自动化测试框架设计与实践

Introduce

- github @xudafeng
- weibo @达峰的夏天
- twitter @2009xdf
- site xdf.me
- company alipay.com

Why Automated Testing


Cross end
CarPlay

- 移动WEB演进越来越快
- 版本分化越来越频繁
- 混合式的技术选型
- 场景越来越多且愈发复杂
- 测试方案和手段被透明化
- 可归档、复用、易重新组织

更直接的收效

性能专项的驱动器

- 耐久性测试
- 性能基准测试

- HTTP 或网关层面实现
- 代理端注入测试套件 **testsuit**
- 代理端插入测试脚本

[anchor#1] movie

满足需求么?

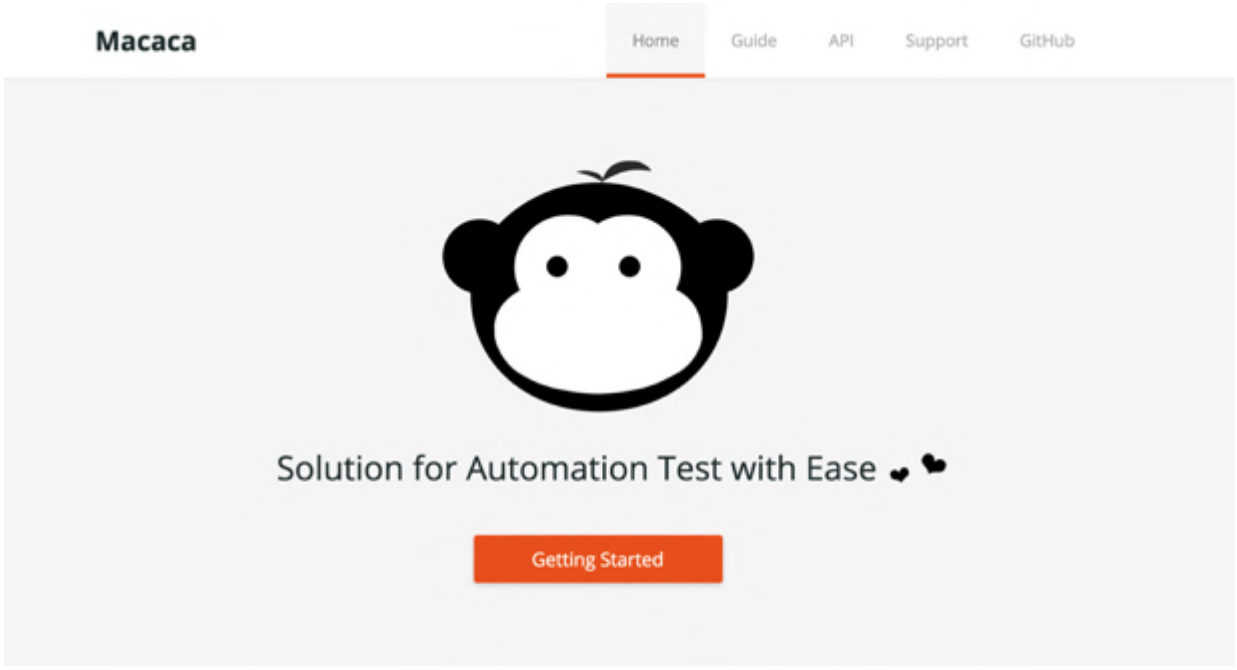
自动化本质是软件开发

环境和配置差异

- 多套部署环境

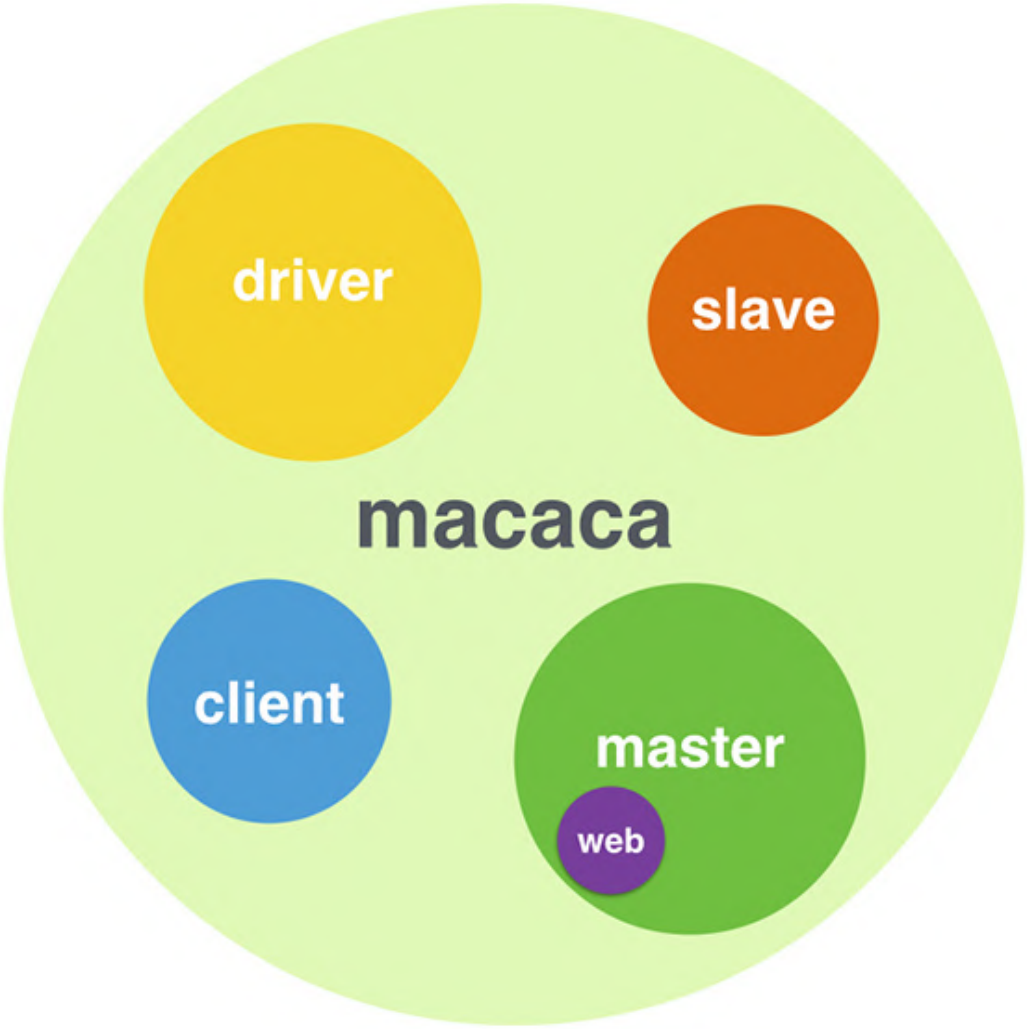
降低自动化的成本

- 收敛覆盖
- 趋于底层
- 数据剥离
- 环境自动化



Write End-to-End tests in Node.js and run against a WebDriver server.


