

# IFJ PAN Particle Physics Summer Student Programme 2022 Information Set #2

## 1 Reminders

Those, who will attend locally (in Krakow), should read carefully *Information Set #1*:

- make sure that you have a valid personal accident insurance during the apprenticeship (ubezpieczenie NNW). A scan with confirmation or good quality photo should be sent to dr Marzena Mitura-Nowak ([Marzena.Mitura-Nowak@ifj.edu.pl](mailto:Marzena.Mitura-Nowak@ifj.edu.pl)) as soon as possible, cc-ing [ppss@ifj.edu.pl](mailto:ppss@ifj.edu.pl),
- make sure that you have a relevant health insurance during your stay in Poland,
- make sure that, if needed, you have a valid VISA,
- situation with COVID-19,
- situation in Poland due to war in Ukraine,
- travel information,
- transport in Krakow,
- accommodation – dates.

## 2 Projects

List of projects will be send in the last week of June. On Wednesday July, 6<sup>th</sup> a consultations with tutors will be organized. Afterward, you will receive a link to form in which you will list topics of your interest. We will try to assign you to one of the chosen topics. However, please keep in mind that there is no guarantee that you will get it! You will be informed about the assigned project on Thursday. Projects will be done in pairs.

Since the programme is held in a hybrid mode, there will be a separate list of topics for remote and local projects.

## 3 Laptops, Linux, C++, ROOT

You are expected to bring and use your own laptop. If you are a Mac user make sure that you have a C++ compiler and can run ROOT (see below). You may also consider installing Linux on your machine. If you are a Windows user we ask you to have a Linux system as well. This can be done by either:

- installing Linux next to Windows,
- installing a virtual machine with Linux on it.

For both cases there are tons of ‘how-to’ available on the Internet. When configuring, please reserve at least 20 GB of space for Linux partition.

## 3.1 ROOT

ROOT is a framework widely used in high energy physics field. It is a great tool to analyze data and visualize results. In order to install ROOT on your laptop, please follow carefully instructions from <https://root.cern/get.started/>.

After installation, please check if you can compile and flawlessly run the first example.

## 3.2 C++

Prior to start the PPSS programme you are expected to have basic knowledge about C/C++. Please be sure that you can solve these problems:

1. Write programme which will display on screen:  $n$  stars in first line,  $n + 1$  is the second one, ...,  $n + m - 1$  in  $m$ -th line.  $n$  and  $m$  should be passed as arguments of `main` function. For example `./program 3 5` should display:  
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2. Above program should prevent user from providing non positive, non-integer number. *E.g.* `./program 3 -5` should inform user about the negative value of  $m$  parameter.
3. Write a program which will create a file named `fibonacci_data.txt` containing the  $x$  first numbers from the Fibonacci series.  $x$  should be passed as an argument of the `main` function. Numbers should be written in a single line and separated by a tabular.
4. Write a program which will read numbers from `fibonacci_data.txt` file (generated for  $x = 100$ ) and will display only those dividable by 3.

You should know how to compile and run these programs on your laptop. Please do NOT send solutions to us. These examples are just for you to ensure the basic knowledge of C++. In case of problems you will find a lot of instructions and hints on the Internet.