<table>
<tr><th>SL</th><th>Questions</th><th>Difficulty</th></tr>
<tr><td>1</td><td>Write a program to take in the name and age as inputs from the user. Print a message in the terminal and make Python introduce yourself.

Example
<table><tr><th>Sample Input</th><th>Sample Output</th></tr><tr><td>John Doe
53</td><td>Hello! My name is John Doe and I am 53 years old.</td></tr></table></td><td>*</td></tr>
<tr><td>2</td><td>Write a program to take a number as input from the user and check if the number is odd or even. Print the label: "The number is odd/even".

Example:
<table><tr><th>Sample Input</th><th>Sample Output</th></tr><tr><td>2</td><td>The number is even</td></tr><tr><td>15</td><td>The number is odd</td></tr></table></td><td>*</td></tr>
<tr><td>3</td><td>Write a program to take in two variables x and y as inputs from the user. Assign the values to each of them such that the value of x is greater than the value of y (x > y). Find out their:
● Sum
● Difference
● Product
● Division

Finally, print each of them with a label: "Their <operation> is: <result>”.

Example
<table><tr><th>Sample Input</th><th>Sample Output</th></tr><tr><td>5
4</td><td>Their sum is: 9
Their difference is: 1
Their product is: 20
Their division is: 1.25</td></tr></table></td><td>*</td></tr>
</table>

4 Write a program that will take three numbers as input from a user, but it will print only the first and last numbers and skip the middle number.

Example:

Sample Input	**Sample Output**
20 50 100	First value = 20, Last value = 100
20 75 22	First value = 20, Last value = 22

*

5 Write a program to check if a shape is a triangle or not. The program will take three numbers as inputs from the user, which are the angles of the triangle (the value should be greater than 0 degrees and less than 180 degrees). Finally, print whether the shape is a triangle or not with simply a **"Yes"** or a **"No"**.

[**HINT:** A shape is a valid triangle if, and only if, the **sum of all its angles** is 180 degrees]

Example

Sample Input	**Sample Output**
90 45 45	Yes
30 110 40	Yes
0 180 0	No
160 20 30	No

*

6 You are given three positive integers a, b, and c, where a and b are the sides of a right-angled triangle, and c is the hypotenuse. Write a program that takes these three integers as inputs from the user, and determines if the triangle is special or not.

For a triangle to be special, it needs to satisfy the Pythagorean theorem

$$a^2 + b^2 = c^2$$

If the triangle is special, print **“Special Triangle”**. Else print **“Not special”**.

*

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Examples

Sample Input	Sample Output
Enter a: 4 Enter b: 3 Enter c: 5	Special
Enter a: 5 Enter b: 3 Enter c: 4	Not special

7

You are developing a menu-based application to convert temperature from **Celsius to Fahrenheit** and vice versa. Write a program to take the choice of conversion, and the temperature value inputs from the user. The choice of conversion are as follows:

- If the user input value is 1, then you need to convert the temperature from Celsius to Fahrenheit.
- If the input value is 2, then you need to convert the temperature from Fahrenheit to Celsius.

Start by:

- Asking the choice of the conversion, "Enter the choice of conversion:".
- Next, ask, "Enter the temperature in Celsius/Fahrenheit:".

Finally, print the converted temperature with the label:
"The converted temperature is <result> C/F". See the examples below.

**

Examples

Sample Input	Sample Output
Enter the choice of conversion: 1 Enter the temperature in Celsius: 25	The converted temperature is: 77 F
Enter the choice of conversion: 2 Enter the temperature in Fahrenheit: 77	The converted temperature is: 25 C

8

You are developing an application for a supermarket checkout. Write a program that would take the name of an item, its price, and how many of it is being purchased by the customer (the quantity). You need to take the name, price, and quantity as inputs from the user:

- Begin by asking with the label, "Enter the item name:" to get the name of the item.