研发阶段
持续集成
监控机制
长效反馈

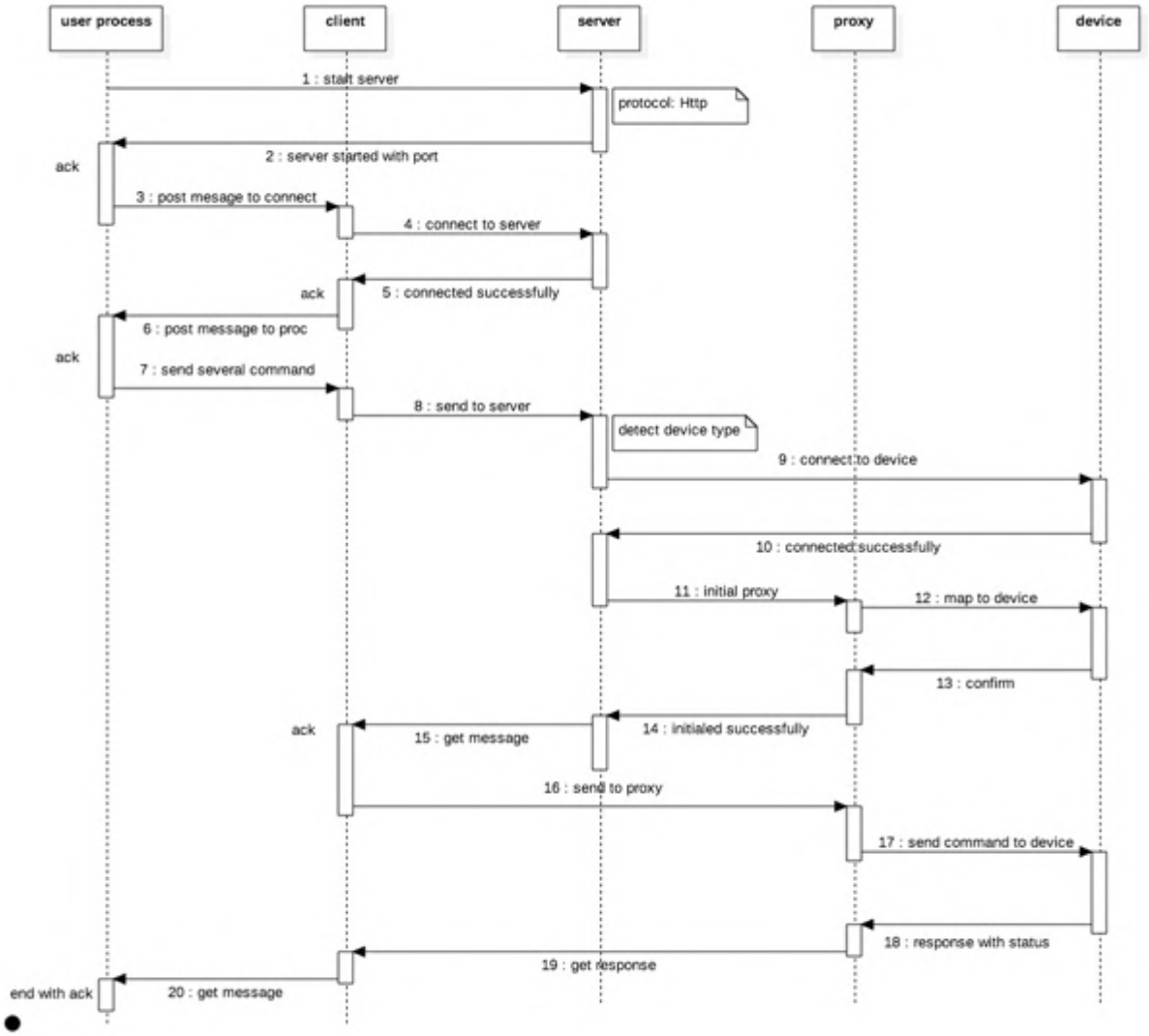

driver
slave
macaca
client
master
web

Macaca Theory

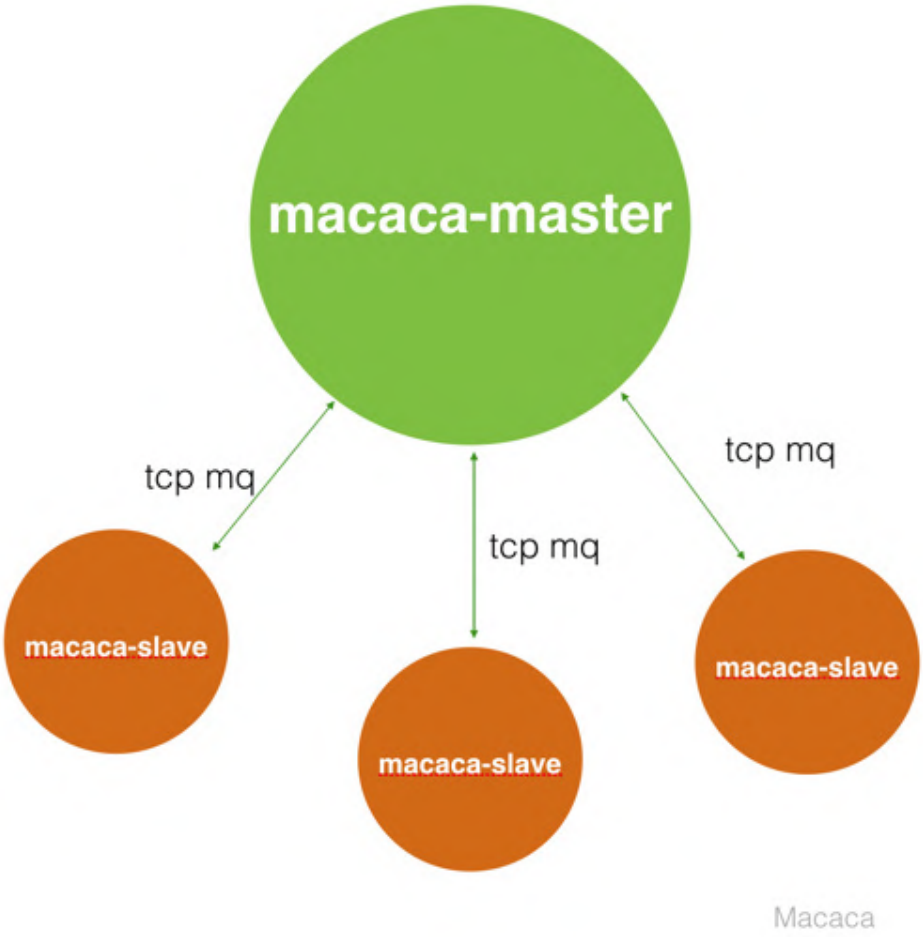
- W3C WebDriver Wire Protocol
- Node.js 成为首要技术选型

- 一体化的测试体验
- 可定制化和可扩展的 API
- 0配置

Device Proxy


user process
client
server
proxy
device
1 : start server
protocol: Http
2 : server started with port
ack
3 : post mesage to connect
4 : connect to server
5 : connected successfully
ack
6 : post message to proc
ack
7 : send several command
8 : send to server
detect device type
9 : connect to device
10 : connected successfully
11 : initial proxy
12 : map to device
13 : confirm
14 : initialed successfully
ack
15 : get message
16 : send to proxy
17 : send command to device
18 : response with status
19 : get response
end with ack
20 : get message

