Naming Conventions for Variables

Help Document for CS101-Introduction to Computer Science, Xiaofeng Gao, Fall 2014.

1. Small letters for elements and functions.

    - a, b, c for elements,
    - f, g for functions,
    - i, j, k for integer indices,
    - x, y, z for free variables,
    - English initial for variables with meanings, e.g., n for node, v for vertex.

2. Capital letters for sets. A, B, S. $A = \{a_1, \cdots, a_n\}$

3. Bold small letters for vectors. $\mathbf{x}$, $\mathbf{y}$. $\mathbf{v} = \{v_1, \cdots, v_m\}$

4. Bold capital letters for collections. $\mathbf{A}$, $\mathbf{B}$. $\mathbf{S} = \{S_1, \cdots, S_n\}$

5. Blackboard bold capitals for domains (standard symbols). $\mathbb{N}$, $\mathbb{R}$, $\mathbb{Z}$.

6. German script for collection of functions. $\mathscr{C}$, $\mathscr{S}$, $\mathscr{T}$.

7. Greek letters for parameters or coefficients. α, β, γ.

8. Some most common notational usages:

    - l and w for length and width of an object,
    - n denotes a fixed integer, such as a count of objects or the degree of an equation (When two integers are needed, for example for the dimensions of a matrix, one uses commonly m and n).
    - p often denotes a prime numbers or a probability.
    - q often denotes a prime power or a quotient.
    - r often denotes a remainder.
    - x, y and z usually denote the three Cartesian coordinates of a point in Euclidean geometry. By extension, they are used to name the corresponding axes..
    - z typically denotes a complex number, or, in statistics, a normal random variable.
    - α, β, γ, θ and ϕ commonly denote angle measures.
    - ε usually represents an arbitrarily small positive number (ε and δ commonly denote two small positives).
    - λ is used for eigenvalues.
    - σ often denotes a sum, or, in statistics, the standard deviation.

9. Double strike handwriting for bold letters.