

# Stellar - A Library for API Programing.

API

API

Application

Programming

Interface

API

program 1

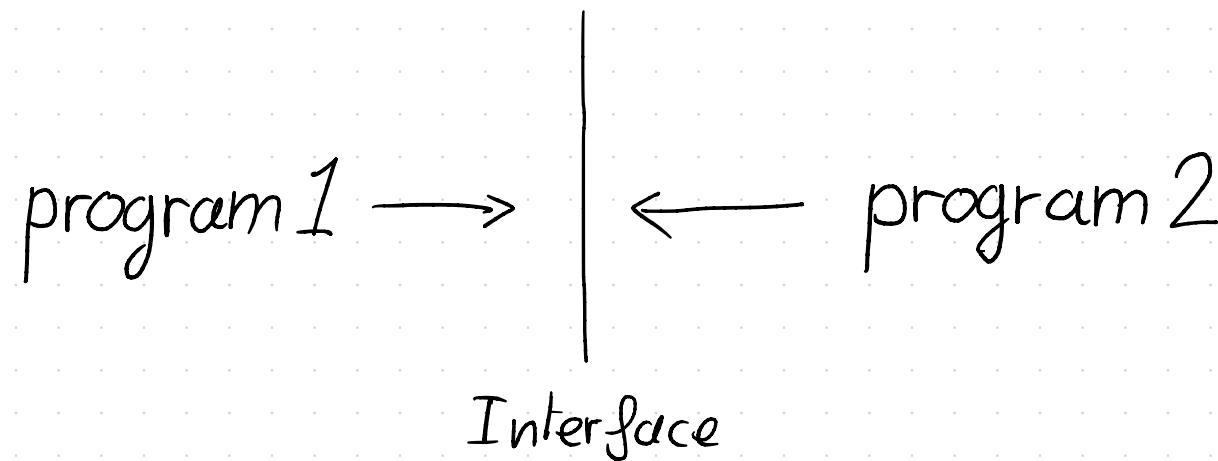
# API

program 1 → program 2

# API

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# API



- Web
  - GET .../...?... ← ListItem
  - POST .../... [ ... ] ← ✓ + X

- Web
  - GET ... / ... ? ... ← ListItem
  - POST ... / ... [ ... ] ← ✓ + X
- POSIX
  - Libc (headers) ret fn(args)
  - CLI (tools, utilities) name [args]
  - Filesystem, signals, ... kill, fork, ...

- Web - GET ... / ... ? ... + ListItem

- POST ... / ... [ ... ] + ✓ + X

- POSIX - Libc (headers) ret fn(args)

- CLI (tools, utilities) name [args]

- Filesystem, signals, ... kill, fork, ...

- Database - Schemas, Queries, Migrations

IO	k	s	
Insert			
Select			
Update			

message

message

response

m: message

response (m)

(  
m: message  
response (m)  
)

Container

$+$  (Coproduct)

API1

+

API2

+ (Coproduct)

API1  
+

API2

- GET / + List Book
- POST /fav [ID] + 1
- POST /lib [Book] + 2

+

(Coproduct)

API1

+

API2

- GET / + List Book
- +  
-
- POST /fav [ID] + 1
- +  
-
- POST /lib [Book] + 2

Open ( Str :- Ptr )

?

Read ( Ptr :- Str )

?

Close ( Ptr :- 1 )

Read ; Close

X no open

Open ; Close ; Close

X close twice

Open ; Close ; Read

X read after  
close

Open ; Open ; Close

X open twice



(Sequencing)

API 1 >> API 2

>>

(Sequencing)

