show the amount of spent fuel liters on a trip, using a car that does 12 Km/L. For this, he would like you to help him through a simple program. To perform the calculation, you have to read spent time (in hours) and the same average speed (km/h). In this way, you can get distance and then, calculate how many liters would be needed. Show the value with three decimal places after the point.

Input

The input file contains two integers. The first one is the spent time in the trip (in hours). The second one is the average speed during the trip (in Km/h).

Output

Print how many liters would be needed to do this trip, with three digits after the decimal point.

Input Sample	Output Sample
10 85	70.833

SOURCE CODE

```c
#include <stdio.h>

int main() {

    int h,speed;
    scanf("%d %d",&h,&speed);
    printf("%.3f\n",(float)h*speed/(float)12);

    return 0;
}
```

Problem No - #19

beecrowd | 1013

The Greatest

Adapted by Neilor Tonin, URI Brazil

Timelimit: 1

Make a program that reads 3 integer values and present the greatest one followed by the message "eh o maior". Use the following formula:

$$MaiorAB = \frac{(a+b+abs(a-b))}{2}$$

Input

The input file contains 3 integer values.

Output

Print the greatest of these three values followed by a space and the message “eh o maior”.

Input Samples	Output Samples
7 14 106	106 eh o maior
217 14 6	217 eh o maior

SOURCE CODE

```c
#include <stdio.h>
#include <math.h>
int main()
{

    int a,b,c;
    scanf("%d %d %d",&a,&b,&c);
    int max = (a+b+abs(a-b))/2;
    max = (max+c+abs(max-c))/2;
    printf("%d eh o maior\n",max);
    return 0;
}
```

Problem No - #20

beecrowd | 1051

Taxes

By Neilor Tonin, URI 🇧🇷 Brasil

Timelimit: 1

In an imaginary country called Lisarb, all the people are very happy to pay their taxes because they know that doesn't exist corrupt politicians and the taxes are used to benefit the population, without any misappropriation. The currency of this country is Rombus, whose symbol is R$.

Read a value with 2 digits after the decimal point, equivalent to the salary of a Lisarb inhabitant. Then print the due value that this person must pay of taxes, according to the table below.

Salary	Taxes
from 0.00 to R$ 2,000.00	Without taxes
from R$ 2,000.01 to R$ 3,000.00	8 %
from R$ 3,000.01 to R$ 4,500.00	18 %
more than R$ 4,500.00	28 %

Remember, if the salary is R$ 3,002.00 for example, the rate of 8% is only over R$ 1,000.00, because the salary from R$ 0.00 to R$ 2,000.00 is tax free. In the follow example, the total rate is 8% over R$ 1000.00 + 18% over R$ 2.00, resulting in R$ 80.36 at all. The answer must be printed with 2 digits after the decimal point.

Input

The input contains only a float-point number, with 2 digits after the decimal point.

Output

Print the message "R$" followed by a blank space and the total tax to be payed, with two digits after the decimal point. If the value is up to 2000, print the message "Isento".

SOURCE CODE

```c
#include <stdio.h>

int main() {
    float x, tax, a, b, c;

    // Corrected scanf statement
    scanf("%f", &x);

    if (x >= 0 && x <= 2000) {
        printf("Isento\n");
    } else if (x >= 2000.01 && x <= 3000) {
        tax = (x - 2000) * 0.08;
        printf("R$ %.2f\n", tax);
    } else if (x >= 3000.01 && x <= 4500) {
        a = x - 3000;
        b = x - a - 2000;
        tax = b * 0.08 + a * 0.18;
        printf("R$ %.2f\n", tax);
    } else if (x > 4500) {
        a = x - 4500;
        b = x - a - 3000;
        c = x - a - b - 2000;
        tax = a * 0.28 + b * 0.18 + c * 0.08;
        printf("R$ %.2f\n", tax);
    }

    return 0;
}

```