

基于Flink的边缘流式计算

Stream processing for edge computing, a Flink based solution

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FLINK FORWARD # ASIA

实时即未来 # Real-time Is The Future

**FLINK
FORWARD**

让流作业运行在任何设备上

Run stream computing on any device

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Challenges of stream processing in edge computing.

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01 流式计算在边缘端的挑战

Challenges of stream processing in edge computing.



内存压力

Limited memory



磁盘压力

Disk pressure

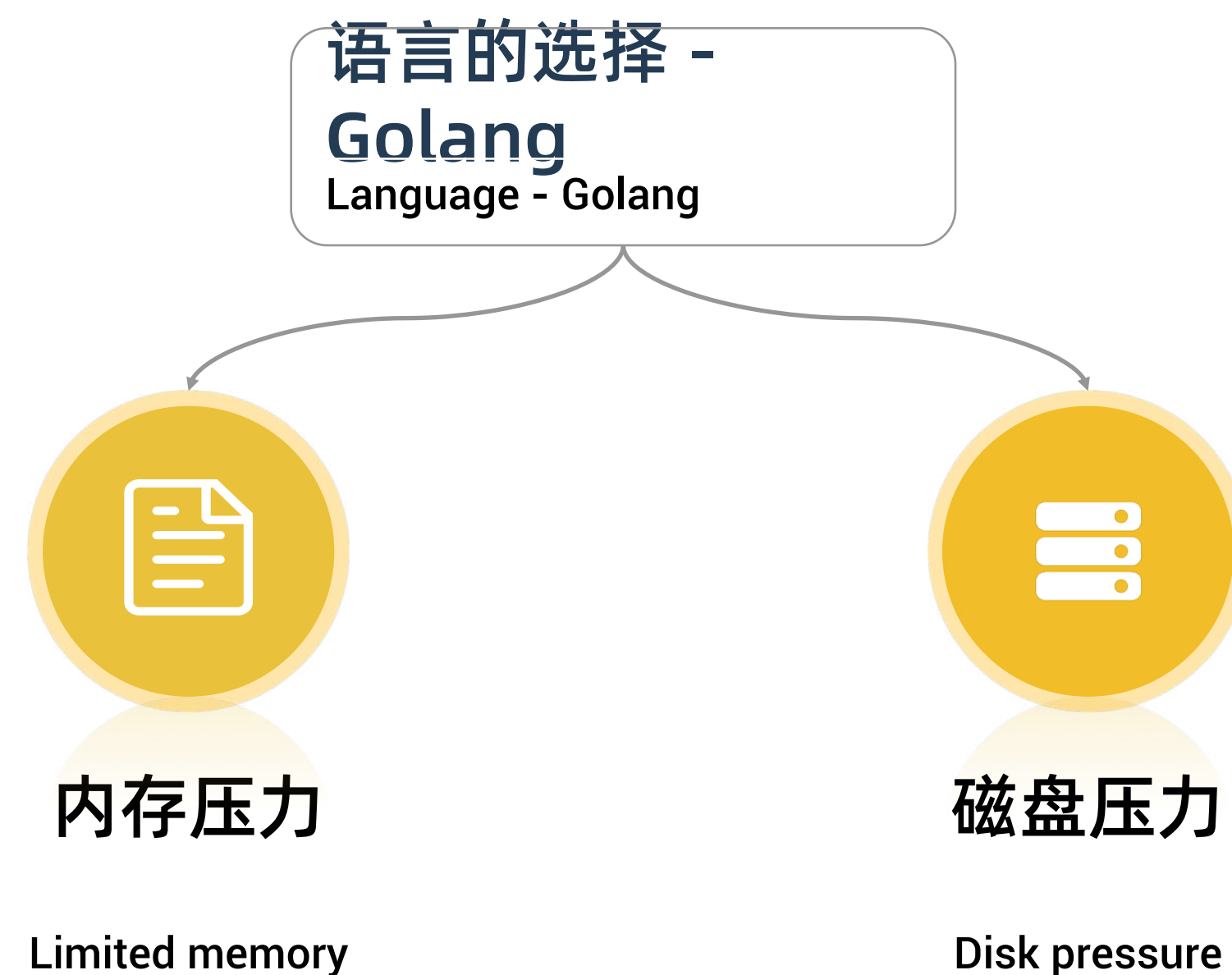


作业管理

Job management

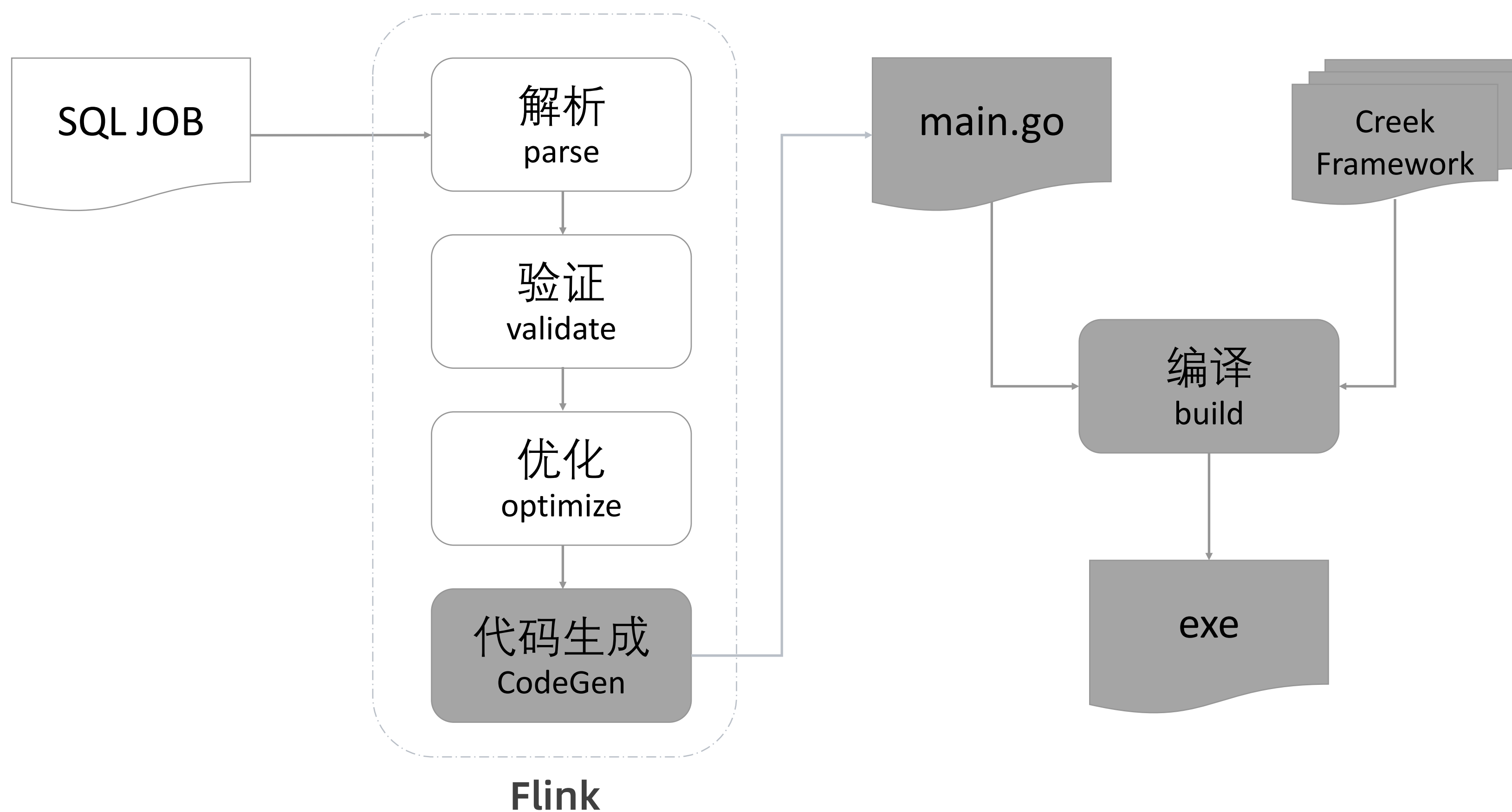
02 实现方案及成果(一)

Solution.