Open >> Read >> Close

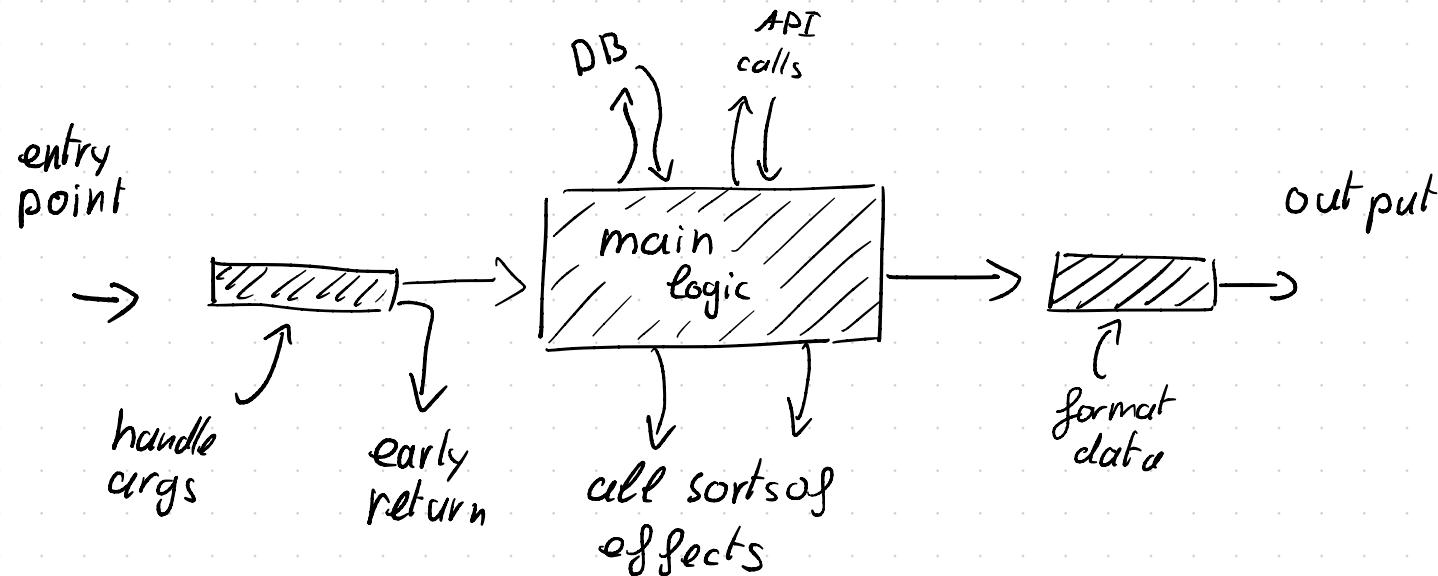
\* (Kleene Star)