Continuous Integration

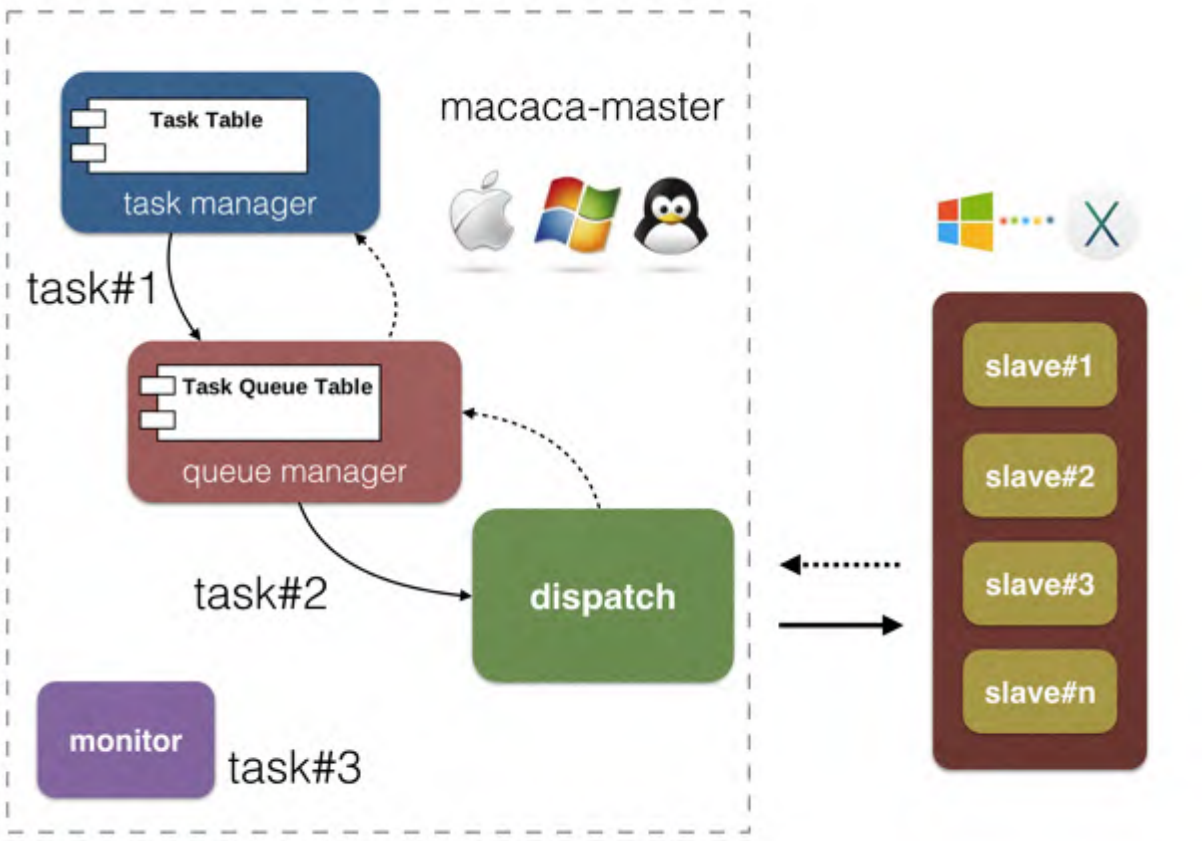

macaca-master
tcp mq
tcp mq
tcp mq
macaca-slave
macaca-slave
macaca-slave
Macaca

macaca-master

- 并发任务
- 节点管理
- WEB平台集成
- 沉淀数据、报表
- Docker Deploy

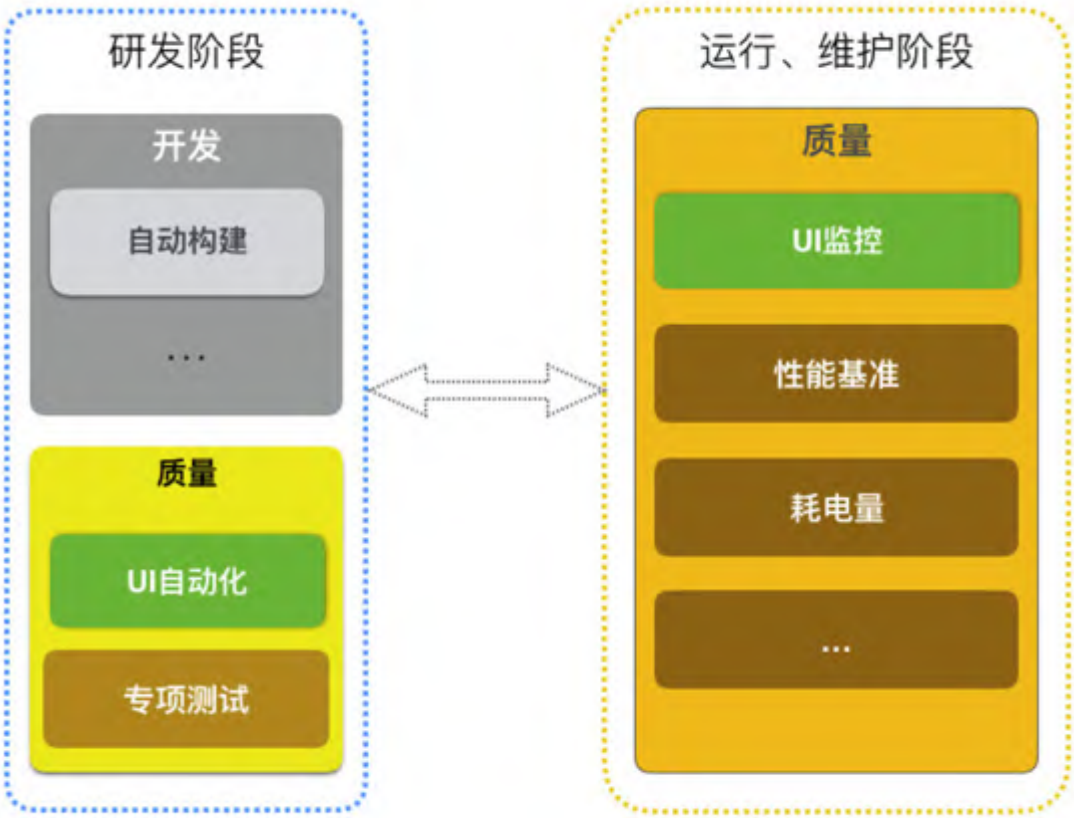

There is no cloud
it's just someone else's computer

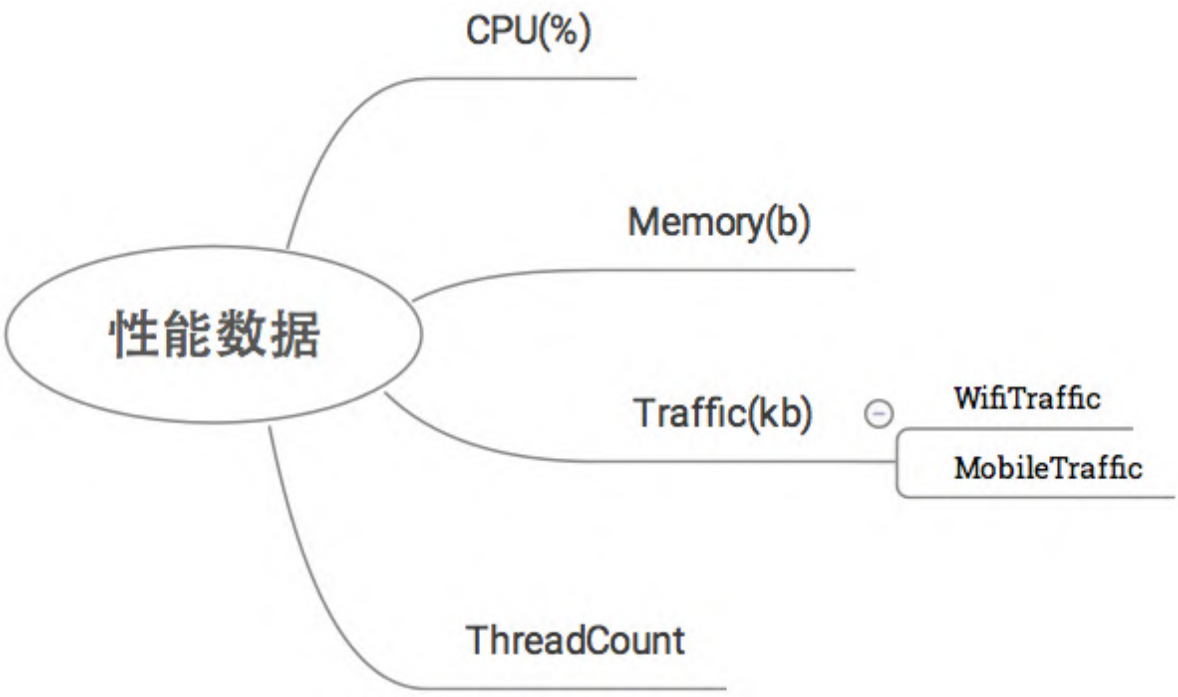
