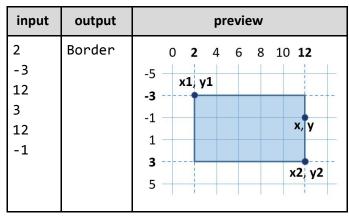# Exercise: Conditional Statements Advanced

1. Point On Rectangle Border

Write a program, which checks whether a **point {x, y}** is located on either one of the sides of a rectangle with **coordinates {x1, y1} – {x2, y2}**. The input is read from the console and consists of **6 lines**: the real numbers **x1**, **y1**, **x2**, **y2**, **x** и **y** (it's guaranteed that **x1 < x2** and **y1 < y2**). Print "**Border**" (if the point is on the border of the rectangle) or "**Inside / Outside**" (otherwise).

Examples

input	output	preview
2 -3 12 3 8 -1	Inside / Outside	

input	output	preview
2 -3 12 3 12 -1	Border	

* **Hint**: use one or several **if** statements with logical operators. The point **{x, y}** lies on any side of a rectangle **{x1, y1} – {x2, y2}**, if any one of the following conditions is true:

- **x** matches **x1** or **x2** and simultaneously **y** is between **y1** and **y2**
- **y** matches **y1** or **y2** and simultaneously **x** is between **x1** and **x2**

You can check the conditions above with a complex **if**-**else** statement or with several simple statements or with nested **if**-**else** conditions.

2. Cinema

In a cinema hall the chairs are ordered in a rectangle of r rows and c columns. There are three types of screenings, each with a different price:

- **Premiere** – **12.00** leva.
- **Normal** – **7.50** leva.
- **Discount** – **5.00** leva.

Write a program, which reads the **type of screening (text)**, **number of rows and columns in the hall** (both **integers**) and calculates the **total profit from tickets if the hall is full**. The result should be formatted **to two decimal places.**

Examples

input	output		input	output		input	output
Premiere 10 12	1440.00 leva		Normal 21 13	2047.50 leva		Discount 12 30	1800.00 leva

* **Hint**: use simple conditions and calculations. To print the result in the wanted format use **Console.WriteLine("{0:f2}", result)**.

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3. Volleyball

Alex is a student, who lives in Sofia and goes back to his hometown every now and then. He's a huge fan of volleyball, but unfortunately is **busy** during **the work days** and only has time to play **during weekends and holidays**.

Alex plays in **Sofia every Saturday if he's not going to visit his hometown**, as well as in **2/3 of the holidays**. He goes to **visit his hometown several times a year**, where he plays volleyball with his friends on **Sundays**. Alex **does not work ¾ of the weekends** when he is in Sofia. Separately, in **leap** years Alex plays **15% more volleyball** than usual. Let's accept that a year has **48 weekends**, **suitable for playing volleyball**.

Write a program which calculates **how many times Alex will play volleyball** during **the year**. **Round the result** to the **smaller integer**.

The input consists of **3 lines:**

- **The first line** reads the **type of year**: "**leap**" or "**normal**"
- **The second line** reads **the number of holidays** during the year (excluding the weekends).
- **The third line** reads **the number of weekends**, during which Alex goes to **visit his hometown**.

Examples

input	output	Explanation

leap
5
2
	45	We've got a total of 48 weekends suitable for volleyball.
		   • 46 weekends in Sofia ⯈ 46 * 3 / 4 ⯈ **34.5** games in Sofia
		   • 2 weekends in his hometown ⯈ 2 Sundays ⯈ **2** games in his hometown
		5 holidays:
		   • 5 * 2/3 ⯈ **3.333** games in Sofia on holidays
		Total number of games during weekends and holidays in Sofia and in his hometown:
		34.5 + 2 + 3.333 ⯈ **39.833**
		The type of year is leap:
		   • Alex will play an additional 15% * 39.833 ⯈ **5.975** games
		Total games during the whole year:
		   • 39.833 + 5.975 = **45.808** games
		   • The result is **45** (rounded to the smaller integer)

input	output
normal 3 2	38

input	output
leap 2 3	43

input	output
normal 11 6	44

input	output
leap 0 1	41

input	output
normal 6 13	43

* **Hints**:

- Calculate **the weekends in Sofia** (48 minus the weekends in his hometown). Calculate the **number of weekends in Sofia**: multiply the weekends in Sofia by (3.0 / 4). Notice that a fractional division is necessary (3.0 / 4), not an integer one (3 / 4).
- Calculate **the number of games in the hometown. They are exactly as much as the trips to the hometown**.
- Calculate **the number of games during holidays**. They equal **the number of holidays multiplied by (2.0 / 3)**.
- **Sum** all games. You will get a decimal number. **Do not round yet**.
- If the year is **leap** add **15%** to **the total number of games**.
- Finally, **round** to the smaller integer by using `Math.Truncate(result)`.

