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// Programming Techniques
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Exercises Class # 8
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Master Programme in Mathematical Finance
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1st Semester 2018/2019
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Overview

- ▶ File Input/Output

Bibliography:

- ▶ Stroustrup, Bjarne, Programming Principles and Practice Using C++, Second Edition, Addison-Wesley, 2014.

File Input/Output

Reading and writing in files using `fstream` is the same as using `cin` and `cout` but now we have an object file associated.

```
# include <fstream>
ifstream ident ("xxx.txt");
ofstream ident ("xxx.txt", ios_ base::openmode);
```

`openmode` :

- ▶ `out` (by omission): If the file doesn't exist it creates one. If it exists, the file is deleted and a new one is created.
- ▶ `app`: If the file doesn't exist it creates one. If it exists, writes in the end of the file.

```
#include "std_lib_facilities.h"

int main()
{
    string data;
    ifstream in;
    in.open("file1.txt");
    if(in.fail()){
        cout<<"Failed file1.txt"<<endl;
        return 1;
    }
    ofstream out;
    out.open("file2.txt");
    if(out.fail()){
        cout<<"Failed file2.txt"<<endl;
        return 1;
    }
    getline(in, data);
    out<<data<<endl;
    return 0;
}
```

```
#include "std_lib_facilities.h"

int main()
{
    string data;
    ifstream in;
    in.open("file1.txt");
    if(in.fail()){
        cout<<"Failed opening file1.txt"<<endl;
        return 1;
    }
    while(!in.eof()){
        double a;
        in>>a;
        cout<<a;
    }
}
```

1. Consider the file `data.txt`. Write a program to read the data and store the information in a vector.
2. Using the vector of the previous exercise, write a program to write in another file some descriptive statistics (number of observations, mean, standard deviation,...).