- 实现进程控制
- 处理数据存档
- 实现任务调度
- 调度策略


Task Table
task manager
macaca-master
task#1
Task Queue Table
queue manager
task#2
dispatch
monitor
task#3
slave#1
slave#2
slave#3
slave#n

macaca-slave

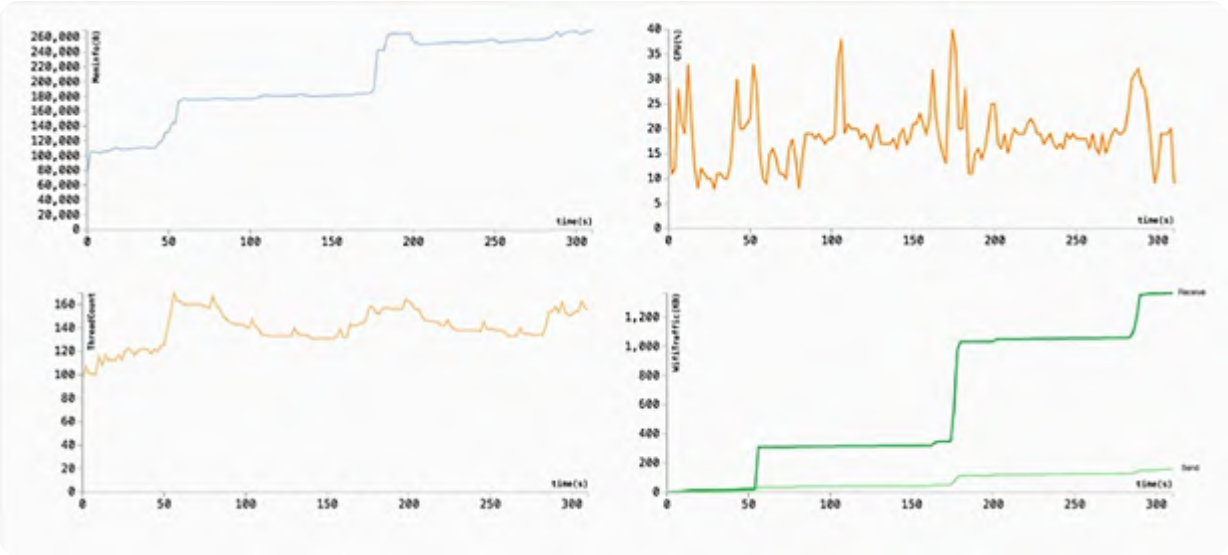
- 配置管理
- 测试框架集成
- slave条件负载


研发阶段
开发
自动构建
...
质量
UI自动化
专项测试
运行、维护阶段
质量
UI监控
性能基准
耗电量
...

