COMPUTER SCIENCE
PROGRAMMING QUESTION

TYPE 1: INPUT AND OUTPUT **LEVEL 3**

1.

Problem Description:

Tina successfully completed her first Month as Navy Officer and her much awaited first month salary got credited into her account and also go her salary report in her mail.

On seeing the salary report there is no information available about the Employee provident fund.So Tina would like to know about the Employee and Employer Contribution for EPF. Can you help her?

Constraints:

1 <= basicPay <= 50000

1 <= employeeFund <= 17.5

1 <= employerFund <= 23.5

Input Format:

The only line of input has a single floating point value representing the basic salary of Tina.

Output Format:

In the First Line of output print the Employee Share of EPF with only two values after decimal point.

In the Second Line of output print the Employer Share of EPF with only two values after decimal point.

Test Case 1

INPUT (STDIN)

```
43982.56
```

EXPECTED OUTPUT

```
7696.95
10335.90
```

Test Case 2

INPUT (STDIN)

```
29717.19
```

EXPECTED OUTPUT

```
5200.51
6983.54
```

2.

Question description

Janaki wants to Convert decimal number to octal using print() output formatting. Can you help her?

Input Format

A single line input will be given

Output Format

Refer the test case

Test Case 1

INPUT (STDIN)

```
12
```

EXPECTED OUTPUT

```
14
```

Test Case 2

INPUT (STDIN)

```
14
```

EXPECTED OUTPUT

```
16
```

3.

Question description

Vignesh wants to Format the following data using a string.format() method. Can you help her?

Given:

totalMoney = 1000

quantity = 3

price = 450

Input Format

A single line input will be given

Output Format

The output will be as follows:

I have 1000 dollars so I can buy 3 football for 450.00 dollars.

Test Case 1

INPUT (STDIN)

```
3 1000 450
```

EXPECTED OUTPUT

```
I have 1000 dollars so I can
buy 3 football for 450.00
dollars.
```

Test Case 2

INPUT (STDIN)

```
2 800 250
```

EXPECTED OUTPUT

```
I have 800 dollars so I can buy
2 football for 250.00 dollars.
```

4.

Nathan was a student by morning and a computer nerd by night .

At the earlier stages of his career he was in need of money,

So he started working in a grocery store. In the grocery store he need to get the product ID, price of the product(Price per Unit) and the quantity of the product purchased by the customer.

At point of time he found he was doing the same job again and again so he thought of automating the task.

Help Nathan for framing the code for his work.

Constraint:

$1000 \leq billid \leq 9999$

$1000 \leq prodid \leq 9999$

$10.00 \leq price \leq 500.00$
$1 \leq quantity \leq 500$

Input Format :

First line has the bill id in integer format
Second line has the product id in integer format
Third line contains the product's price in float format
Fourth line contains the quantity of purchased items in integer format

Output Format :

Print the bill amount correct to 2 decimal places corresponding to the bill id.

Test Case 1

INPUT (STDIN)

```
1521
1113
78.00
4
```

EXPECTED OUTPUT

```
312.00
```

Test Case 2

INPUT (STDIN)

```
1522
1034
39.50
17
```

EXPECTED OUTPUT

```
671.50
```

5.

Question description

Loans have become an integral part of everyone's life today and help us achieve some important life goals. Be it buying a car, buying a home or affording kids overseas education, loans play a vital role in our life.

However, when we talk about loans, the most important word associated with it is EMI. EMI, which stands for equated monthly installment, is the monthly amount payments we make towards a loan we opted for.

Saravanan need to find the EMI value for the required loan. Can you help him to calculate the EMI?

Function Description

The mathematical formula to calculate EMI is:

EMI =p×r×(1+r)n(1+r)n-1

where p= Loan amount, r= interest rate, n=tenure in number of years.

Input Format:

First line represents the principal amount,

Second line represent the interest rate

Third line represents the tenure in years.

Output Format:

Print the EMI value.

Test Case 1

INPUT (STDIN)

```
100000
1
1
```

EXPECTED OUTPUT

```
8378.54
```

Test Case 2

INPUT (STDIN)

```
10000
10
2
```

EXPECTED OUTPUT

```
461.45
```

6.

Problem Description:
Zaheer and Vinod went to California for attending the Apple products launch event.