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4. Summer Outfit

It's summer and since the weather is very unpredictable Victor needs your help. Write a program, which recommends Victor what to wear **according to the time of day and the weather outside**. Depending on the time of day, he will have different plans, which require **different outfits** – you can see then in the table below.

The input consists of exactly two lines:

- **Degrees – an integer in the range [10…42]**
- **Time of day – text with possible values: "Morning", "Afternoon", "Evening"**

Degrees / time of day	Morning	Afternoon	Evening
10 <= deg <= 18	Outfit = Sweatshirt Shoes = Sneakers	Outfit = Shirt Shoes = Moccasins	Outfit = Shirt Shoes = Moccasins
18 < deg <= 24	Outfit = Shirt Shoes = Moccasins	Outfit = T-Shirt Shoes = Sandals	Outfit = Shirt Shoes = Moccasins
deg >= 25	Outfit = T-Shirt Shoes = Sandals	Outfit = SwimSuit Shoes = Barefoot	Outfit = Shirt Shoes = Moccasins

Print a single line on the console: "It's {degrees} degrees, get your {outfit} and {shoes}."

Examples

Input	Output	Explanation
16 Morning	It's 16 degrees, get your Sweatshirt and Sneakers.	In the morning when it's 16 degrees, Victor wears a sweatshirt and sneakers.

Input	Output	Input	Output
22 Afternoon	It's 22 degrees, get your T-Shirt and Sandals.	28 Evening	It's 28 degrees, get your Shirt and Moccasins.

5. New House

Marin and Nelly are buying a house. Nelly loves flowers very much and she needs you to write a program, which calculates how much it will cost to plant a certain number of flowers and whether their budget will be enough.

The prices are as follows:

Flower	Rose	Dahlia	Tulip	Narcissus	Gladiolus
Price per piece	5	3.80	2.80	3	2.50

In some cases, there are discounts:

- **If Nelly buys more than 80 Roses - 10% discount from the final price**
- **If Nelly buys more than 90 Dahlias - 15% discount from the final price**
- **If Nelly buys more than 80 Tulips - 15% discount from the final price**
- **If Nelly buys less than 120 Narcissus – the final price is increased by 15%**
- **If Nelly buys less than 80 Gladiolus - the final price is increased by 20%**

The input consists of 3 lines:

- **Type of flowers – text with possible values: "Roses", "Dahlias", "Tulips", "Narcissus", "Gladiolus"**

- **Number of flowers – an integer in the range [10...1000]**
- **Budget – an integer in the range [50...2500]**

Print **a single line** on the console:

- **If the budget is enough - "Hey, you have a great garden with {number of flowers} {type of flowers} and {money left} leva left."**
- **If the budget is NOT enough - "Not enough money, you need {money needed} leva more."**

The sum should be formatted to 2 decimal places.

Examples

Input	Output	Explanation
Roses 55 250	Not enough money, you need 25.00 leva more.	Nelly wants 55 Roses. The price per rose is 5lv., therefore 55 pieces will cost her: 55 * 5 = 275lv. Her budget is 250 lv. Since 275 > 250, she can't afford it and she needs 25 lv.

Input	Output	Input	Output
Tulips 88 260	Hey, you have a great garden with 88 Tulips and 50.56 leva left.	Narcissus 119 360	Not enough money, you need 50.55 leva more.