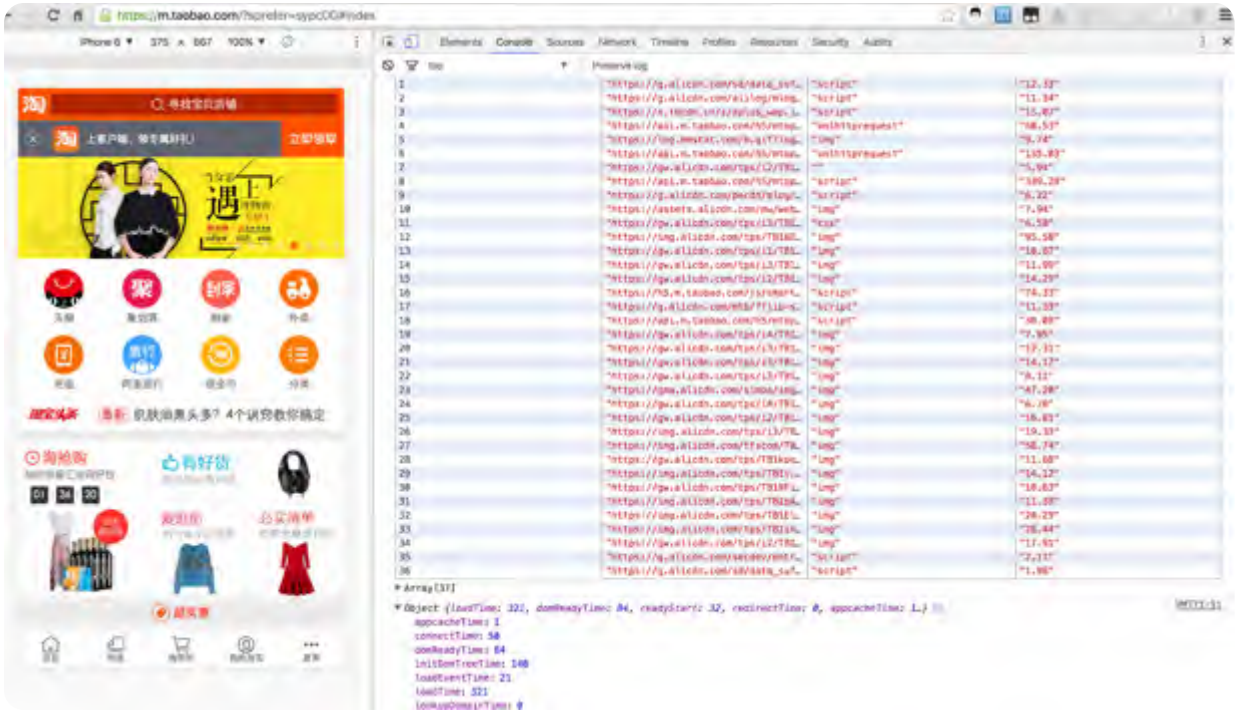

CPU(%)
Memory(b)
性能数据
Traffic(kb)
WifiTraffic
MobileTraffic
ThreadCount

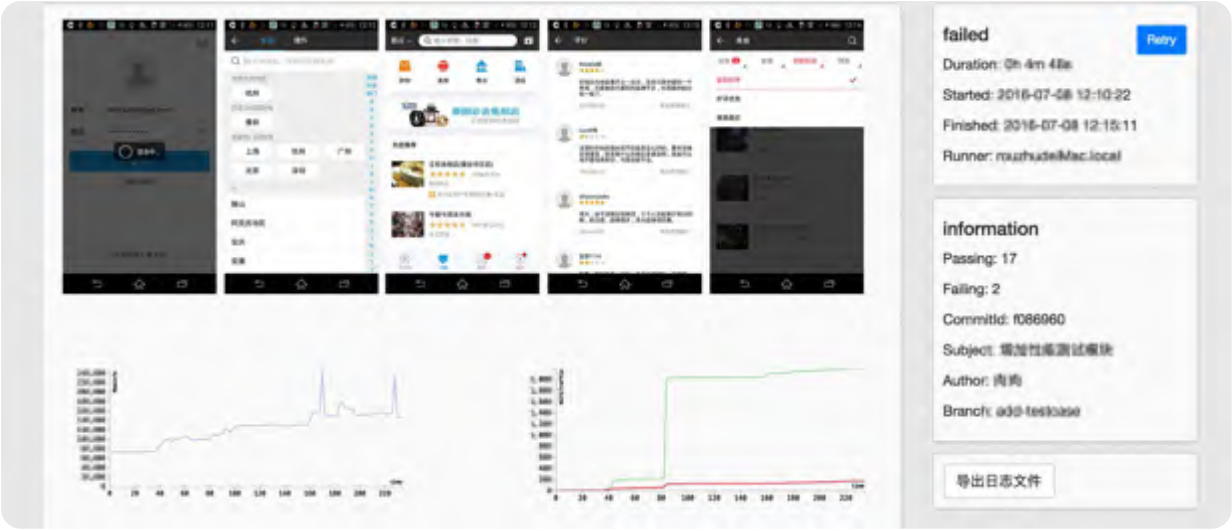
Performance Pin

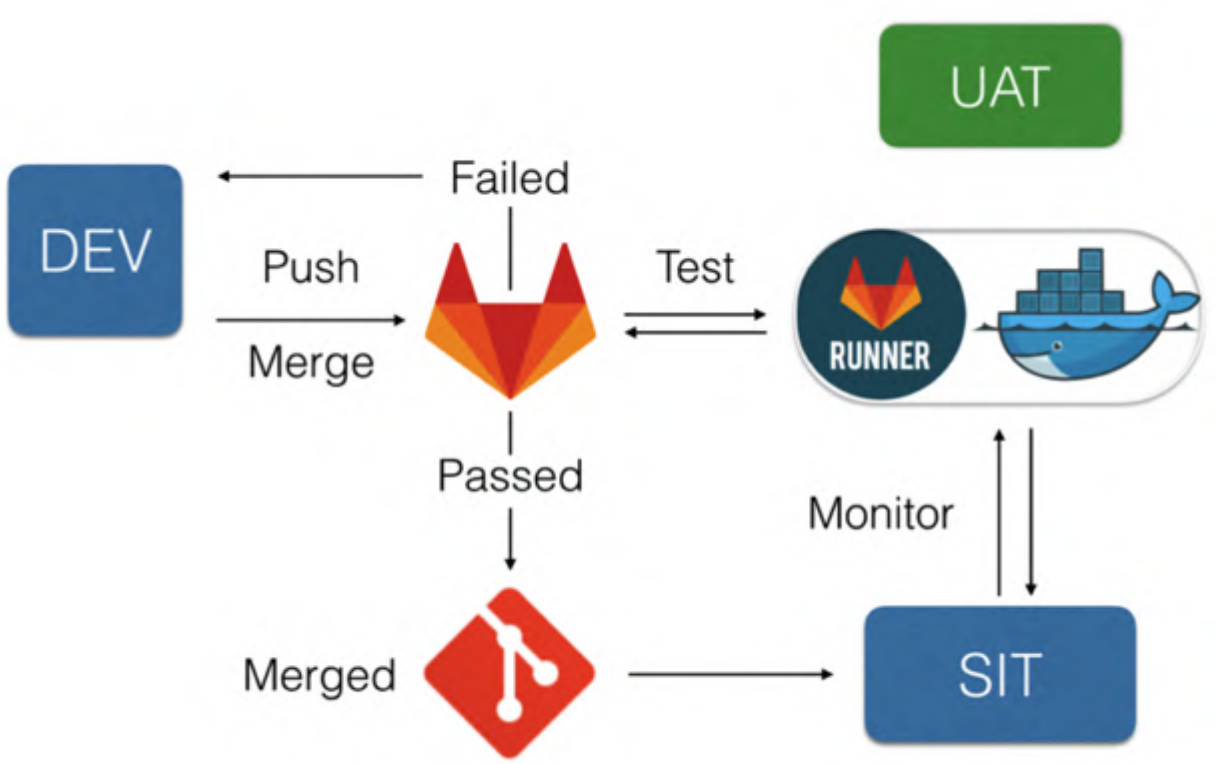
Native Performance


260,000
240,000
220,000
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
0
50
100
150
200
250
300
time(s)
40
35
30
25
20
15
10
5
0
160
140
120
100
80
60
40
20
1,200
1,000
800
600
400
200

WEB Performance




failed
Retry
Duration: 0h 4m 48s
Started: 2016-07-08 12:10:22
Finished: 2016-07-08 12:15:11
Runner: ruzhudeiMac.local
information
Passing: 17
Failing: 2
CommitId: f086960
Subject:
Author: 肉狗
Branch: add-testcase
导出日志文件

