Seamless Hackathon
Dec 3, 2020

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RPBS platform

Ressource Parisienne en BioInformatique Structurale

Goals of the hackathon

- NOT: impress the audience with shiny web services
(Seamless can incorporate existing web visualization libraries.)

- NOT: advertise every feature of Seamless and all you can do with it
(macros, strong interoperability between tools, big data...)

- Getting to know Seamless, find out if it can help you with your daily work

Daily work in computational science

- **Develop new scientific algorithms/functions**
    (C++, Python, Fortran, …)

- **Combine scientific functions into scripts**
    (Python, bash)

- **Reproducible execution of scripts/programs**
    (Docker, singularity, conda)

- **Combine command-line programs into a workflow**
    (bash, GNU make, SnakeMake,
    Common Workflow Language, Galaxy, NextFlow, …)

- **From command-line to web interface**
    (Python, Galaxy, Mobyle)

- **Interactive coding, data analysis, visualization and plotting**
    (Jupyter, R Studio)

What Seamless aims to do

- Not to re-invent the wheel
Good tools/languages exist already!

- Bring existing tools/languages together
Express yourself using the tools/languages that you like
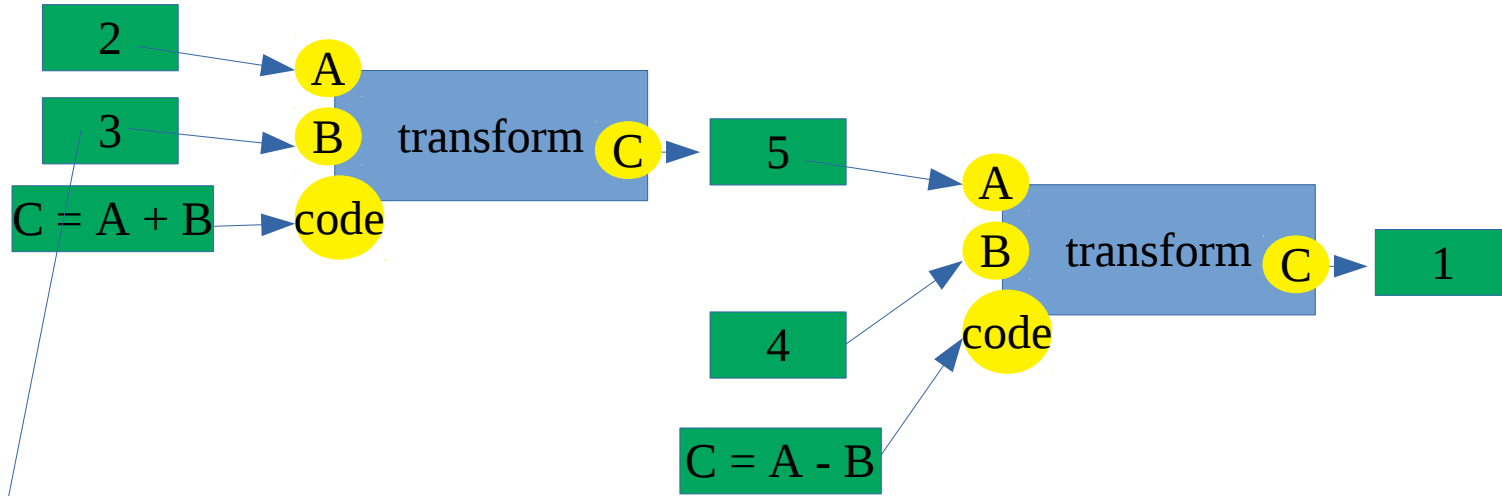*Not being narrow in scope. CWL vs Jupyter vs Galaxy*

- Make modification easy
The other half of computational science: application
To stand on the shoulders of giants
Interactive feedback
Live collaboration

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- Collaborative development of chem/bioinformatics protocols
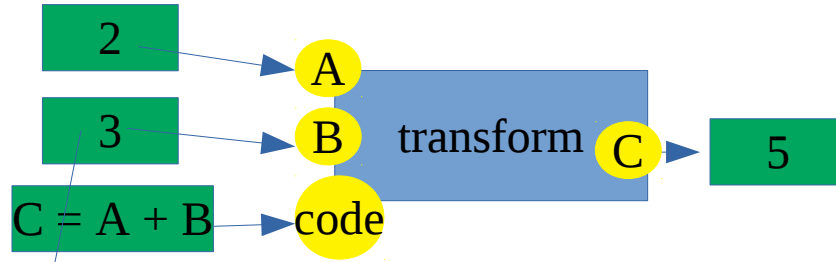*(interactivity, **real-time feedback**)*

Seamless is beta software

What Seamless is

Dependency graph

No file system

Cells

What Seamless is

2

3

C = A + B

A

B

code

transform

C

5

Cells

Dependency graph

No file system

What Seamless is

High-level API
(Python => IPython, Jupyter)

Graph + values (checksums)
(JSON, language-neutral)

- **Change in topology (explicit)**
- **Change in values**
  (implicit, continuous)

translation

result values (checksums)

Computation engine
(seamless.core)