Jabuti CE

Writing Executable Smart Contracts for Enterprise Application Integration

Mailson Teles-Borges

mailson.borges@sou.unijui.edu.br

Unijuí University

LangDev CON 2024

Seville 17-19 October, 2024

https://langdevcon.org

Members

Mailson Teles-Borges

mailson.borges@sou.unijui.edu.br

Unijuí University, Brazil

Sandro Sawicki

sawicki@unijui.edu.br

Unijuí University, Brazil

Antonia M. Reina-Quintero

reinaqu@us.es

Seville University, Spain

Eldair F. Dornelles

eldair.dornelles@unijui.edu.br

Unijuí University, Brazil

Fabricia Roos-Frantz

frfrantz@unijui.edu.br

Unijuí University, Brazil

Carlos Molina-Jimenez

carlos.molina@cl.cam.ac.uk

Cambridge University, United Kingdom

Rafael Z. Frantz

rzfrantz@unijui.edu.br

Unijuí University, Brazil

Jose Bocanegra

j.bocanegra@uniandes.edu.co

Universidad de Los Andes, Colombia

Index

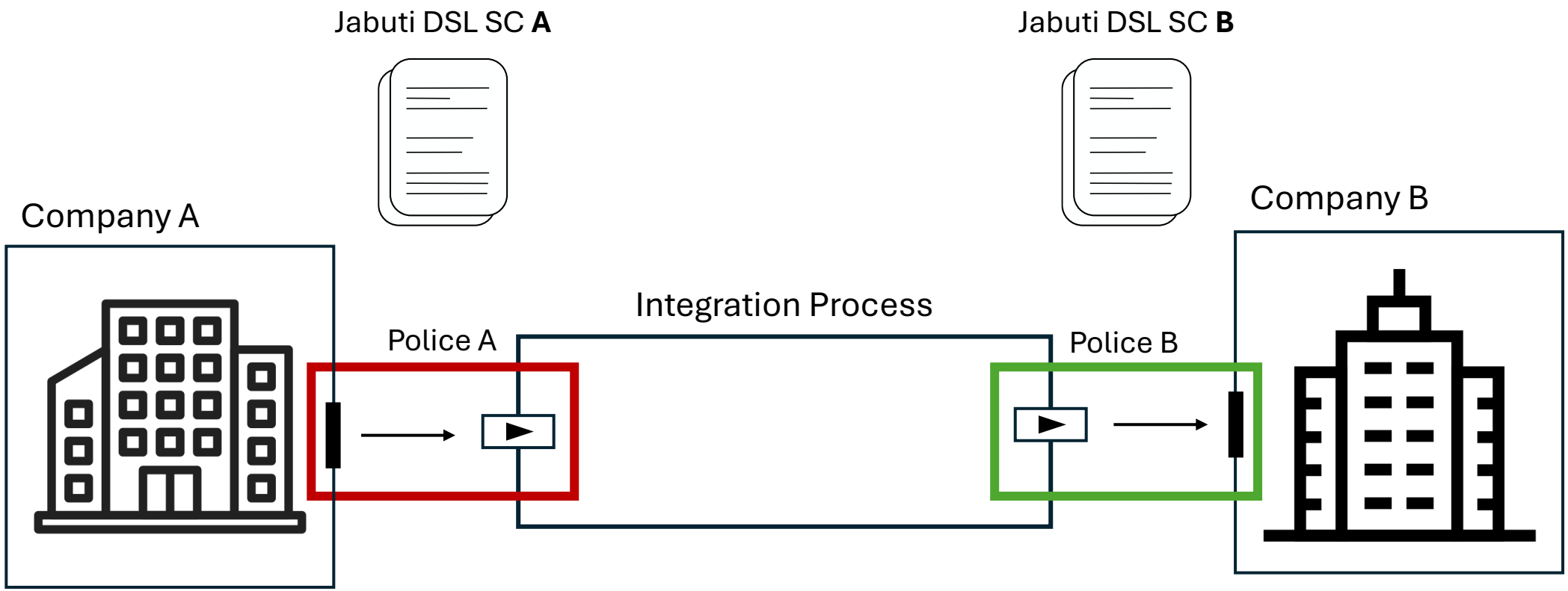
C5NA

ProxyHands

1. Context
2. Problem
3. Solution
4. Current and Future works

Context

Context


Jabuti DSL SC **A**
Jabuti DSL SC **B**
Company A
Company B
Integration Process
Police A
Police B

Problem

Problem

Is possible to execute a Jabuti DSL smart contract ?