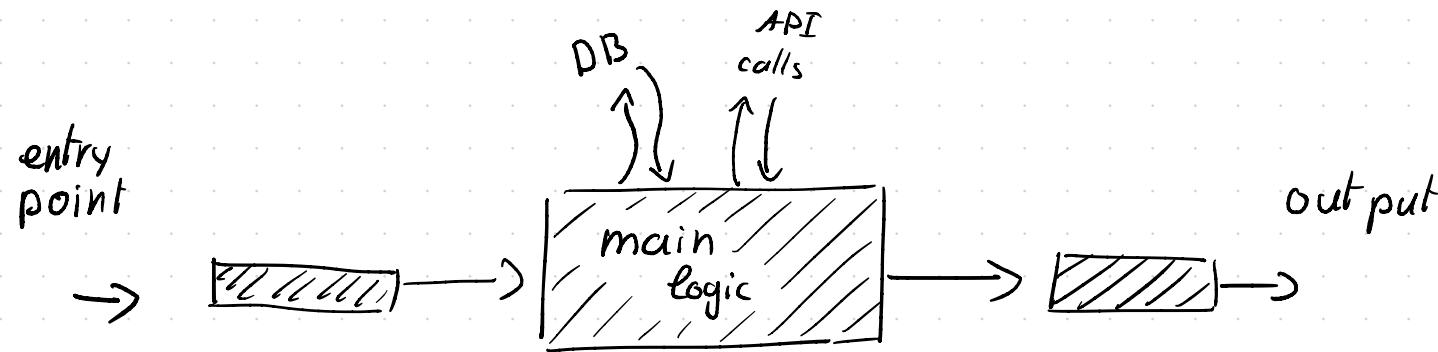
Open » Read\* » Close

## Morphisms of APIs

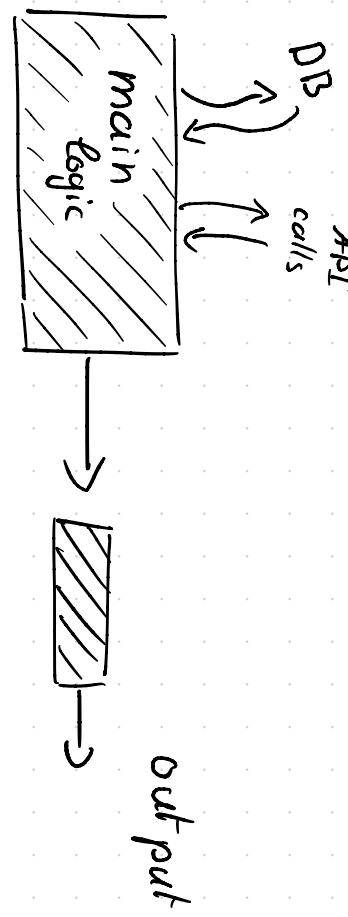
$A_1 \Rightarrow A_2$

# Typical program





entry  
point



entry  
point



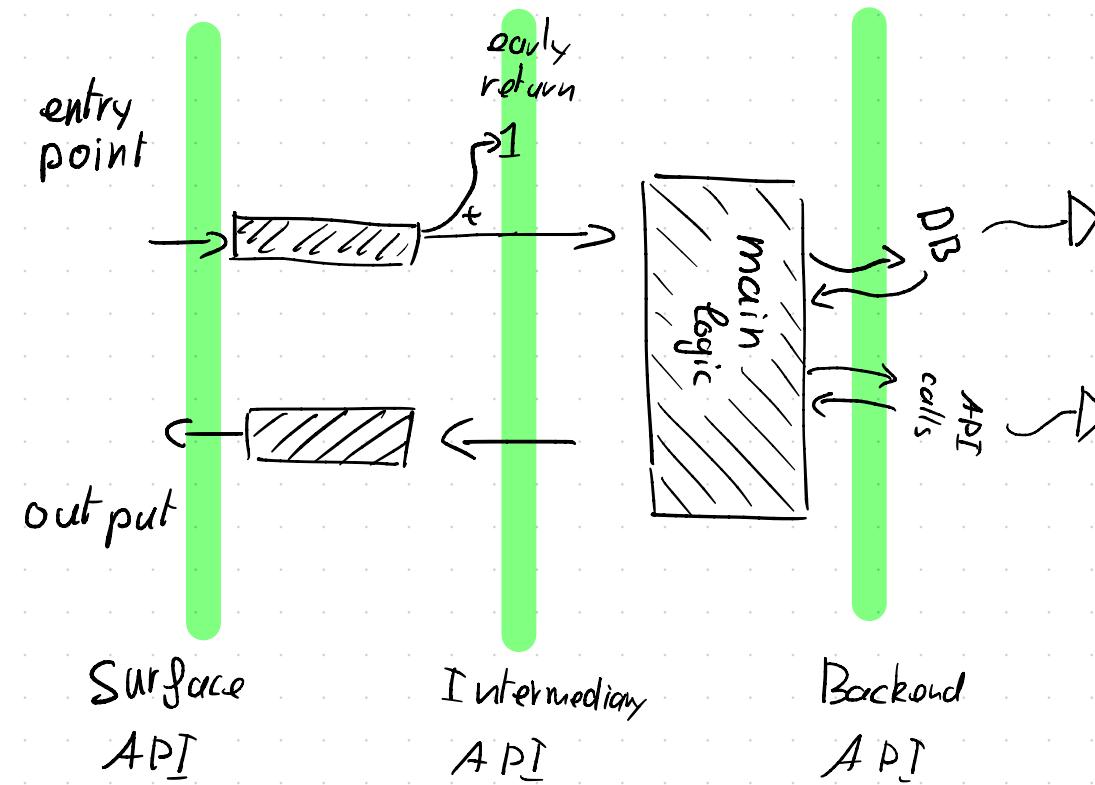
DB  
calls  
API  
calls

main  
logic



output

# API-based Architecture



# Stellar

- Generic Combinators stellar-api  $A \Rightarrow M(B)$
- HTTP server stellar-http  $HTTP \Rightarrow A$
- SQL bindings stellar-sql  $A \Rightarrow SQL, SQL \Rightarrow I$
- HTTP client stellar-browser  $A \Rightarrow HTTP, HTTP \Rightarrow I$

# API-based Programming

UI  $\Rightarrow$  API    API  $\Rightarrow$  SQL    SQL  $\Rightarrow$  I

Frontend

backend

database

bedankt!

ありがとう

obrigado!

grazie!

Thank you!

merci!

gracias!

danke!