

### FLOATING - POINT REAL NUMBERS :-

Specification:  $\left\{ \begin{array}{l} \text{In FORTRAN} \rightarrow \text{real} \\ \text{In C} \rightarrow \text{float} \end{array} \right.$

Some precision required for floating-point numbers, in terms of the numbers of digits used in the decimal representation, may be specified by the programmer, as in Ada.

- Similar arithmetic operations, relational and assignment operations as with integers are usually provided for real.
- Boolean operations has restrictions
- Equality between two Real no. is rarely achieved Due to Round off issues. because program that checks for equality to exit a loop may never Terminate.

→ Some inbuilt functions like  
Sine and maximum value

$\text{Sin} : \text{real} \times \text{real} \rightarrow \text{real}$

and

$\text{max} : \text{real} \times \text{real} \rightarrow \text{real}$

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## Implementation :-

- Storage representation based on hardware representation in which a storage location is divided into Mantissa (i.e. Significant digit of the no.) and an exponent.
- Any number  $N$  can be expressed as  $N = m \times 2^k$  form between 0 and 1 and for some integer  $k$ .
- A double-precision form of floating-point number is also often available, in which an additional memory word is used to store an extended mantissa.

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