# Introduction to High-Performance Computing Exercise/2

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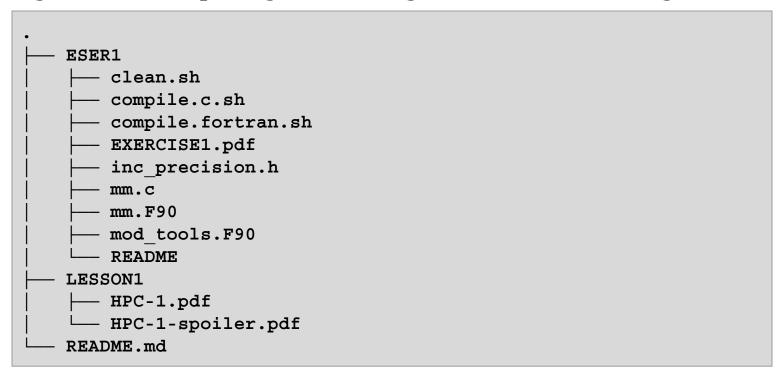
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# **Agenda**

- ✓ Exploit performance for matrix-matrix Multiplication
  - Fortran/C
- ✓ Always check the results
- ✓ Extract some Performance figure (in MFLOPs)
  - Change order of loops
  - Change size
  - With blocking
  - With unrolling
  - All together!!!!!
- ✓ Any available Compiler
- ✓ Medium optimization level (-02)

#### How to do

- Clone the repository
  - git clone https://github.com/gamati01/HPCLessons.git



# Homework/1: Fill the table

Loop order	Size	Fortran	С
i,k,j	512*512		
j,k,i	512*512		
i,k,j	4096*4096		
j,k,i	4096*4096		

- ✓ Compiler used:
- ✓ Compiler option used:
- ✓ HW used:

## Homework/2: Fill the table

✓ Unrolling external loop

#unrolling	Size	Fortran	С
2	512*512		
4	512*512		
2	4096*4096		
4	4096*4096		

- ✓ Compiler used:
- ✓ Compiler option used:
- ✓ HW used:

### Homework/3: Fill the table

✓ Cache blocking: try a couple of blocking size...

#blocking	Size	Fortran	С
?	512*512		
?	512*512		
?	4096*4096		
?	4096*4096		

- ✓ Compiler used:
- ✓ Compiler option used:
- ✓ HW used:

### Homework/4: Fill the table

✓ Put all together (blocking, unrolling,....)

#unrolling	#blocking	Size	Fortran	С
?	?	4096*4096		
?	?	8192*8192		

- ✓ Compiler used:
- Compiler option used:
- ✓ HW used: