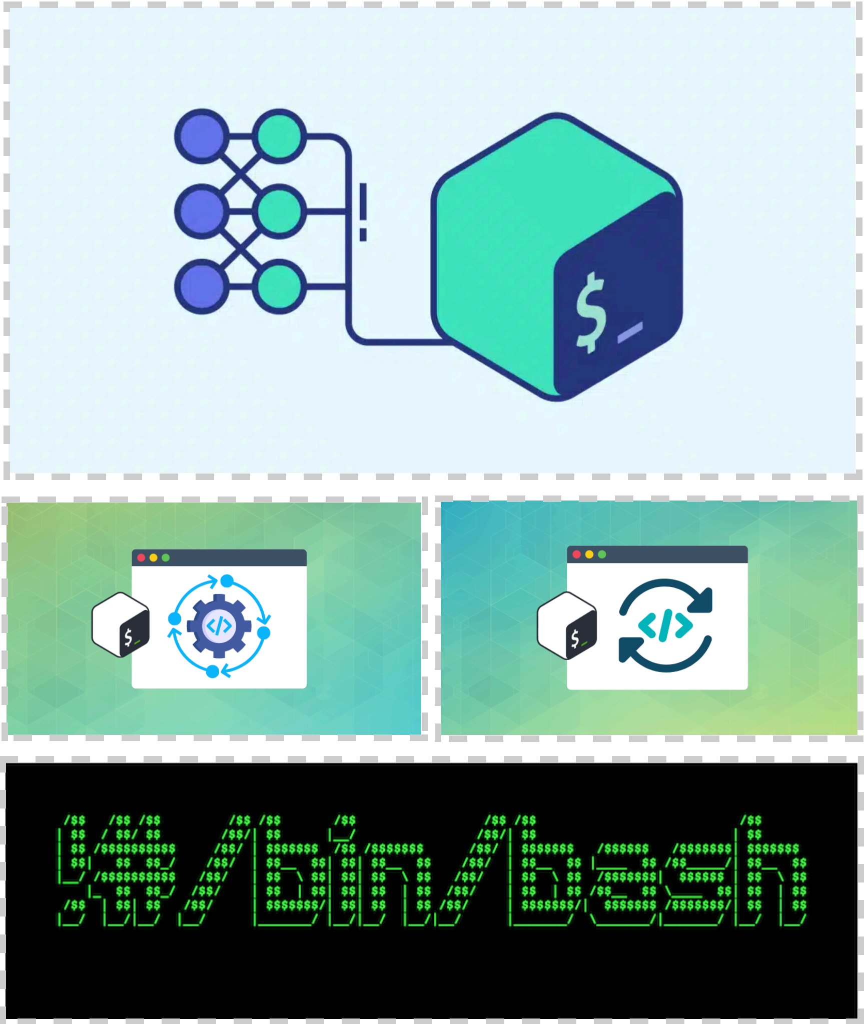
5. Combinatorial Automations

This is the last out of the five guiding pdf files that aims to make it easier for the developer to get started with the project. In 4 sections, we will dive into how to execute and configure the combinations of different topics. A combination in this context is a certain value-configuration of the central file 'configuration.yml' that is used to execute a branch of the entire system.

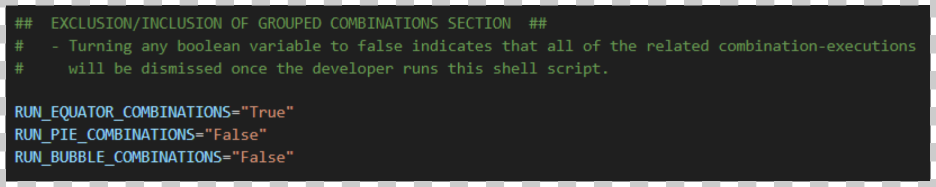


1) **Automation:** The information in this pdf file is based on the shell script "/instructions-executions/executionary/5. combinatorial-automations.sh". Use this script as a reference to the explanations provided in this pdf. To be clear, you can just run "5. combinatorial-automations.sh" and everything is taken care of automatically. With that said, this file is just providing elaborated explanations of the execution procedure.

2) **Configurations:** As the name of this pdf implies, the area of focus is the 5th section, and as you may have noticed there are 5 different shell scripts related to this tutorial. To avoid confusion, a brief explanation of them is provided:

- *1) 5. combinatorial-automations.sh: The entry point to the other scripts listed below. This is the only script you have to worry about*
- *2) 5. equator-combinations.sh: Is executed through the 1st script and takes care of the equator-chart related issues*
- *3) 5. bubble-combinations.sh: Is executed through the 1st script and takes care of the bubble-chart related issues*
- *4) 5. pie-combinations.sh: Is executed through the 1st script and takes care of the pie-chart related issues*
- *5) 5. utils.sh: Is imported in script 2-4 to use its general methods for reusability*

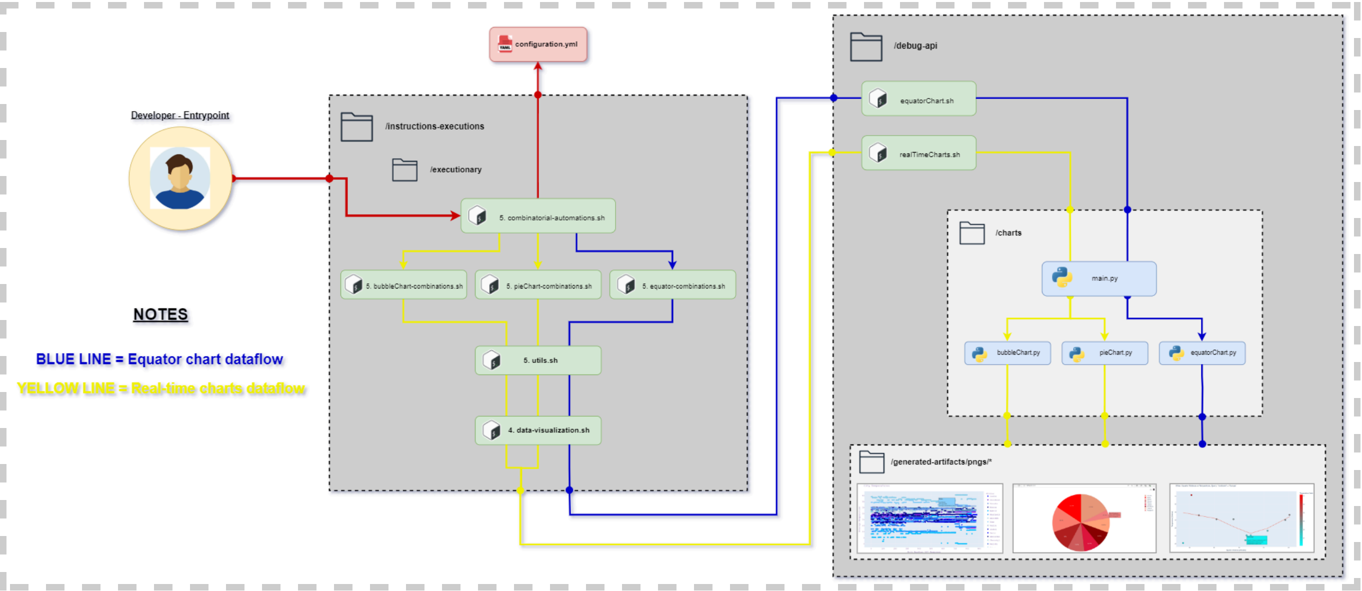
In "5. combinatorial-automations.sh", the only script you have to worry about, there are three boolean variables. Each one is associated with script 2-4 and is the indicator of whether to execute its combinations. This becomes handy in cases when the developer only wants to run certain combinations on a sub-topic to save time.



```
##  EXCLUSION/INCLUSION OF GROUPED COMBINATIONS SECTION  ##
#   - Turning any boolean variable to false indicates that all of the related combination-executions
#     will be dismissed once the developer runs this shell script.

RUN_EQUATOR_COMBINATIONS="True"
RUN_PIE_COMBINATIONS="False"
RUN_BUBBLE_COMBINATIONS="False"
```

Recall from the last tutorial how "4. data-visualization.sh" was involved in the automation of a particular chart based on the input arguments. With this tutorial, we extend on the automation procedure to change 'configuration.yml' during runtime to make it possible to execute multiple combinations all in one shell command. As you may notice, the module to the right of the architectural diagram below is identical to the diagram demonstrated in the previous tutorial. This is because the shell scripts in this section forwards the current combination execution to "4. data-visualization.sh":


configuration.yml
Developer - Entrypoint
/instructions-executions
/executionary
5. combinatorial-automations.sh
5. bubbleChart-combinations.sh
5. pieChart-combinations.sh
5. equator-combinations.sh
5. utils.sh
4. data-visualization.sh
/debug-api
equatorChart.sh
realTimeCharts.sh
/charts
main.py
bubbleChart.py
pieChart.py
equatorChart.py
/generated-artifacts/pngs/*
NOTES
BLUE LINE = Equator chart dataflow
YELLOW LINE = Real-time charts dataflow

3) **Execution:** Simply run "5. combinatorial-automations.sh". Keep in mind that your settings in "configuration.yml" governs the output and dataflow to a great extent.

4) **The next step:** Congratulations! You have now completed all tutorials. At this point, you know how to run the system, interact with database instances via PostgresSQL and the JSON version. Moreover, you have learned how to debug the docker shells to access their status and output in real-time, as well as visualizing the data and running multiple combinations by simply running one shell script. Now, when you possess this operational knowledge and insight to the system, you are ready to proceed with the development of this project!