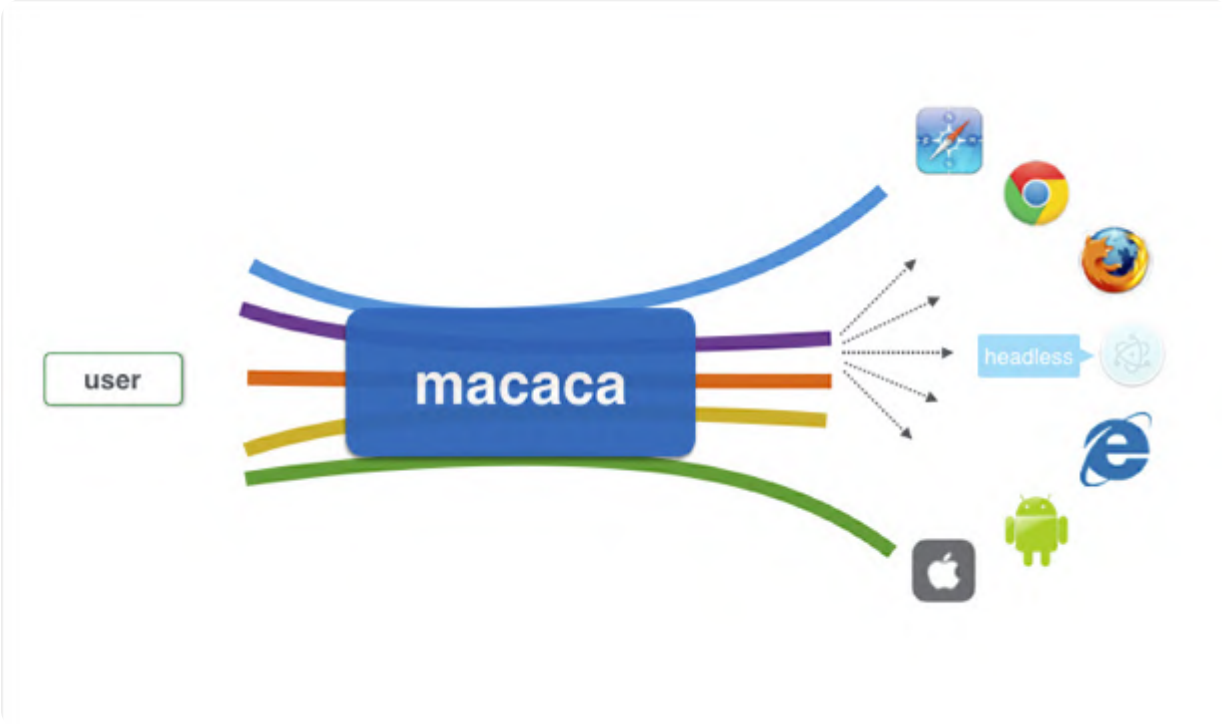

UAT
DEV
Failed
Push
Merge
Test
RUNNER
Passed
Monitor
Merged
SIT

Macaca Enables Us

Multi-lang

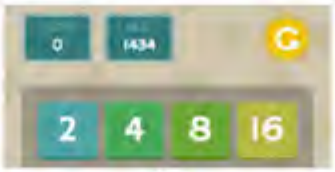

node
JS
python
Java

Full End Stack



Hilo

Flappy Bird



2048

Fruit Ninja


双十一喵喵赛


2013狂欢城


2014狂欢城


2015狂欢城


圣诞跳雪界


双十一红包雨


喵星大冒险1


喵星大冒险2

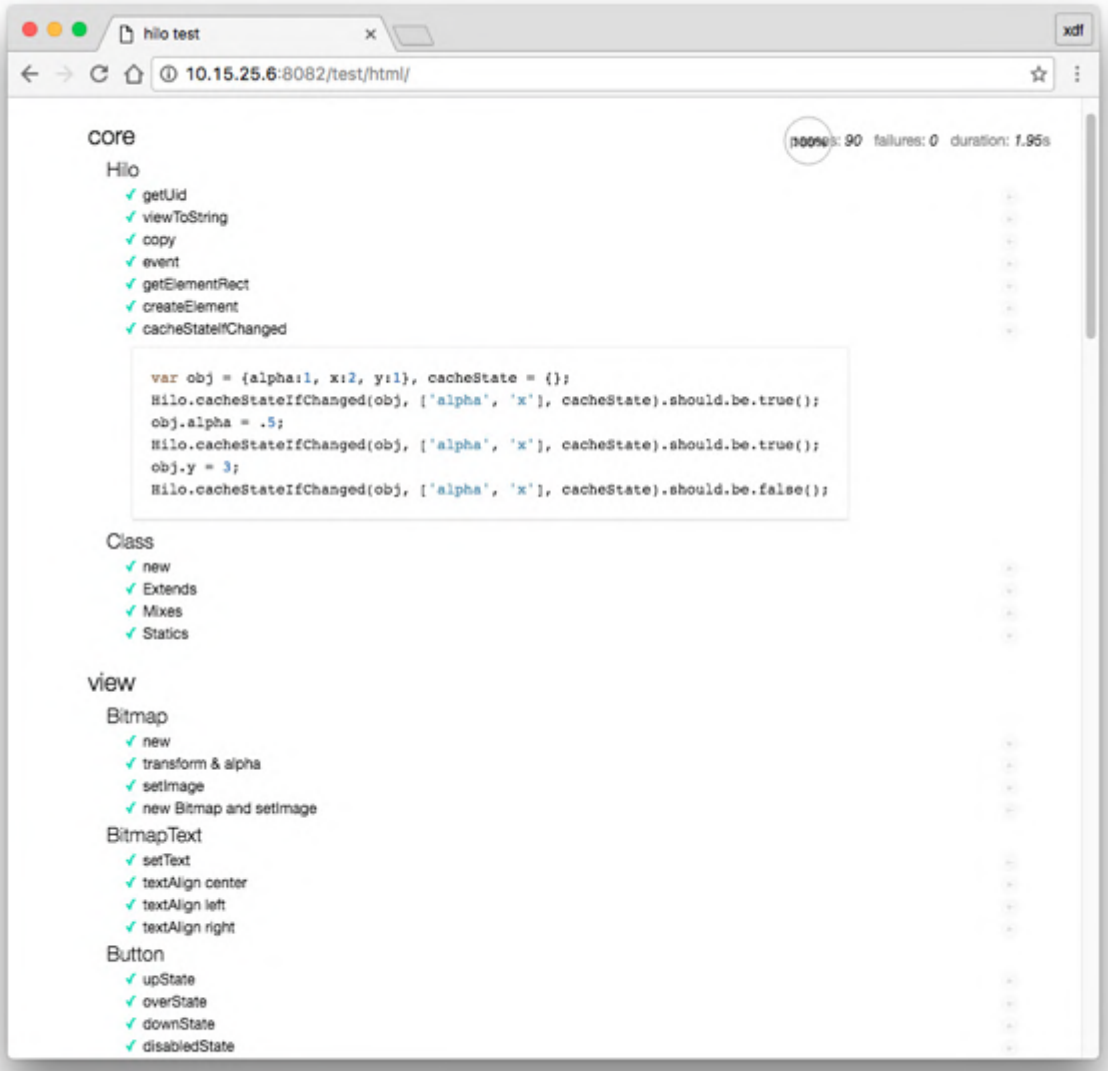

618抢事车

打年兽

幸运爆竹

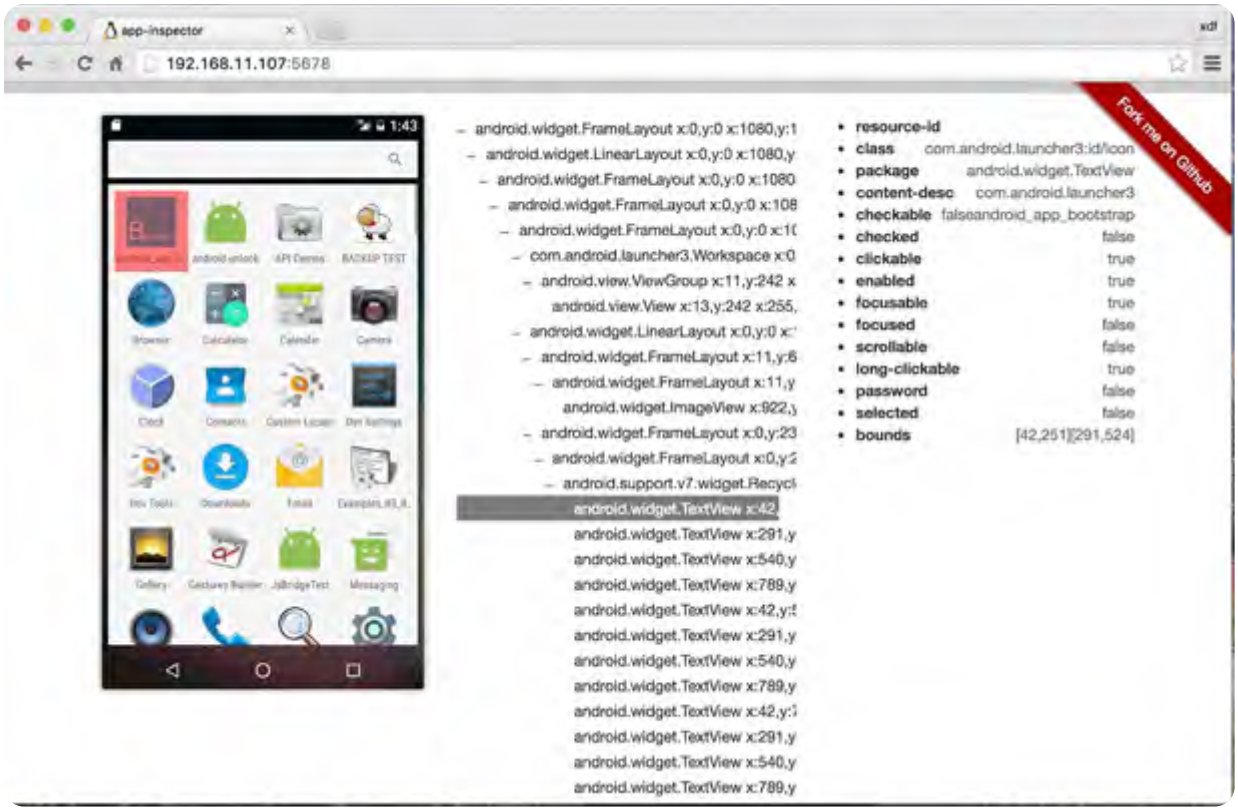

双十一大冲关

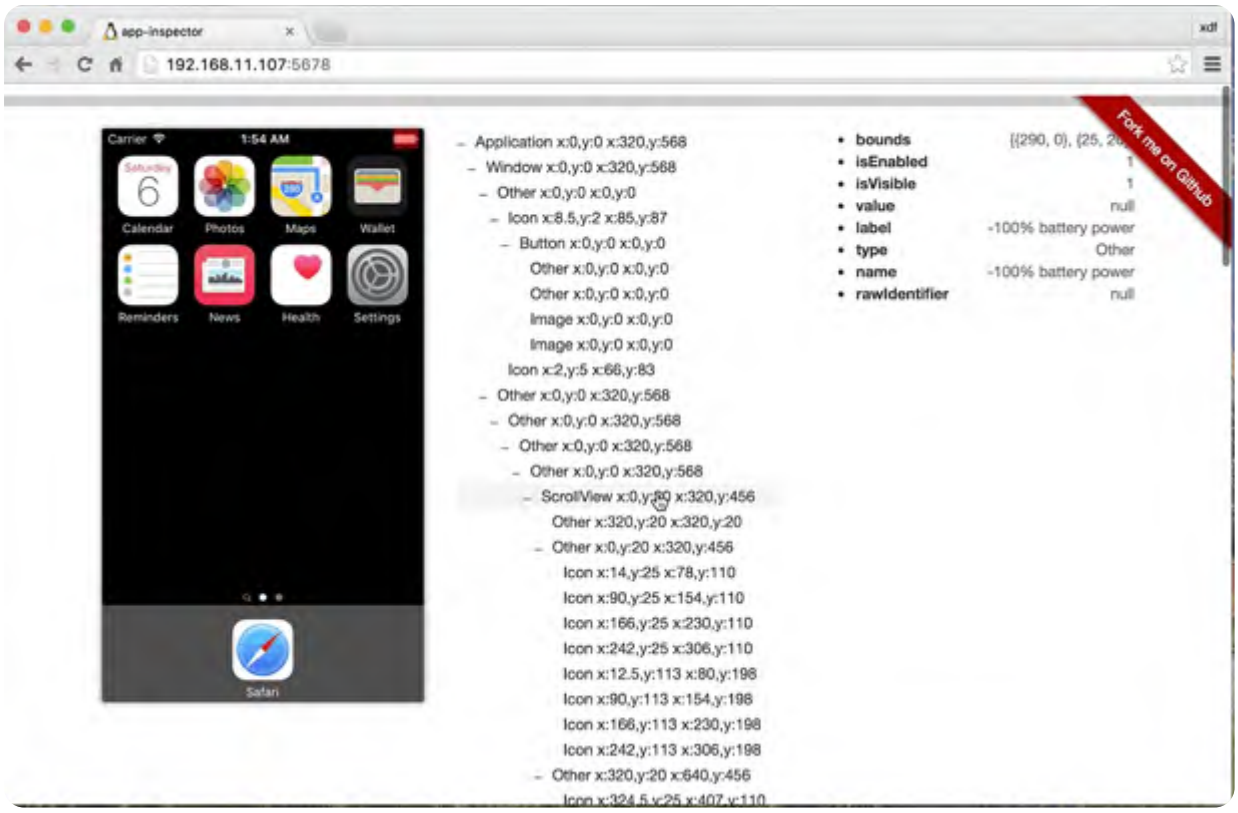

Last login: Wed Aug 17 11:21:45 on ttys002
berton@BertondeMacBook-Pro ~/workspace/git/github/Hilo ‹uitest›
$ npm t_


hilo test
xdf
10.15.25.6:8082/test/html/
core
100%: 90 failures: 0 duration: 1.95s
Hilo
getUid
viewToString
copy
event
getElementRect
createElement
cacheStateIfChanged
var obj = {alpha:1, x:2, y:1}, cacheState = {};
Hilo.cacheStateIfChanged(obj, ['alpha', 'x'], cacheState).should.be.true();
obj.alpha = .5;
Hilo.cacheStateIfChanged(obj, ['alpha', 'x'], cacheState).should.be.true();
obj.y = 3;
Hilo.cacheStateIfChanged(obj, ['alpha', 'x'], cacheState).should.be.false();
Class
new
Extends
Mixes
Statics
view
Bitmap
new
transform & alpha
setImage
new Bitmap and setImage
BitmapText
setText
textAlign center
textAlign left
textAlign right
Button
upState
overState
downState
disabledState


支付宝 ALIPAY 注册
1 创建账户
2 设置身份信息
3 设置支付方式
成功
设置支付方式 你正在进行身份验证，请输入一张本人银行卡验证并绑定。
银行卡号 6205 1827 3727 3666
持卡人姓名
证件
手机号码 131****8828
获取校验码
同意协议并确定
《快捷签约协议》 《中国光大银行客户信息验证授权协议》
承诺你的用卡安全
• 信息加密
• 风险识别
• 资金保障

