LHCb Open Data Portal
matter antimatter asymmetry analysis

Welcome to the LHCb open data portal project!

You interact with the project using your web browser. This project uses **Jupyter** notebooks to explain the process of the analysis and provide sections for you to code in the same space. The computation of the code you write is done on a server, linked through a program called **everware**. Everware is a Jupyter notebook viewer mixed with a temporary server launching from a Github repository.

1. Getting started

Firstly you will need a **Github** account in order to complete this analysis. Github is a web-based repository hosting service that projects use to save and synchronise work between multiple people. This is where the project's dependencies are hosted and you can find the link to all the files there. You can sign up for a Github account with your email address here: https://github.com/.
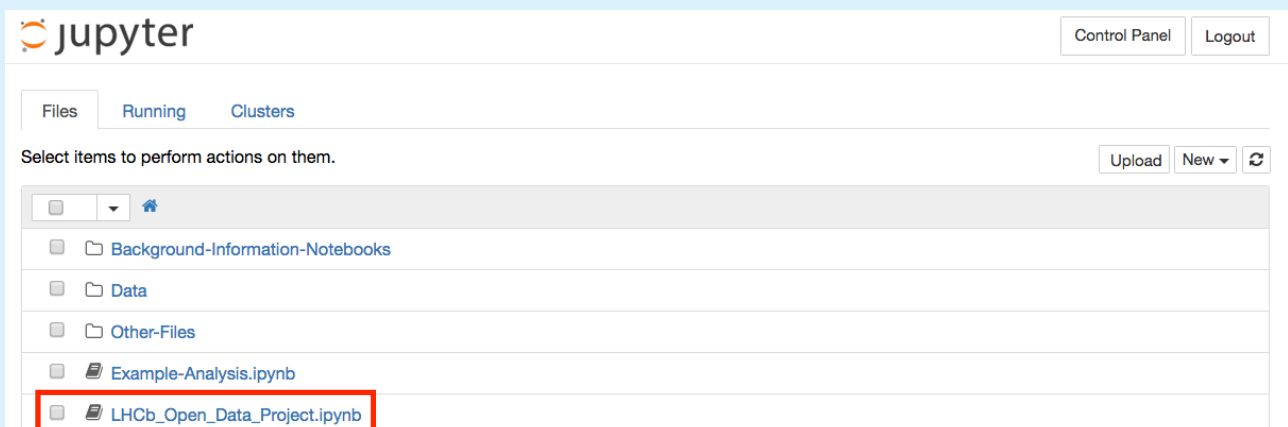
Once you are logged into Github point your favourite web browser to: https://everware.rep.school.yandex.net/hub/oauth_login?repourl=https://github.com/lhcb/opendata-project.git

You will see a screen like this:

After a few minutes you will then be presented with a screen like the one shown below:

From here click on the **LHCb_Open_Data_Project notebook** to go to the main page of the project . You can also click on **Example_Analysis** to see a completed analysis of an unrelated problem. You can adapt the code from here to help in the main project.

2. Running the notebook

Once you have clicked on the **main notebook**, it will load and you will be ready to go. The notebook consists of **explanatory text** and **coding sections**. It is recommended that you click through each of the links and make sure you are familiar with the content covered in each one, as you will find the content useful in completing the notebook.

The **grey code boxes** can be clicked and edited. Most of the code boxes are empty, indicating that you should write code for a specific task inside them. Others will have code already written inside like the example below.
IMPORTANT NOTE: You will have to select the code box by clicking it and press **shift+enter** to run the cells even when there is code already in there!
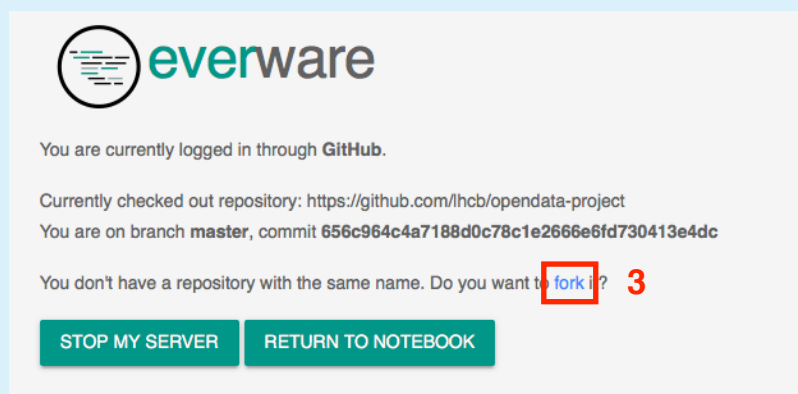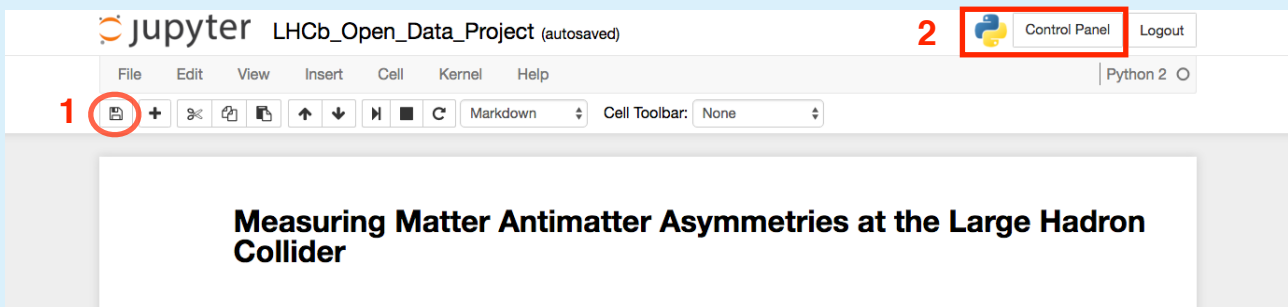
If the In [x]: to the left of a codebox changes to In [*]: that means the code in that box is currently running

```
In [ ]:  from __future__ import print_function
         from __future__ import division

         %pylab inline
         execfile('Data/setup_main_analysis.py')
```

3. Saving your progress

As the current state of the notebook is stored on the **temporary server** you are using, there are a few extra steps you need to take in order to be able to come back to your work later. Firstly, press the **floppy disk icon** and save the current state of the notebook. You will then need to **fork** the Github repository to your own account (this means to copy the state of the project to your own Github account so you can edit it). To do this click the **control panel button**, indicated in the picture below, and then click fork on the screen that appears.

