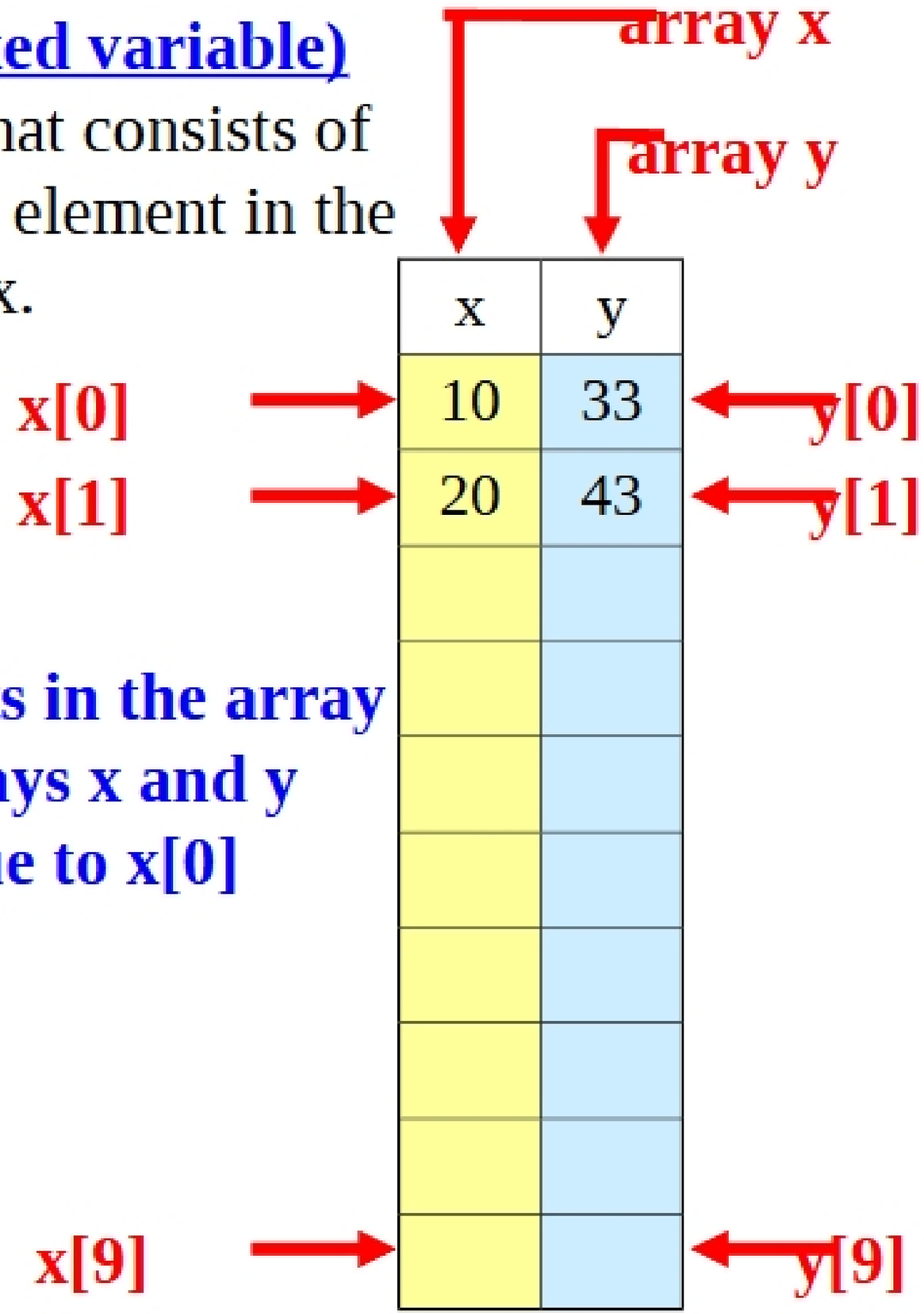
Chapter 7 – One-Dimensional Arrays

Array (subscripted variable, indexed variable)

An array is a data structure in C++ that consists of a group of like-type data where each element in the array is easily referred to by an index.



Example:

```
int main()
{
    const int N = 10;    //10 elements in the array
    double x[N],y[N];  //define arrays x and y
    x[0] = 10;              //assign value to x[0]
    x[1] = 20;
    y[0] = 33;
    y[1] = 43;
    ....
```

Declaring arrays

Arrays are declared like other variables, except that the identifier is followed by brackets containing a value specifying the size of the array.

Form:

type ArrayName[ArraySize];

ArrayName – any valid identifier

ArrayValue – a constant variable, expression, or literal

Examples:

```
const int N = 30;
int  A[N], B[2*N], C;
double Grades[100], Monthly_Sales[12], Total;
char Initials[3];
```

Working with arrays elements

Elements in an array are easily referred to using the subscript (or index). The index for the first element is 0. If an array has size N, then the indices run from 0 to N-1. A(2) refers the third element in array A and may be treated as any other variable.

Example:

```
const int N = 4;          // specify the array size *
int  A[N];                // declare the array
A[0]=10;                  // assigning a value to A[0]
A[1]=20;
A[2] = A[0] + A[1];       // array elements used in expressions
A[N-1] = A[N-2];          // array indices can be expressions
cout << A[2];             // printing one value of the array
//  *Note:  It is good practice to use variables for array sizes
```