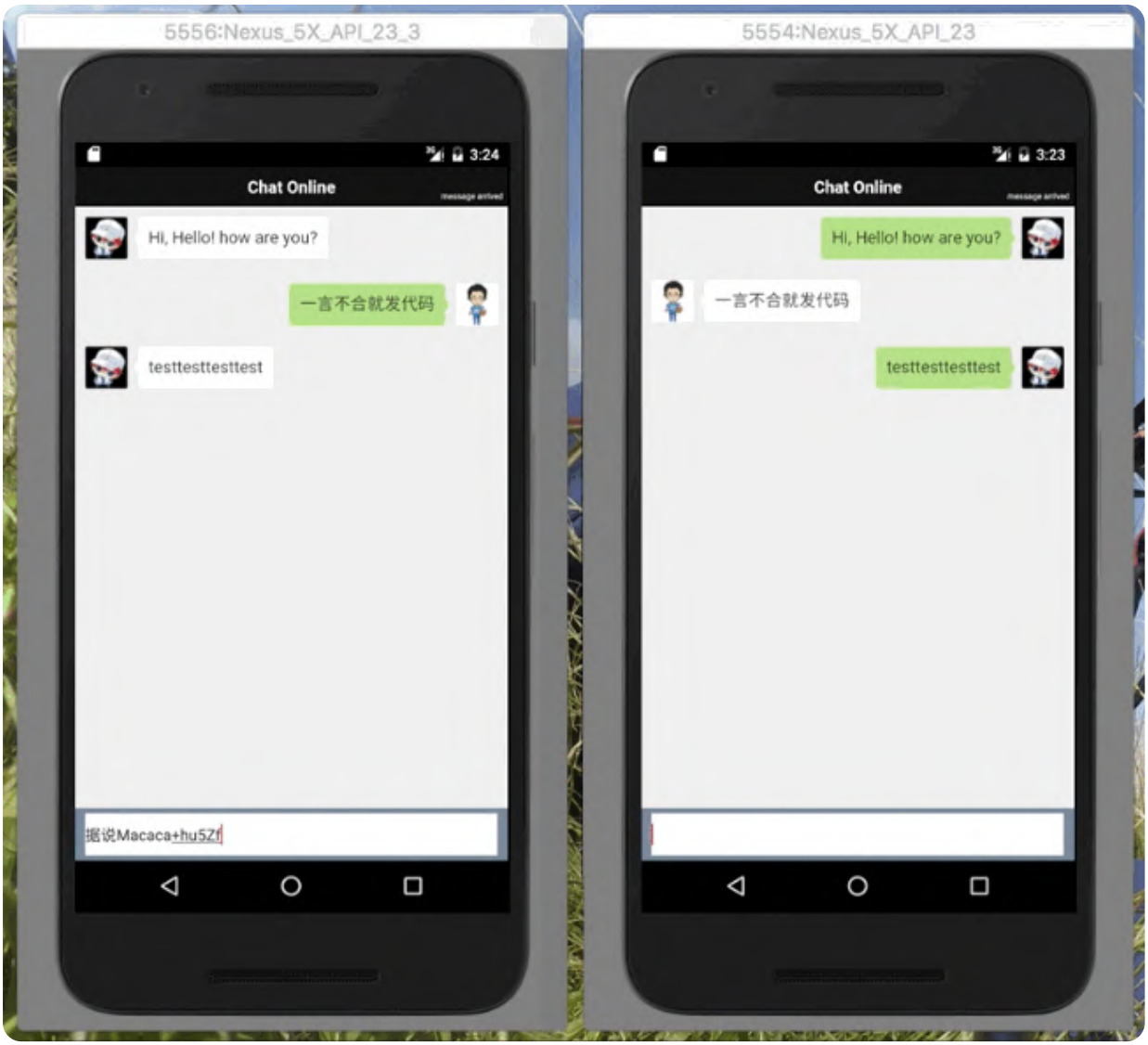
Inspector


app-inspector
192.168.11.107:5678
Fork me on Github
android.widget.FrameLayout x:0,y:0 x:1080,y:1
android.widget.LinearLayout x:0,y:0 x:1080,y
android.widget.FrameLayout x:0,y:0 x:1080
android.widget.FrameLayout x:0,y:0 x:108
android.widget.FrameLayout x:0,y:0 x:1(
com.android.launcher3.Workspace x:0
android.view.ViewGroup x:11,y:242 x
android.view.View x:13,y:242 x:255,
android.widget.LinearLayout x:0,y:0 x:
android.widget.FrameLayout x:11,y:6
android.widget.FrameLayout x:11,y
android.widget.ImageView x:922,y
android.widget.FrameLayout x:0,y:23
android.widget.FrameLayout x:0,y:2
android.support.v7.widget.Recycl
android.widget.TextView x:42,
android.widget.TextView x:291,y
android.widget.TextView x:540,y
android.widget.TextView x:789,y
android.widget.TextView x:42,y:
android.widget.TextView x:291,y
android.widget.TextView x:540,y
android.widget.TextView x:789,y
android.widget.TextView x:42,y:
android.widget.TextView x:291,y
android.widget.TextView x:540,y
android.widget.TextView x:789,y
resource-id
class com.android.launcher3:id/icon
package android.widget.TextView
content-desc com.android.launcher3
checkable falseandroid_app_bootstrap
checked false
clickable true
enabled true
focusable true
focused false
scrollable false
long-clickable true
password false
selected false
bounds [42,251][291,524]


app-inspector
192.168.11.107:5678
Carrier
1:54 AM
Calendar
Photos
Maps
Wallet
Reminders
News
Health
Settings
Safari
– Application x:0,y:0 x:320,y:568
– Window x:0,y:0 x:320,y:568
– Other x:0,y:0 x:0,y:0
– Icon x:8.5,y:2 x:85,y:87
– Button x:0,y:0 x:0,y:0
Other x:0,y:0 x:0,y:0
Other x:0,y:0 x:0,y:0
Image x:0,y:0 x:0,y:0
Image x:0,y:0 x:0,y:0
Icon x:2,y:5 x:66,y:83
– Other x:0,y:0 x:320,y:568
– Other x:0,y:0 x:320,y:568
– Other x:0,y:0 x:320,y:568
– Other x:0,y:0 x:320,y:568
– ScrollView x:0,y:80 x:320,y:456
Other x:320,y:20 x:320,y:20
– Other x:0,y:20 x:320,y:456
Icon x:14,y:25 x:78,y:110
Icon x:90,y:25 x:154,y:110
Icon x:166,y:25 x:230,y:110
Icon x:242,y:25 x:306,y:110
Icon x:12.5,y:113 x:80,y:198
Icon x:90,y:113 x:154,y:198
Icon x:166,y:113 x:230,y:198
Icon x:242,y:113 x:306,y:198
– Other x:320,y:20 x:640,y:456
bounds
isEnabled
isVisible
value
label
type
name
rawIdentifier
null
-100% battery power
Other
-100% battery power
null
Fork me on GitHub

Multi Driver

chat with robot ...


5556:Nexus_5X_API_23_3
3:24
Chat Online
Hi, Hello! how are you?
一言不合就发代码
testtesttesttest
据说Macaca+hu5Zf
5554:Nexus_5X_API_23
3:23
Chat Online
Hi, Hello! how are you?
一言不合就发代码
testtesttesttest

Open Source

alibaba/macaca

Ecosystem

- Macaca Site
- Testerhome.com
- Cnodejs.org

THANK YOU