

PROGRAMMING REQUIREMENT

Programming Requirement

- Implement a programming project and send it to me.

Programming Project

- Can be
 - a project you have already implemented,
 - a project you work on as part of your research, or
 - a project you implement for a course.

- Can be implemented in C++, C, C#, Java, Python, Matlab, Lua, ...
 - pretty much any other programming language

What to Submit?

Submit your **program** and **a report**.

(A rule of thumb: the report should be 2 pages in length.)

The report should:

1. Explain what your program does.
2. Describe how your program works.
 - Describe the algorithm.
 - Describe main classes, functions, variables, etc.

What to Submit?

The report should:

3. Describe how to compile your program e.g.
 - `$ gcc -O3 1p-solver.cc`
 - `$ make all`

4. Describe how to run and use your program.
 - `$./1p-solver 1p.data`
 - Describe the format of input and output files.
 - Provide sample input files.

Requirements

- Size: medium to large (not that important)
 - A rule of thumb: if it takes a day or more to implement the project, then it's fine.
- Your code should be well written! (important)

Code Quality

- The code should be well written!
 - Easy to understand
 - Easy to support and maintain
 - Error free

Coding Standards

- Have comments that explain what your code does.
 - Comments should explain the purpose of all functions and methods; what their parameters are, and what they return.
 - Explain the purpose of all important variables.
- Give meaningful and consistent names to classes, functions and variables.

Coding Standards

- Properly format your code:

```
int nn=1; Meaningless variable name  
for (int i =2; i <=n; i++)  
{  
nn= nn*i;}
```

not OK

Coding Standards

- Properly format your code:

```
int nn=1;  
for (int i =2; i <=n; i++)  
{  
nn= nn*i;}
```

Non-matching styles for curly braces



not OK

Coding Standards

- Properly format your code:

```
int nn=1;  
for (int i =2; i <=n; i++)  
{  
nn= nn*i;}
```

Inconsistent spacing

not OK

Coding Standards

- Properly format your code:

```
int nn=1;  
for (int i =2; i <=n; i++)  
{  
nn= nn*i;}
```

No indent

not OK

Coding Standards

- Properly format your code:

```
int nFactorial = 1;
for (int i = 2; i <= n; i++)
{
    nFactorial = nFactorial * i;
}
```

Maintainable Code

- It should be easy to
 - change the functionality of your program,
 - slightly change the algorithm,
 - add new features

without rewriting the whole program.

Error Free

- Your program should
 - properly handle invalid arguments,
 - catch I/O exceptions,
 - have no memory leaks, have no buffer overflows, etc.
- It should never crash or hang!

Programming Requirement

- Implement a programming project and send it to me.
- Discuss the project with me **at least two months** before the deadline.
- Submit the project **at least one month** before the deadline.
 - *Don't wait till the last minute!*

Summary

- Submit your programming project at least one month before the deadline.
- Send me your project and report.
 - What matters is the code quality not the code size.
- Report should
 1. Explain what your program does.
 2. Describe how your program works.
 3. Describe how to compile your program.
 4. Describe how to run and use your program.