IF ... ELSE STATEMENT

1. Take a number from the user and check if it is odd (not divisible by 2) or even (divisible by 2).

INPUT	OUTPUT
5	Odd
16	Even
-1	Odd
0	Even

2. Take a number from the user and check whether the number is positive, negative or neither.

INPUT	OUTPUT
-3	Negative
10	Positive
0	Neither positive or negative

3. Write program that takes a number as input and checks whether it is an integer or floating point number.

INPUT	OUTPUT
1.25	Floating-point number
4	Integer
-2.014	Floating-point number
0	Integer

4. Write a program that checks if a number is divisible by 7 or 5.

INPUT	OUTPUT
15	Divisible by 5 or 7
6	Not divisible by 5 or 7
21	Divisible by 5 or 7
27	Not divisible by 5 or 7

5. Write a program that checks if a number is divisible by 3 and 5.

INPUT	OUTPUT
15	Divisible by 3 and 5
9	Not divisible by 3 and 5
25	Not divisible by 3 and 5
45	Divisible by 3 and 5

6. Write a program that checks if a number is greater than 50 and less than 100 and divisible by 13 or 9.

INPUT	OUTPUT
39	No
65	Yes
80	No
90	Yes

7. Write a program that checks if a number is within the range [35,75) and divisible by 5 but not by 2. (Note that the range includes 35 but excludes 75.)

INPUT	OUTPUT
50	No
35	Yes
65	Yes
75	No

8. Write a program that checks if a number is within the range (10,40) and divisible by 5 or within the range (60,90) and divisible by 7.

INPUT	OUTPUT
37	No
25	Yes
50	No
63	Yes
96	No

9. Write a program that implements the following grading system. Make sure that you understand the meaning of the brackets. [means including the value,) means excluding the value.

Mark range	Grade
[85, 100]	A
[80, 85)	A-
[75, 80)	B+
[70, 75)	B
[65, 70)	B-
[60, 65)	C+
[55, 60)	C
[50, 55)	C-
[45, 50)	D+
[40, 45)	D
[0, 40)	F

10. Write a program that takes the user's age as input and then finds out what stage of human life they are in using the table given below.

Age Range	Stage
Less than 3 years	Infancy
From 3 years to less than 12 years	Childhood
From 12 years to less than 20 years	Adolescence
From 20 years to less than 40 years	Young adulthood
From 40 years to less than 65 years	Mature adulthood
65 years and above	Late adulthood

Input	Output
20	Young adulthood
6	Childhood
12	Adolescence
1	Infancy
65	Late adulthood

11. Write a program that takes integer inputs from 0 to 10 and displays the number in words.

INPUT	OUTPUT
5	Five
0	Zero
10	Ten
7	Seven

12. Write a program that takes three numbers from the user and finds out the largest and the smallest number.

INPUT	OUTPUT
5.5 8.12 7.02	Largest: 8.12 Smallest: 5.5
-72 -12 -52	Largest: -12 Smallest: -72
15 15 15	Largest: 15 Smallest: 15
2.5 2.5 1.5	Largest: 2.5 Smallest: 1.5

13. Write a program that checks if a year is a leap year or not. If a year is divisible by 4, but not by 100, it is a leap year. If a year is divisible by 100, but not by 400, then it is not a leap year. If a year is divisible by 400, it is a leap year.

INPUT	OUTPUT
2023	Not a leap year
2000	A leap year
2016	A leap year
1900	Not a leap year
2400	A leap year

14. Write a program that takes a character from the user and checks if it is a lower case letter, an upper case letter, a digit or a symbol. (Hint: Learn about ASCII table)

INPUT	OUTPUT
a	Lowercase letter
9	Digit
%	Symbol
H	Uppercase letter
0	Digit
,	Symbol

15. Write a program to compute the roots of a quadratic equation $ax^2 + \mathrm{bx} + \mathrm{c} = 0$. The formula for finding the roots is:

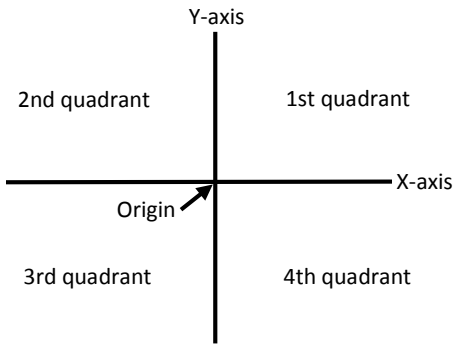
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Here the value of *a*, *b* and *c* are given by the user. The roots can be real or complex. Display the complex roots properly.

INPUT	OUTPUT
a = 1 b = 2 c = 3	x = -1 + 1.4142i x = -1 - 1.4142i
a = 1.25 b = 7.62 c = 2.38	x = -0.3302 x = -5.7657
a = 1 b = 2 c = 0	x = 0 x = -2
a = 2 b = 0 c = 2	x = 0 + 1i x = 0 - 1i

16. Write a program that asks the user to enter the x and y coordiantes of a point in 2-dimensional space. Then find out where the point is located. Possible locations are the four quadrants, the two axes and the origin. See the input-output table below.

INPUT	OUTPUT
x = -5 y = -3	3rd quadrant
x = -2.5 y = 0	X-axis
x = 0 y = 0	Origin
x = 0; y = 12;	Y-axis
x = 1.32 y = 2.14	1st quadrant



17. Write a program that takes the lengths of the three sides of a triangle from the user and checks if the sides form a right triangle. (a right triangle is a triangle in which one angle is 90 degrees).

INPUT	OUTPUT
3 5 4	Right triangle
1 1 1	Not a right triangle
13 5 12	Right triangle
4.5 2.0 4.5	Not a right triangle

18. Write a program that ask the user to select an option for a menu. The menu will have the following options:

1. Area of a circle
2. Area of a rectangle
3. Area of a triangle
4. Volume of a cylinder
5. Volume of a sphere
6. Volume of a cube

The use will select an option by entering the corresponding serial number. For example, let's assume the user enters 2. That means the user wants to compute the area of a rectangle. So, then the program asks the user to enter the length and width of the rectangle. Once the user provides the requested inputs, the program computes and prints the result.

INPUT	OUTPUT
1. Area of a circle 2. Area of a rectangle 3. Area of a triangle 4. Volume of a cylinder 5. Volume of a sphere 6. Volume of a cube Select an option (1-6): 2 << Area of a rectangle >> Enter length: 2.5 Enter width: 10	Area of the rectangle is 25.
1. Area of a circle 2. Area of a rectangle 3. Area of a triangle 4. Volume of a cylinder 5. Volume of a sphere 6. Volume of a cube Select an option (1-6): 5 << Volume of a sphere >> Enter radius: 1.05	Volume of the sphere is 4.849.