4) What is the floating-point numbers?

Floating point numbers allow the computer to maintain a limited, fixed number of digits of precision together with a power that shifts the point left or right within the number to make the number larger or smaller, as necessary. The range of numbers that the computer can handle in this way is huge, in a personal computer, for example, the range of numbers that may be expressed this way may be 10-38 < number < 10+38 or more.

The floating-point number is derived from the fact that there is no fixed number of digits before and after the decimal point; that is, the decimal point can float. There are also representations in which the number of digits before and after the decimal point is set, called *fixed-point* representations. In general, floating-point representations are slower and less accurate than fixed-point representations, but they can handle a larger range of numbers.

Reference:

1. The - Irv Englander *The Architecture of Computer Hardware and System Software A , 5th Edition,* Page 137
2. https://www.webopedia.com/TERM/F/floating\_point\_number.html