Jupyter LHCb_Open_Data_Project (autosaved)   **2** Control Panel   Logout

File   Edit   View   Insert   Cell   Kernel   Help   Python 2 ○

1   Markdown ⌄   Cell Toolbar: None ⌄

Measuring Matter Antimatter Asymmetries at the Large Hadron Collider

everware

You are currently logged in through **GitHub**.

Currently checked out repository: https://github.com/lhcb/opendata-project
You are on branch **master**, commit **656c964c4a7188d0c78c1e2666e6fd730413e4dc**

You don't have a repository with the same name. Do you want to fork it? **3**

STOP MY SERVER   RETURN TO NOTEBOOK

After pressing the **fork button** it will be replaced by a **push button**. Click that to push the changes made to the new repository on your Github account.
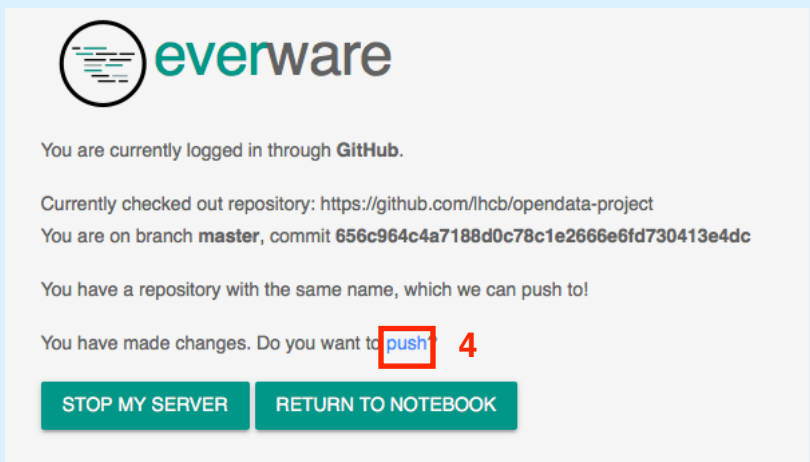

To check your work has saved go to https://github.com/YourUserName, click the **repositories tab** and verify that there is a repository called **opendata-project.**

4. Loading data

If you have saved your data by **forking** the repository to your account you can return to your work on everware at https://everware.rep.school.yandex.net/hub/home. If you find that your server has stopped running you will be greeted by this page and you should **Launch A Notebook.**
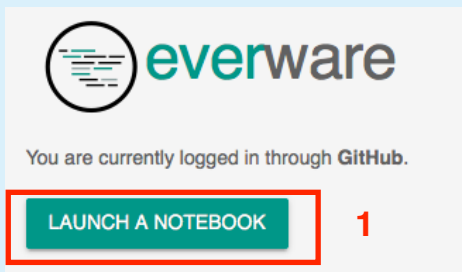

Type in the URL as indicated below, replacing *YourUserName* with your GitHub user name. Then click **Launch Notebook.**
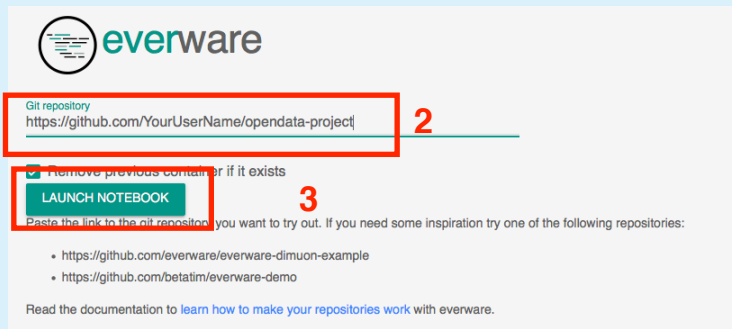
5. Share your experience

If you face a challenge throughout your work with the project which can not be resolved by the guidance and hints provided, Github allows for you to create an **issue** and to make or access an entry of the **project specific wiki**. You can share your **results** on here, too!
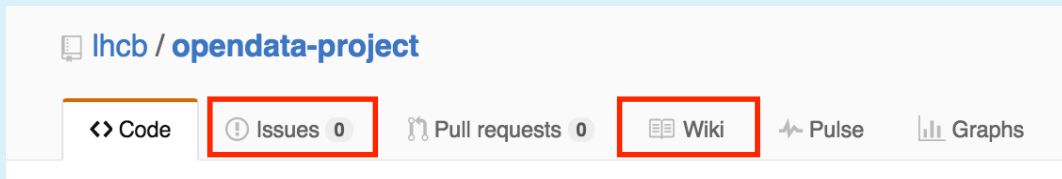
When you have worked with the project, we would love to hear your **thoughts** about the execution of the project and possible improvements we could make. Please do leave us some **feedback** by clicking this access link to a feedback form we have prepared:
http://goo.gl/forms/3vUDgZLEk9

We hope you enjoy working on the project and we are excited to hear about your **discoveries**!