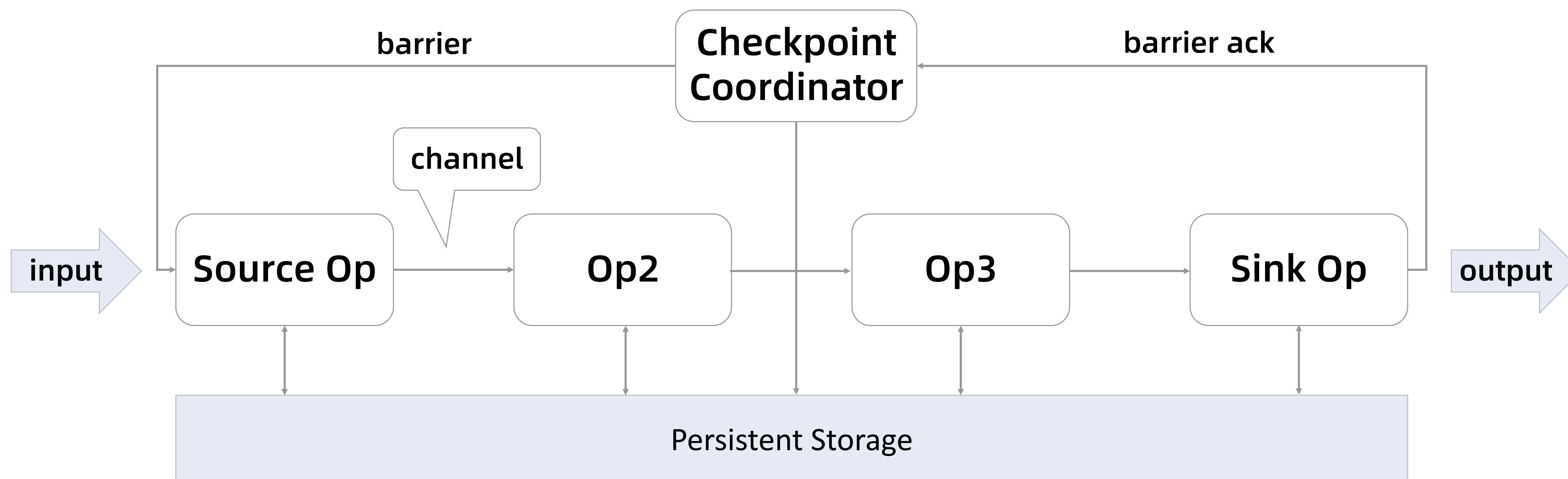
02 实现方案及成果(二)

Solution cont'd



02 实施方案及成果(三)

Solution cont'd



02 实现方案及成果(四)

Solution cont'd

内存消耗 - 7MB

Memory consumption

文件大小 - 7MB

File size

吞吐率 - 770K

msg/s

Throughput

The screenshot shows the 'Creek 作业生成器' (Creek Job Generator) web interface. The browser address bar shows 'creek.baidubce.com'. The page title is 'Creek 作业生成器 超轻量级节点流式计算框架'. The interface is divided into two main sections: '作业模板 (7个)' (Job Templates (7)) and '作业' (Job). The '定义' (Definition) section on the left lists five templates, with the first one selected: '1. 标准输入, 标准输出, 固定窗口, 平均值'. The '作业' section on the right displays the generated Flink code in JSON format, including a comment, description, input/output examples, and a schema definition for a CSV source with fields 'ts' (SQL_TIMESTAMP) and 'deviceid' (STRING). A '生成可执行文件' (Generate executable file) button is located at the bottom right of the code area. The Baidu Smart Cloud logo is visible in the bottom right corner.

Creek 作业生成器
超轻量级节点流式计算框架

作业模板 (7个) 作业

定义

1. 标准输入, 标准输出, 固定窗口, 平均值

2. 文件输入, 文件输出, 滑动窗口, 求和

3. Kafka输入, Kafka输出, 会话窗口, 求最大值

4. MQTT输入, MQTT输出, Row Over窗口

5. 处理时间, 嵌套JSON

```
{
  "注释": {
    "说明": "展示标准输入 (STDIN) 数据源和标准输出 (STDOUT)",
    "输入示例": "1000,dev1,2.3",
    "输出示例": {"avg_temperature": 2.3, "deviceid": "dev1"}
  },
  "sources": [
    {
      "schema": {
        "format": "CSV",
        "fields": [
          {
            "name": "ts",
            "type": "SQL_TIMESTAMP"
          },
          {
            "name": "deviceid",
            "type": "STRING"
          },
          {
            "name": "temp",
            "type": "DOUBLE"
          }
        ]
      }
    }
  ]
}
```