6. Fishing Boat

Tony and his friends decide to go on a fishing trip with a boat. The price for renting the boat depends **on the season** and **the number of fishermen.**

Seasonal prices:

- **The price for rent during spring is 3000 lv.**
- **The price for rent during summer and fall is 4200 lv.**
- **The price for rent during winter is 2600 lv.**

The following discounts exist:

- **For a group of up to 6 people – a discount of 10%.**
- **If the group is from 7 to 11 people – a discount of 15%.**
- **If the group is 12 or more people – a discount of 25%.**

The fishermen have an additional discount of **5% if the group is an even number, except if it's fall – then they don't have the discount. Write a program, which calculates whether the fishermen will have enough money.**

Input

The input consists of 3 lines:

- **Group budget – an integer in the range [1...8000]**
- **Season – text : "Spring", "Summer", "Autumn", "Winter"**
- **Number of fishermen – an integer in the range [4...18]**

Output

Print **a single line** on the console:

- **If the budget is enough:**

"Yes! You have {money left} leva left."

- If the budget is **NOT enough**:

`"Not enough money! You need {money needed} leva."`

The sum should be formatted to two decimal places.

Examples

Input	Output	Explanation
3000 Summer 11	Not enough money! You need 570.00 leva.	During the Summer the rent is 4200 lv., **11** fishermen get a 15% discount -> **4200 - 15% = 3570** lv., their group is **an odd number**, which means they don't get an additional discount. 3000 <= 3570, therefore they need 570.00 lv. more.

Input	Output	Input	Output
3600 Autumn 6	Not enough money! You need 180.00 leva.	2000 Winter 13	Yes! You have 50.00 leva left.

7. On Time for the Exam

Monica has an upcoming exam. According to the rules, she will be **on time for the exam** if she is there **exactly when it starts** or **up to half an hour before this**. If she arrives **more than 30 minutes before the start**, she will be **too early**. If she arrives after the exam has started, she will be **late**. Write a program, which reads **the time the exam starts**, and **the time Monica arrived** and prints whether she arrived **on time, too early or late** and **how many hours/minutes** before or after the start she arrived.

Input

The input consists of **4 lines**:

- The **hour** the exam starts – **an integer** in the range [0 ...23]
- The **minute** the exam starts – **an integer** in the range [0 ...59]
- The **hour** Monica arrived – **an integer** in the range [0 ...23]
- The **minute** Monica arrived – **an integer** in the range [0 ...59]

Output

On the first line print:

- "**Late**", if Monica arrived after the exam started.
- "**On time**", if Monica arrived exactly on time or up to 30 minutes early.
- "**Early**", if Monica arrived more than 30 minutes before the start.

If she arrived with at least a minute of a difference from the exam time, print on the next line:

- "**mm minutes before the start**" if she is less than an hour early.
- "**hh:mm hours before the start**" if she arrived more than an hour early. The minutes should always be printed with **a leading zero**.
- "**mm minutes after the start**" if she is less than an hour late.
- "**hh:mm hours after the start**" if she is more than an hour late. The minutes should always be printed with **a leading zero**.

Examples

Input	Output		Input	Output		Input	Output

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9 30 9 50	Late 20 minutes after the start
9 00 8 30	On time 30 minutes before the start
16 00 15 00	Early 1:00 hours before the start

9 00 10 30	Late 1:30 hours after the start
14 00 13 55	On time 5 minutes before the start
11 30 8 12	Early 3:18 hours before the start

10 00 10 00	On time
11 30 10 55	Early 35 minutes before the start
11 30 12 29	Late 59 minutes after the start

8. Journey

John is a young programmer, who likes to plan his trips ahead. His next destination will be determined **according to his budget** and **the season**, during which he would like to go on a trip. Write a program, which will help him **pick a destination** and will tell him **how much he will spend on his trip**.

The destination depends on the budget. The amount of money he will spend **depends on the season**. If it's **summer** he will go **camping**, if it's **winter** he will go to a **hotel**. If it's **somewhere in Europe,** he will stay at a **hotel** (no matter the season). For every camping or hotel, he goes to, he must pay a certain percent of the budget (**according to the destination**):

- If he has a budget of up to **100lv.** – his trip will be in **Bulgaria**
    - **Summer – 30%** of the budget
    - **Winter – 70%** of the budget
- If he has budget of up to **1000lv** – his trip will be somewhere in the **Balkans**
    - **Summer – 40%** of the budget
    - **Winter – 80%** of the budget
- If his budget is more than **1000lv**. – his trip will be somewhere in **Europe**
    - No matter the season he will spend **90% of the budget**

Input

The input consists of **2 lines**:

- **John's budget - a real number in the range [10.00...5000.00].**
- **Season** - text with possible values: **"summer"**, **"winter"**

Output

Print two lines on the console.

