



CSE122 Computer Programming

Sheet 5: Arrays

- Determine if the following declaration are legal or not (and why?)
 - float payroll[f] ;
 - int workers[3] = { 6 , 8 , 8 , 0 } ;
 - int freq[12] = { 0 , 3 , 7 , 10 , 16 , 28 , 31 , 30 , 19 , 13 , 5 , 2 } ;
- Given an array X with the following values:

X[0]	X[1]	X[2]	X[3]	X[4]	X[5]	X[6]	X[7]
10.0	15.0	6.0	5.0	20.0	0.0	1.5	2.5

Find the value of y in each of the following expressions:

```
int i = 3;  
y = X[i]+1;  
y = X[i+1];  
y = X[i/2];  
y = X[i]/2;  
y = X[i*2];  
y = X[X[i]];
```

- What are the values stored in array x[8] after executing the following , if x originally has the following values { 14 , -45 , 67 , 23 , -56 , 34 , 24 , -56 }
 - for (int i = 4; i < 7; i++) x[i] = x[i+1] ;
 - for (int i = 5; i > 1; i--) x[i] = x[i+1] ;
- Write C++ functions for the following array operations: (a) average, (b) maximum, (c) minimum, (d) median, (e) sort, and (f) mode. You must write a program to test your developed functions.

5. Write a C++ program that reads n-integer values in a one-dimensional array and calculates the average of the array elements with an odd index and the average of the array elements with an even index.

6. Write a C++ function to evaluate the following polynomial

$$F(x) = a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \cdots + a_0,$$

Assuming that coefficients are the function parameters as well as x value.

7. Read a collection of 250 integer data items, store them in an array, then find and print the first and the last occurrence of the number 12. If the number 12 is not found, a warning message must be printed. If it only appears once then the first occurrence will be last occurrence.

8. Given the following array, write a program that reverses all array elements then prints them

```
int x[] = {1,2,3,4,5,6,7,8,9,10};
```

9. The Fibonacci numbers form an interesting sequence in which each number is equal to the sum of the previous two numbers, in other words

$$F_i = F_{i-1} + F_{i-2}$$

Where F_i refers to the i^{th} Fibonacci numbers. The first two numbers are by definition equal to 1 (i.e. $F_1 = F_0 = 1$). Calculate and store the first 100 Fibonacci numbers.

Example:

$$F_2 = F_1 + F_0 = 1 + 1 = 2$$

$$F_3 = F_2 + F_1 = 2 + 1 = 3$$

$$F_4 = F_3 + F_2 = 3 + 2 = 5$$

⋮