生成可执行文件

百度智能云

03 现场演示

Live demo

Demo

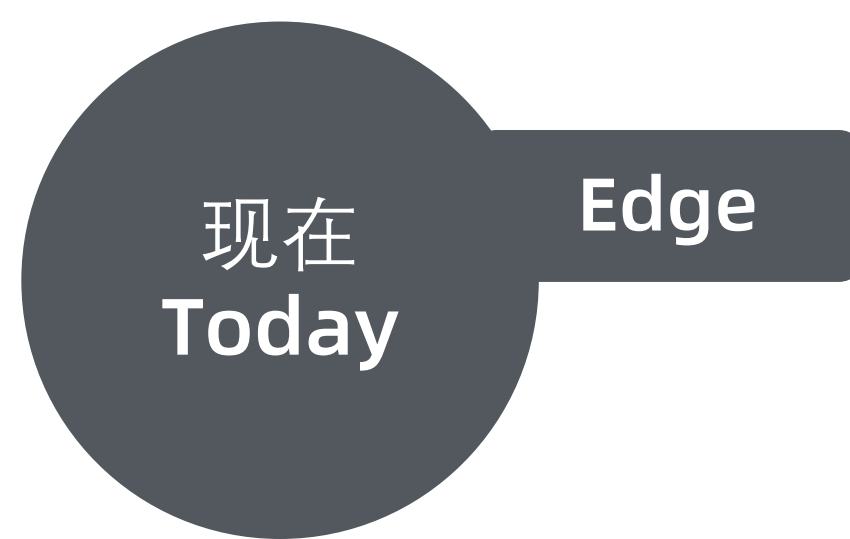
<http://creek.baidubce.com>

演示人 - 黄家天

By Jiatian HUANG.

04 小结和未来计划

Wrap up & Future plan



1, 处理时间, 事件事件, Watermark

ProcessingTime, EventTime, Watermark

2, 固定\滑动\会话窗口, Row\Range Over

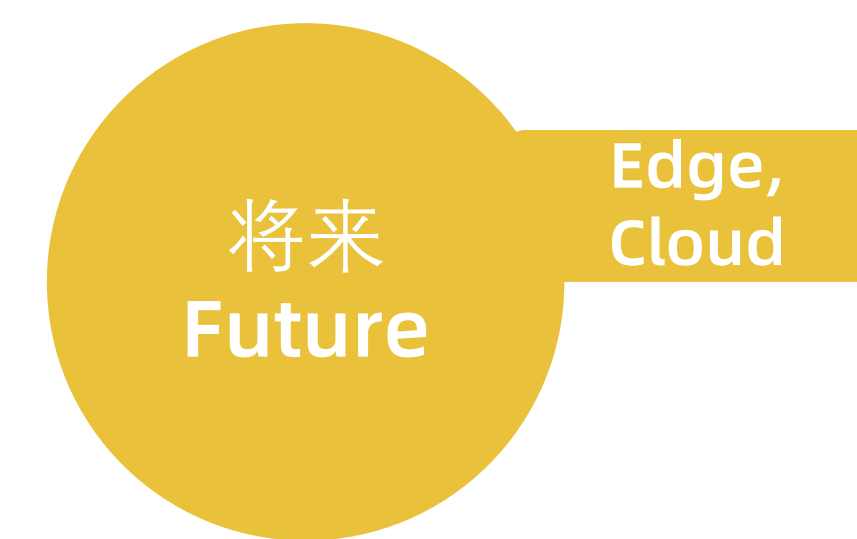
Tumble, Hop, Session, Row\Range Over Windows

3, 支持File, MQTT, Kafka数据源和目的地

Support File, MQTT, Kafka as source and sink

4, 检查点、故障恢复

Checkpointing and recovering



1, 复杂事件处理(CEP)

Complex Event Processing

2, 支持更多Connectors: web log, ES, etc.

More connectors, e.g. web log, ES

3, 状态保存支持分布式存储: HDFS

State backend support distributed file system: HDFS

4, 用户自定义函数

UDF

Q&A



技术交流群



THANKS