In the event location there are lot of mini contests going on with exciting rewards.

In one such stall there was a contest were they have given a floating point number and asked the visitors to display the rightmost digit integral part of the number using a programming logic.

Can you help Zaheer and Vinod to display the rightmost integral part of the number so that they get the exciting apple products as reward?
Constraints:
$1.000 \leq \text{number} \leq 1000.999$

Input Format:
Only line of input has a single floating point value with three values after decimal point.

Output Format:
Print the output in a single line rightmost integral part of the number.

Test Case 1

INPUT (STDIN)

```
1985.674
```

EXPECTED OUTPUT

```
5
```

Test Case 2

INPUT (STDIN)

```
3489.781
```

EXPECTED OUTPUT

```
9
```

7.

Problem Description:

A pair of non-negative integers (A,B) is called *and-pair* if A & B = B, i.e., bitwise-and of A and B is equal to B.

Similarly, a tuple of K non-negative integers (A_1,A_2,A_3 .. A_K) is called *and-tuple* if A_i & A_{i+1} = A_{i+1} for $1 \leq i \leq K-1$.

Given two integers N and K, how many *and-tuples* of size K exist such that the sum of the elements of the tuple is N?

Constraints:

$3 \leq K \leq 6$

$1 \leq N \leq 15$

Input Format:

Only line of input contain two space-separated integers K and N.

Output Format:

For each testcase, print a single line containing the answer.

Since the number can be quite large, print the answer modulo 1000000009.

Explanation:

If K=3 and N =2 then the the two *and-tuples* are (2,0,0) and (1,1,0).

	Test Case 1
	INPUT (STDIN)
	`4 8`
	EXPECTED OUTPUT
	`5`
	
	Test Case 2
	INPUT (STDIN)
	`3 12`
	EXPECTED OUTPUT
	`7`

8.	Problem Description: Krishna has just arrived in the city of Madhura. He brought an old house and renovating it. On seeing the pathetic floor conditions he planned to pave it with tile. He has a m x n units of floor area and want to cover it up with 2x1 size tiles. Krishna is no so good at calculations. Could you help him to find out the minimum number tiles he needs to cover the floor? Constraints: $1 \leq m,n \leq 500$ Input Format: Only line of input has two integers m and n separated by as space. Output Format: Print the minimum number of tiles need to pave the floor as output.

	Test Case 1
	INPUT (STDIN)
	`121 175`
	EXPECTED OUTPUT
	`10588`
	
	Test Case 2
	INPUT (STDIN)
	`183 156`
	EXPECTED OUTPUT
	`14274`

9.	Question description Thanvi is a SSLC student. Her Mathematics teacher gave the weekend assignment. She wants to find the next term of the arithmetic progression. Function Description tn=a+(n-1)d where a is a starting number of the Arithmetic Progression d is the common difference n is the nth term

Constraints

n>0

Input Format

First line represents the first four values of the arithmetic progression. each values are separated by comma.

Second line represents the required term.

Output Format

Print the required term of the Arithmetic Progression

Test Case 1

INPUT (STDIN)

```
9,15,21,27
5
```

EXPECTED OUTPUT

```
33
```

Test Case 2

INPUT (STDIN)

```
10,20,30,40
5
```

EXPECTED OUTPUT

```
50
```

10.

Question description

You are given integers A and B between 0 and 255 (inclusive). Find a non-negative integer C such that A xor C=B.

It can be proved that there uniquely exists such C, and it will be between 0 and 255 (inclusive).

Function Description

The bitwise XOR of integers A and B, A XOR B, is defined as follows:

- When A XOR B is written in base two, the digit in the 2k's place ($k \geq 0$) is 1 if exactly one of A and B is 1, and 0 otherwise.

For example, we have 3 XOR 5=6

(in base two: 011 XOR 101=110).

Constraints

- $0 \leq A,B \leq 255$
- All values in input are integers.

Input Format

A single line represents the A and B value separated by space

Output Format

Print the answer.

Test Case 1

INPUT (STDIN)

```
3 6
```

EXPECTED OUTPUT

```
5
```

Test Case 2

INPUT (STDIN)

```
10 12
```

EXPECTED OUTPUT

```
6
```