Data Management

Bein

1. Simplify calling external programs in your calculations

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2. Track the external progams you run and files to preserve

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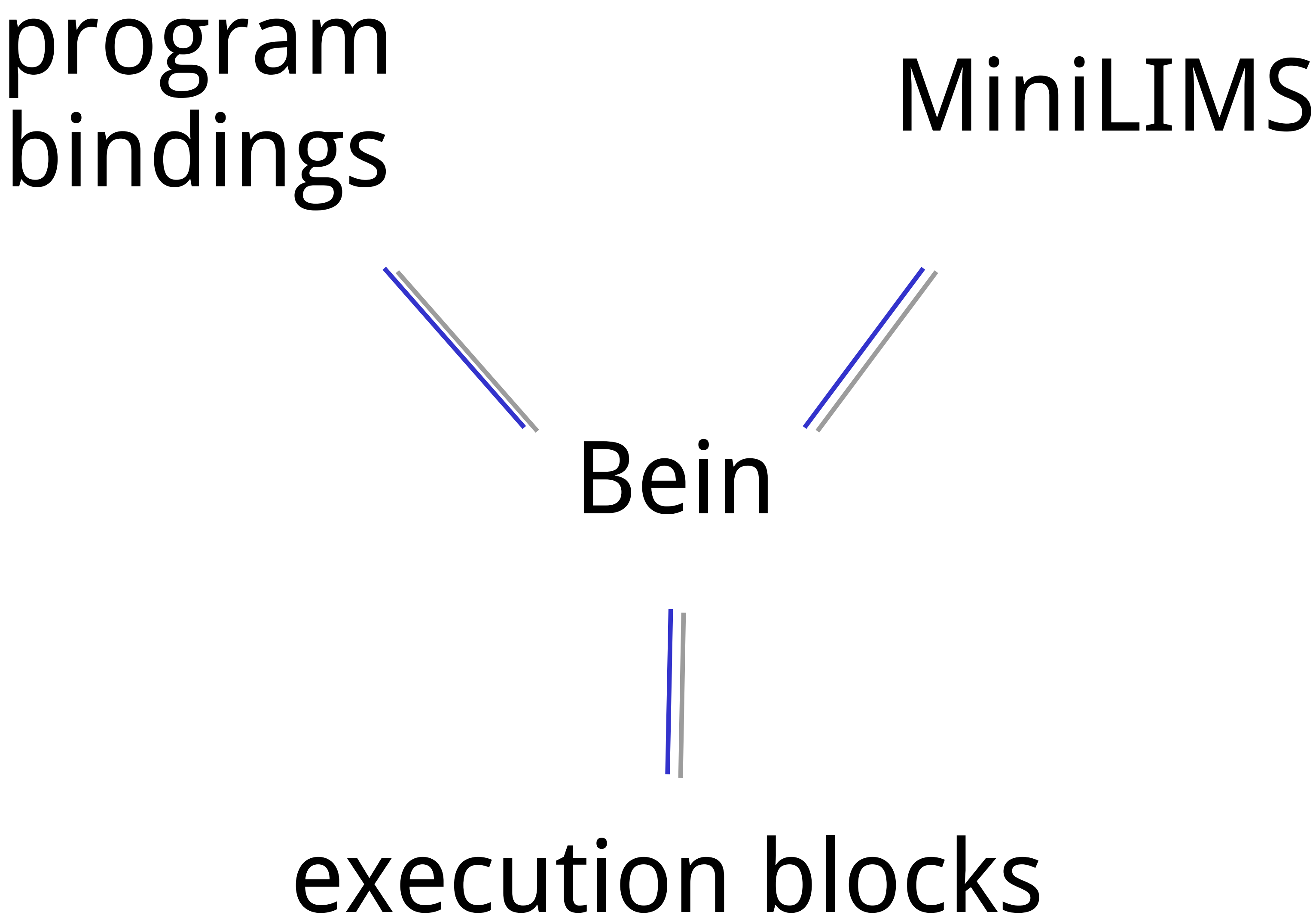
3. Minimize the distance between prototype and production code



program bindings

MiniLIMS

Bein

execution blocks

MiniLIMS

```
.../
    boris              ← SQLite database
    boris.files/       ← Directory for files
        ...
```

MiniLIMS

```
#!/usr/bin/env python
from bein import *


M = MiniLIMS(”/path/to/sqlitedb”)
```

Bein creates the database
if it does not exist

Execution Blocks

```
M = MiniLIMS(”/path/to/sqlitedb”)
with execution(M) as ex:
    ...
    ...

more_stuff()
```

Creates a working directory

Working directory cleaned up and deleted here automatically

Program Bindings

```
@program
def count_lines(filename):

  def parse_output(p):
    pat = r’^\s*(\d+)\s+’ + filename + r’\s*$’
    m = re.search(pat, ’’.join(p.stdout))
    return int(m.groups()[-1])

  return {”arguments”: [”wc”,”-l”,filename],
          ”return_value”: parse_output}
```

Program Bindings

Transform it into
a program binding

```
@program
def count_lines(filename):

  def parse_output(p):
    pat = r’^\s*(\d+)\s+’ + filename + r’\s*$’
    m = re.search(pat, ’’.join(p.stdout))
    return int(m.groups()[-1])

  return {”arguments”: [”wc”,”-l”,filename],
          ”return_value”: parse_output}
```