No, it isn’t

How to execute a Jabuti DSL smart contract?

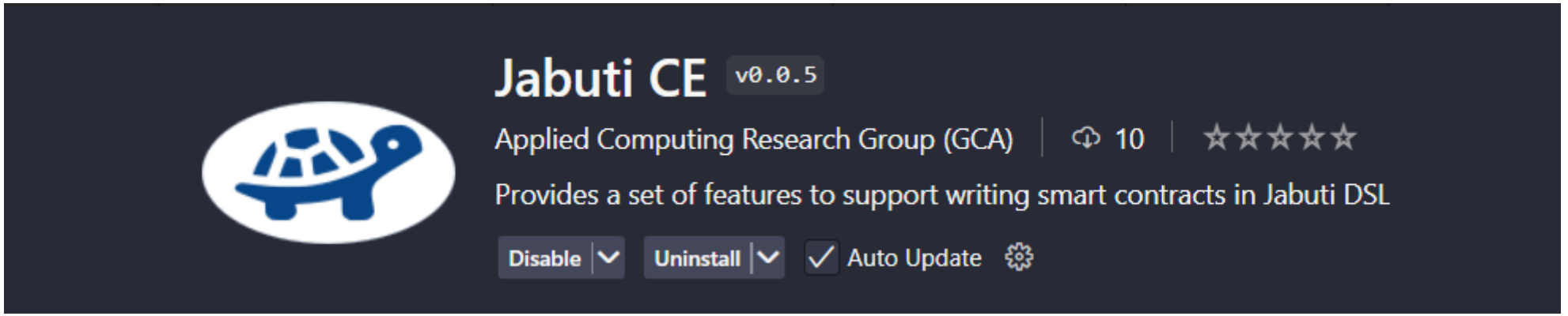
Option 1: building a runtime
Option 2: transforming it in an executable language

Why option 2 is the best option?

- Validated environment
- Faster development
- Allows more possibilities of use cases

Solution

Jabuti CE



https://marketplace.visualstudio.com/items?itemName=gca-unijui.jabuti-ce-vscode-plugin

Main Features

Code highlighting

discount-coupon-late-delivery.jabuti > ...

```
1  contract DiscountCouponLateDelivery {
2
3    dates {
4      beginDate = 2024-06-06 00:00
5      dueDate = 2024-06-10 23:59
6    }
7
8    parties {
9      application = "Delivery App"
10     process = "Integration Process"
11   }
12
13   variables {
14     totalPurchaseAmount = MessageContent("sum($.[*].value)")
15     deliveryDate = "$.deliveryDate"
16     expectedDate = "$.expectedDate"
17   }
18
```

Main Features

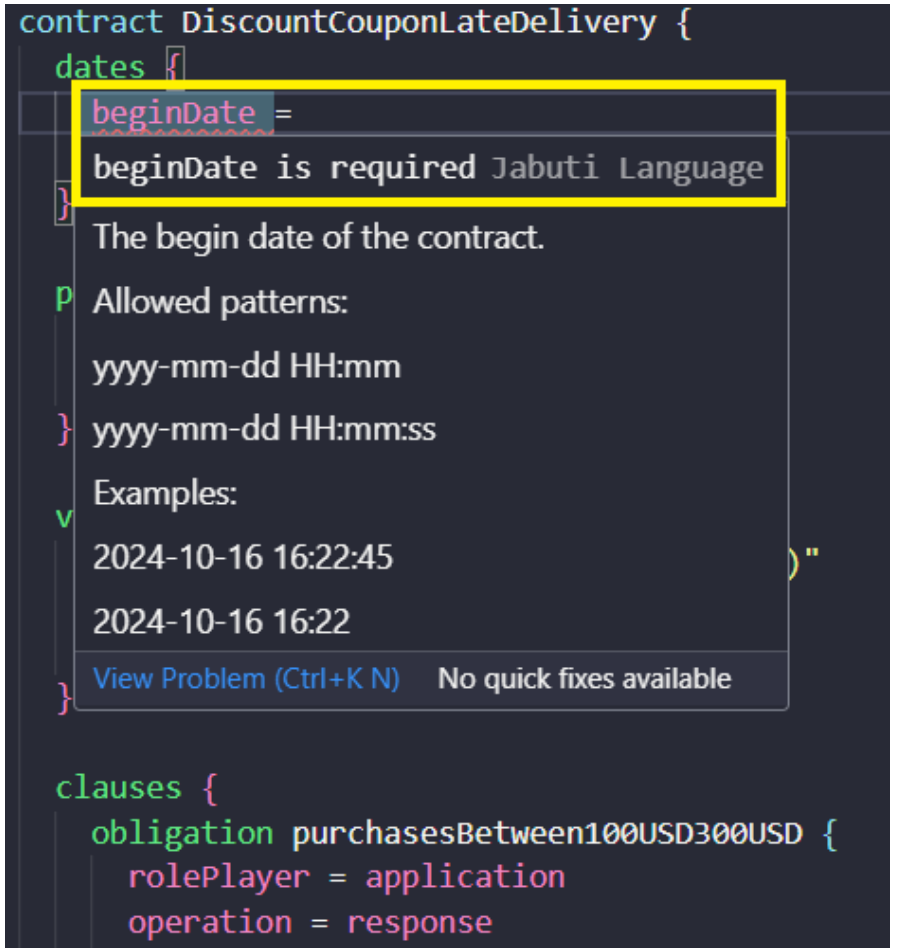
Autocompletion

```
obligation purchasesGreatherThan300USD {
  rolePlayer = application
  operation =        You, 4 weeks ago • Uncommitted changes

  terms {
    MessageCon
    MessageCon
  }

  onBreach(log("[300USD] the delivery date was later than the expected date"))
}
```

poll
push
read
request
response
write

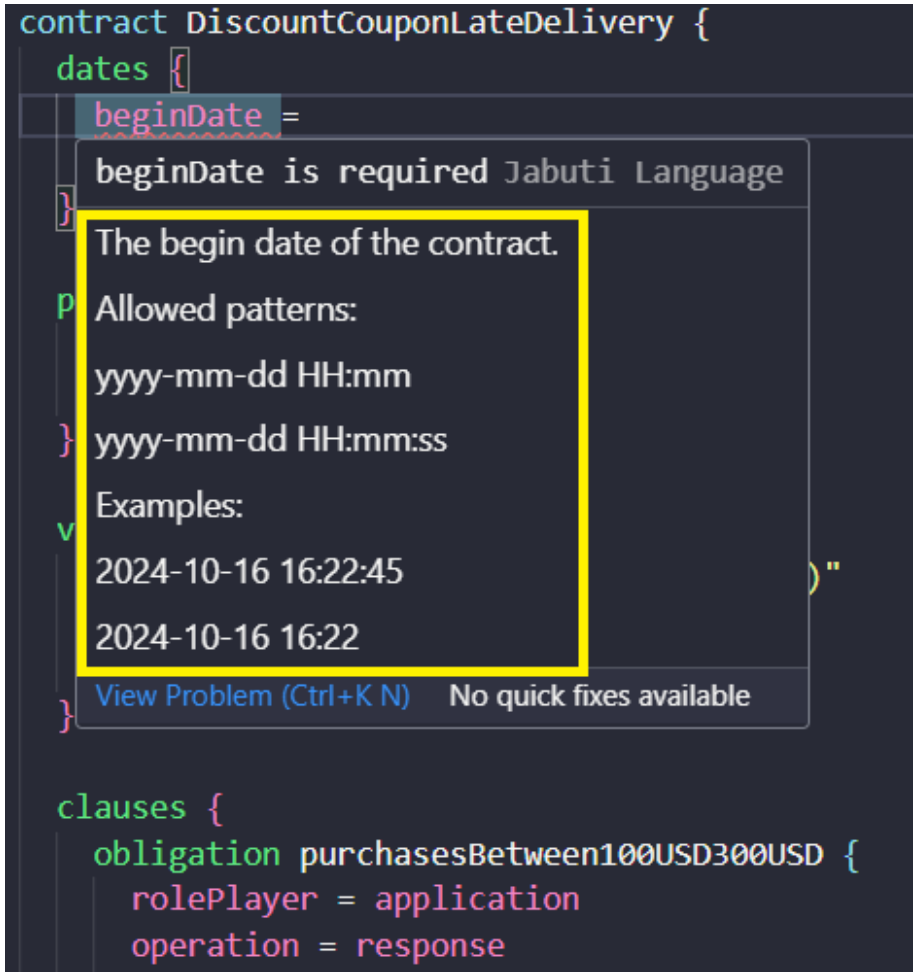
Main Features

Syntax and semantic validation



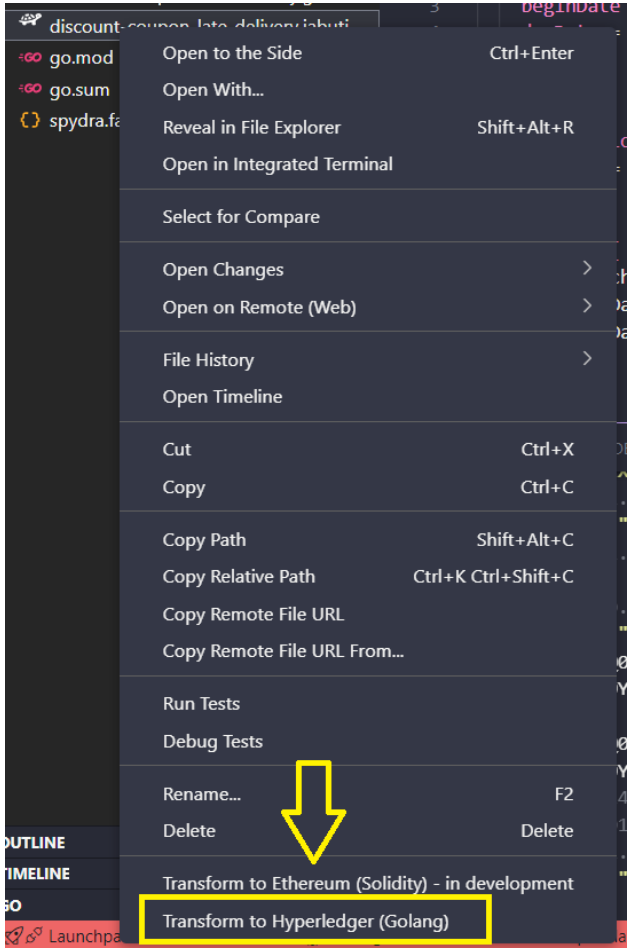
Main Features

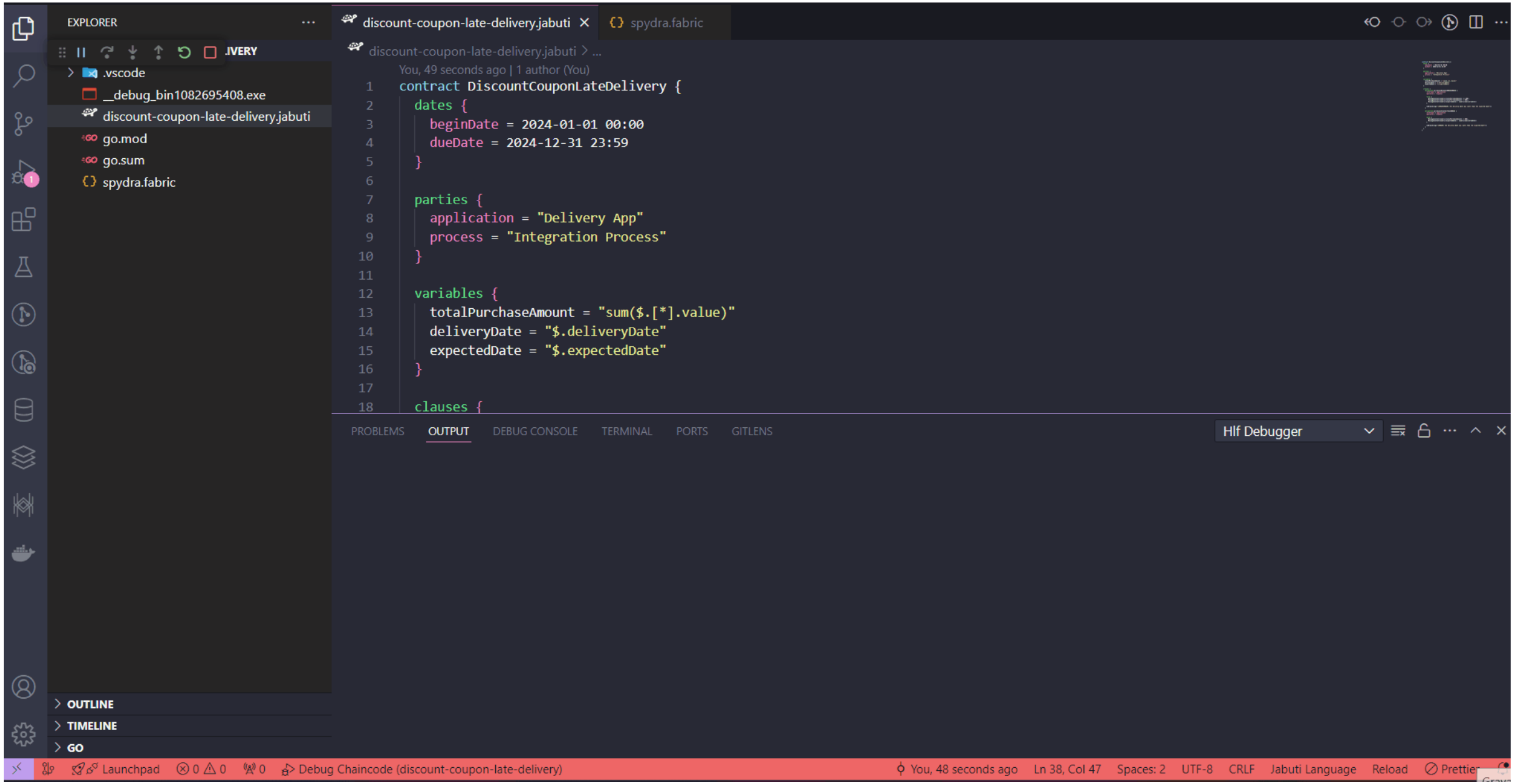
Documentation on hover



Main Features

Transformation




EXPLORER
.IVERY
.vscode
__debug_bin1082695408.exe
discount-coupon-late-delivery.jabuti
go.mod
go.sum
spydra.fabric
discount-coupon-late-delivery.jabuti
spydra.fabric
discount-coupon-late-delivery.jabuti > ...
You, 49 seconds ago | 1 author (You)
contract DiscountCouponLateDelivery {
dates {
beginDate = 2024-01-01 00:00
dueDate = 2024-12-31 23:59
}
parties {
application = "Delivery App"
process = "Integration Process"
}
variables {
totalPurchaseAmount = "sum($.[*].value)"
deliveryDate = "$.deliveryDate"
expectedDate = "$.expectedDate"
}
clauses {
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
GITLENS
Hlf Debugger
OUTLINE
TIMELINE
GO
Launchpad
Debug Chaincode (discount-coupon-late-delivery)
You, 48 seconds ago
Ln 38, Col 47
Spaces: 2
UTF-8
CRLF
Jabuti Language
Reload

Current and future works

Current and future works

- Explore complex case studies
- Integrate with Blockchains
- Execution and Monitoring
- Use of AI

Where do you can find us?

https://github.com/gca-research-group/jabuti-ce-transformation-engine

Jabuti project papers

- Advances in a DSL to Specify Smart Contracts for Application Integration Processes
- On the Need to Use Smart Contracts in Enterprise Application Integration
- Jabuti CE: A Tool for Specifying Smart Contracts in the Domain of Enterprise Application Integration

Jabuti projetct repositories

- VSCode based projects
  - Jabuti DSL Grammar
  - Transformation Engine
  - VSCode Plugin
- Eclipse based projects
  - XText/Xtend implementation

Q&A

Mailson Teles Borges | mailson.borges@sou.unijui.edu.br

C5NA