

Object-Oriented Programming (List 6)

Due: April 28th 2010

1. Write a function

```
std::vector< unsigned int >  
count_occurrences( std::vector< unsigned int > v, unsigned int x )
```

that counts how often x occurs in the vector v .

2. Write a function

```
unsigned int most_frequent( std::vector< unsigned int > v )
```

that returns an element of v that occurs most frequently. If $v = \{1, 2, 1, 3\}$, the result is 1. If $v = \{4, 5, 6, 7, 6\}$, the result must be 6. If $v = \{4, 4, 5, 5\}$, the result can be either 4 or 5, because both of them occur two times.

3. Write a function

```
double arithmetic_mean( std::vector< double > v )
```

that computes the arithmetic mean of the doubles in vector v .

4. Write a function

```
double standard_deviation( std::vector< double > v )
```

that computes the standard deviation of the double in vector v . (Note that you need to compute the arithmetic mean first).

In case you forgot:

```
v.size( )      :      Length of vector.  
v.push_back( i ) : Append i at the end of v.  
v.pop_back( ) :      Remove last element from vector.  
v[i]          :      i-th element of vector.
```