Program Bindings

Return arguments and a function to extract a return value

```
@program
def count_lines(filename):

  def parse_output(p):
    pat = r’^\s*(\d+)\s+’ + filename + r’\s*$’
    m = re.search(pat, ’’.join(p.stdout))
    return int(m.groups()[-1])

  return {”arguments”: [”wc”,”-l”,filename],
          ”return_value”: parse_output}
```

Program Bindings

```
with execution() as ex:
  n = count_lines(ex, filename)
  n = count_lines(ex, filename, stderr=“asdf”)
  f = count_lines.nonblocking(ex, filename)
  n = f.wait()
  f = count_lines.nonblocking(ex, filename,
                              via=“lsf”)
  n = f.wait()
```

```
#!/usr/bin/env python
import sys

a = f()
for i in range(5):
  ...
```

```
#!/usr/bin/env python
import sys
from bein import *

a = f()
for i in range(5):
    ...
```

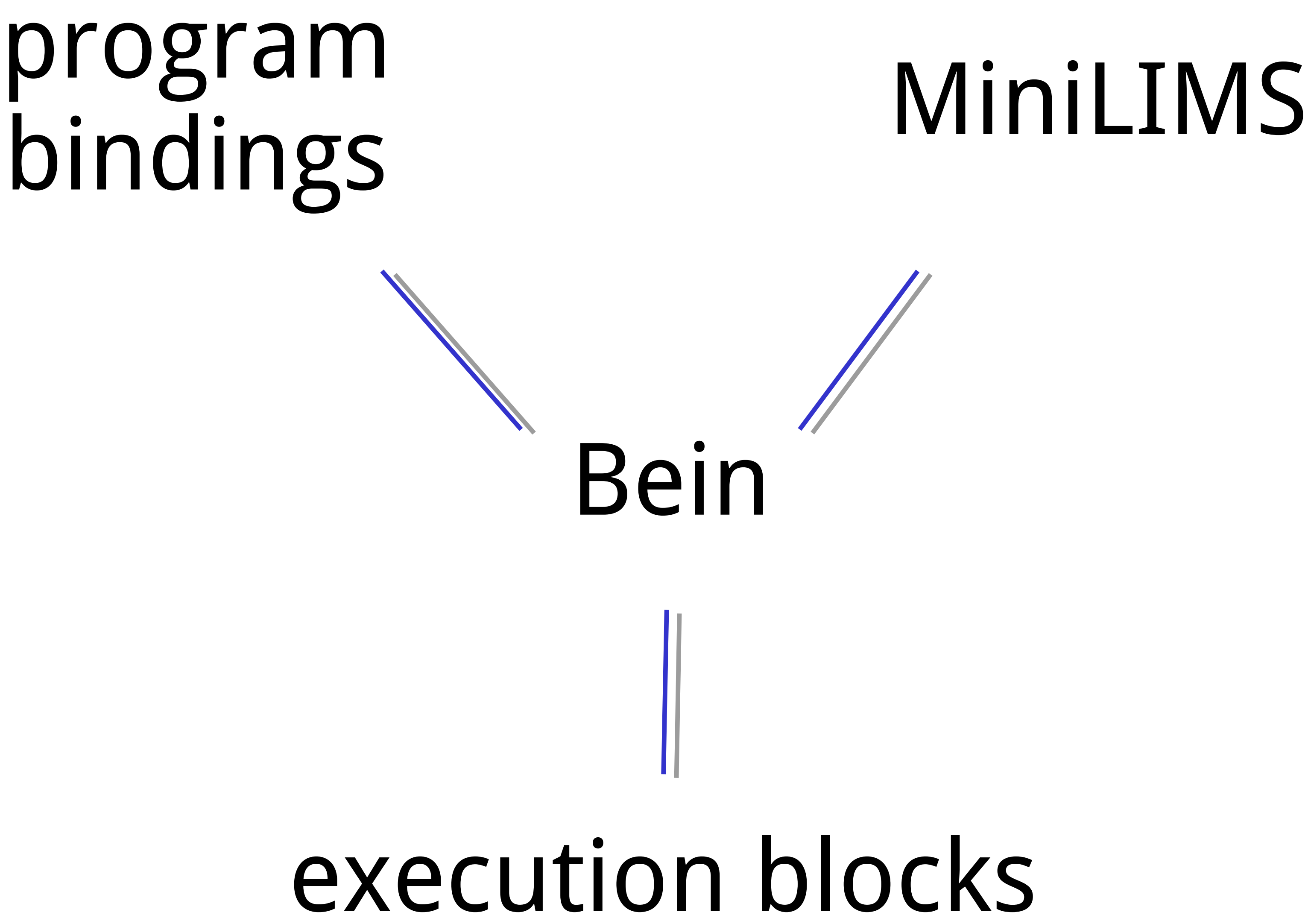
```
#!/usr/bin/env python
import sys
from bein import *

with execution() as ex:
  a = f()
  for i in range(5):
    ...
```

```
#!/usr/bin/env python
import sys
from bein import *

M = MiniLIMS(”/path/to/sqlitedb”)

with execution(M) as ex:
  a = f()
  for i in range(5):
    ...
```

pip install bein

Documentation at:

http://madhadron.com/bein/



program bindings

MiniLIMS

Bein

execution blocks

created by

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