**

- Next, ask, "Enter the price of the item:" to get the price of the item.
- Finally, ask, "Enter the quantity of the item:" to get the quantity of the item the customer is purchasing.

Finally, print it with the label:
"The total price of <name> purchased: <total_price> BDT".
See the examples below.

Examples

Sample Input	**Sample Output**
Enter item name: Apple Enter item price: 10 Enter item quantity: 2	The total price of Apple purchased: 20 BDT
Enter item name: Speaker Enter item price: 1000 Enter item quantity: 10	The total price of Speaker purchased: 10000 BDT

9

Write a simple program that helps users calculate the area and perimeter/circumference of different shapes based on their choice. The program should ask the user to input a number corresponding to the shape they want to calculate. The choices are as follows:

- If the user input value is 1, then calculate the area for a circle.
- If it is 2, then calculate the area for a square.
- If it is 3, then calculate the area for a rectangle.
- If it is 4, then calculate only the area for a triangle.

After choosing the shape, the program should ask for the necessary values:

- For a circle, ask for the radius.
- For a square, ask for the length of a side.
- For a rectangle, ask for the lengths of two sides.
- For a triangle, ask for the base and height.

Calculate their area and finally, print the values in the terminal. See the inputs and corresponding outputs in the examples below.

[**NOTE***:* Take the value of pi π as 3.14]

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Examples

Sample Input	Sample Output
Enter choice of shape: 1 Enter the radius: 5	Area of the circle: 78.5
Enter choice of shape: 2 Enter the length: 10	Area of the square: 100
Enter choice of shape: 3 Enter the length for one side: 10 Enter the length for another side: 5	Area of the rectangle: 50
Enter choice of shape: 4 Enter the base: 5 Enter the height: 10	Area of the triangle: 25

10 You are developing a grade-checking system for UIU. Write a program to take the final score/marks as user input. Print the output of the final grade along with its remarks in the format:
"Grade: <grade>, <remarks>".

The grade table is as follows:

Letter Grade	Grade Point	Marks	Assessment
A	4.00	90-100	Outstanding
A-	3.67	86-89	Excellent
B+	3.33	82-85	Very Good
B	3.00	78-81	Good
B-	2.67	74-77	82-85 Above Average
C+	2.33	70-73	Average
C	2.00	66-69	Below Average
C-	1.67	62-65	Poor
D+	1.33	58-61	Very poor
D	1.00	55-57	Pass
F	0.00	<55	Fail
I	0.00	-	Incomplete
W	0.00	-	Withdraw
R	0.00		Repeat/Retake

**

Examples

Sample Input	Sample Output
91.5	Grade: A, Outstanding
50	Grade: F, Fail
75	Grade: B-, Above Average

11

You are developing a payroll system for a company. The system has a feature to give a bonus to an employee if they fulfil all the conditions such as:

- The work hours must be greater than 20 hours/week.
- The employee must have been in the company for at least 2 years.

If an employee doesn't meet these conditions, they are not eligible for a bonus.

If an employee has these conditions fulfilled, then may be awarded any bonus from three types of categories: **Gold, Silver,** and **Bronze**. The conditions and rewards to meet the categories are as follows:

- If their productivity is within the range of 0.5-0.69, then they will be awarded a **Bronze** bonus.
- If their productivity is within the range of 0.70-0.89, then they will be awarded a **Silver** bonus.
- If their productivity is within the range of 0.90-1.00, then they will be awarded a **Gold** bonus.
- Else, give a normal bonus.

The productivity is defined as **the number of tasks completed by the employee divided by the number of tasks they were assigned**.

Write a program to take in the employee name, work hours, years of work, tasks done, and tasks given as inputs from the user (print labels to take inputs, see examples for more). Based on the conditionals, find if the employee is eligible for a bonus and print the bonus category.