- **First line** – "**Somewhere in {destination}**" – possible destinations are: "**Bulgaria**", "**Balkans**", "**Europe**"
- **Second line** – "**{Type of holiday} – {The amount he spent}**"
    - **The possible types of holiday are** "**Camp**" and "**Hotel**"

The sum should be rounded to two decimal places.

Examples

input	output
50 summer	Somewhere in Bulgaria Camp - 15.00

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75 winter	Somewhere in Bulgaria Hotel - 52.50
312 summer	Somewhere in Balkans Camp - 124.80
678.53 winter	Somewhere in Balkans Hotel - 542.82
1500 summer	Somewhere in Europe Hotel - 1350.00

9. Operations Between Numbers

Write a program, which reads **two integers (N1 and N2)** and **an operator,** which will perform a certain math operation with them. The possible operations are: **Addition (+)**, **Subtraction (-)**, **Multiplication (*)**, **Division (/)** и **Modular Division (%).** If the operation is either addition, subtraction or multiplication, print the result of the operation on the console and whether it is an even or an odd number. If the operation **is regular or modular division** –print **only the result**. Keep in mind that **the divisor can be 0 (zero)** and you are **not supposed to divide by zero**. In that case **print a special message.**

Input

The input consists of **3 lines**:

- **N1 – an integer in the range [0...40 000]**
- **N2 – an integer in the range [0...40 000]**
- **Operator – a symbol of the following**: '**+**', '**-**', '*****', '**/**', '**%**'

Output

Print **a single line** on the console:

- If the operation is **addition**, **subtraction** or **multiplication**:
  - o **"{N1} {operator} {N2} = {the result of the operation} – {even/odd}"**
- If the operation is **regular division**:
  - o **"{N1} / {N2} = {result}"** – the **result** should be **formatted to two decimal places**
- If the operation is **modular division**:
  - o **"{N1} % {N2} = {remainder}"**
- If case **of division by 0 (zero)**:
  - o **"Cannot divide {N1} by zero"**

Examples

input	output	input	output	input	output
10 12 +	10 + 12 = 22 - even	123 12 /	123 / 12 = 10.25	112 0 /	Cannot divide 112 by zero
10 1 -	10 – 1 = 9 - odd	10 3 %	10 % 3 = 1	10 0 %	Cannot divide 10 by zero
7 3 *	7 * 3 = 21 - odd				

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10. Hotel Room

A hotel has **two types of rooms**: **a studio and an apartment**. Write a program, which calculates the price for staying at a studio and an apartment. The prices depend on **the month and the stay**:

May and October	June and September	July and August
Studio – **50** lv./night	Studio – **75.20** lv./ night	Studio – **76** lv./ night
Apartment – **65** lv./night	Apartment – **68.70** lv./ night	Apartment – **77** lv./ night

The hotel makes the following **discounts**:

- For a **studio**, for **more than 7 nights** in **May** and **October**: **5% discount**.
- For a **studio**, for **more than 14 nights** in **May** and **October**: **30% discount**.
- For a **studio**, for **more than 14 nights** in **June** and **September**: **20% discount**.
- For **an apartment**, for **more than 14 nights all year round: 10% discount.**

Input

The input consists of 2 lines:

- **The month** – **text** with possible values: **May, June, July, August, September** or **October**
- **Number of nights** – an integer in the range [0 ... 200]

Output

Print **two lines** on the console:

- On the **first line**: "**Apartment: {the price for the whole stay} lv.**"
- On the **second line**: "**Studio: {the price for the whole stay} lv.**"

The prices should be formatted to two decimal places.

Examples

Input	Output	Explanation
May 15	Apartment: 877.50 lv. Studio: 525.00 lv.	**In May**, if the stay is more than **14** nights, the discount of the studio is **30%** (50 – 15 = 35), and of the apartment – **10%** (65 – 6.5 =58.5). The price for the whole stay for an **apartment – 877.50 lv**. The price for the whole stay for a **studio – 525.00 lv**.

Input	Output	Input	Output
June 14	Apartment: 961.80 lv. Studio: 1052.80 lv.	August 20	Apartment: 1386.00 lv. Studio: 1520.00 lv.

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