***

Example

Sample Input	Sample Output
Enter employee name: John Doe Enter the work hours: 20 Enter years of work: 3 Enter tasks done: 12 Enter tasks given: 12	John Doe is not eligible for a bonus

Enter employee name: Jane Doe Enter the work hours: 23 Enter years of work: 4 Enter tasks done: 12 Enter tasks given: 14	Jane Doe is eligible for the Silver bonus
Enter employee name: Mr X Enter the work hours: 21 Enter years of work: 10 Enter tasks done: 5 Enter tasks given: 12	Mr X is eligible for the normal bonus
Enter employee name: Mrs Y Enter the work hours: 21 Enter years of work: 10 Enter tasks done: 18 Enter tasks given: 20	Mrs Y is eligible for the Gold bonus
Enter employee name: Jack Doe Enter the work hours: 21 Enter years of work: 5 Enter tasks done: 13 Enter tasks given: 20	Jack Doe is eligible for the Bronze bonus

12 Robin Hood steals money from the rich and gives it to the poor, but conditionally. Before deciding to steal, he sees the population of his town at a particular hour. If the number of rich people in the town is more than the number of poor people, he does not steal. If he sees that the number of poor people is more than the number of rich people, he will only steal if **both**:

- The number of poor people is a multiple of 4.
- The number of rich people is a multiple of 3.

Write a program for Robin Hood where he will input the number of poor people and the number of rich people. The program will tell whether or not Robin Hood should steal at that time of the day. The program will output either "**Do not steal"** or **"Steal"**

Example

Sample Input	**Sample Output**
Number of rich people: 4 Number of poor people: 2	Do not steal.
Number of rich people: 4 Number of poor people: 5	Do not steal
Number of rich people: 4 Number of poor people: 8	Do not steal

*

Number of rich people: 6 Number of poor people: 8	Steal

13 The english alphabet contains 5 vowels. Write a program to take in an input capital/small letter from the user and print whether the alphabet is a vowel or not. *

Example

Sample Input	**Sample Output**
A	Vowel
a	Vowel
p	Not a vowel

14 A T20 cricket game lasts 20 overs. The analysts need to predict if the team chasing down the target can win the game or not, given their current runs and number of overs finished. In order to make a fair (but not accurate) prediction, the analysts calculate the run rate and **assume that the team will maintain this run rate till the end of the game**. Next, they estimate the amount of runs the team will score within the remaining overs by taking **the product of the run rate and the number of overs remaining**. If the estimated score is greater than the target to be chased, then the team is predicted to win. If not, then the team will lose. *

Help the analysts write this program. Ask the analysts for the number of runs scored, the number of overs finished, and the current target. Finally, print **"Might win"** if the team is predicted to win, else **"Might lose"**.

Example

Sample Input	**Sample Output**
Runs: 150 Overs bowled: 15 Target: 210	Might lose
Runs: 200 Overs bowled: 13 Target: 310	Might lose
Runs: 210 Overs bowled: 13 Target: 310	Might win

Explanation

For sample input 1: The run rate is 150/15 = 10. There are 5 overs remaining, which means the estimate runs the team will score is 50. The runs left to chase is 60. The team cannot win if they maintain this run rate.

15

Pete and his friend Billy decided to buy a watermelon. They chose the biggest and the ripest one, in their opinion. After that the watermelon was weighed, and the scales showed a certain number of kilos. They rushed home, dying of thirst, and decided to divide it, however they faced a hard problem.

Pete and Billy are great fans of even numbers, that's why they want to divide the watermelon in such a way that **each of the two parts weighs even number of kilos**, at the same time it is not obligatory that the parts are equal. The boys are extremely tired and want to start their eating as soon as possible, that's why you should help them and find out, if they can divide the watermelon in the way they want. For sure, each of them should get a part of positive weight.

Print **YES**, if the boys can divide the watermelon into two parts, each of them weighing even number of kilos; and **NO** in the opposite case.

*

Example

Sample Input	Sample Output
8	YES
2	NO

Explanation

For sample input 1: the boys can divide the watermelon into two parts of 2 and 6 kilos respectively (another variant — two parts of 4 and 4 kilos).