

# Современный подход к тестированию локализации на iOS



Сергей Мохин

Heisenbug  
Москва 2019

# Содержание

- Интро
- Тестирование локализации в 2K19
  - Работа со строками 🗣️🗣️🗣️
    - Crowdin
    - Linguanapp
  - Тестируем руками (глазами 👁️👁️)
  - Тестируем автоматически 🤖
    - Готовим XCUITest правильно 🤖
    - Автоматическое создание скриншотов 🤖🤖
      - Fastlane
      - XCTestPlan
    - Snapshot testing 🤖🤖🤖
      - ios-snapshot-test-case
      - Swift-snapshot-testing
- The end





4+ года в тестировании

Барнаул ✈️ Limassol



@qaban



[sergeymokhin](#)

# Welcome to Exness

# Place, where everything is possible



Scan me:



# OUR BIG MULTICULTURAL TEAM



Number of Nationalities  
working at Exness

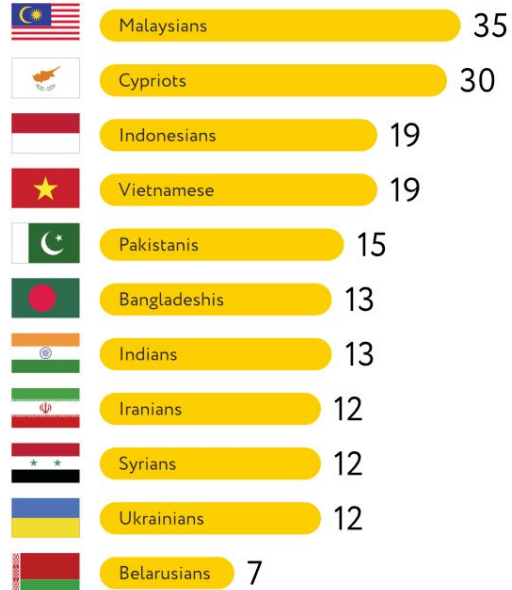
58

## TOP 10 NATIONALITIES

  
RUSSIANS  
193

  
CHINESE  
40

  
THAIS  
38



# Welcome to Exness

- Python
- Java
- Go
- C++
- PHP
- Docker
- AWS
- PostgreSQL
- Kafka
- Rabbit



Unique users  
**430 000**



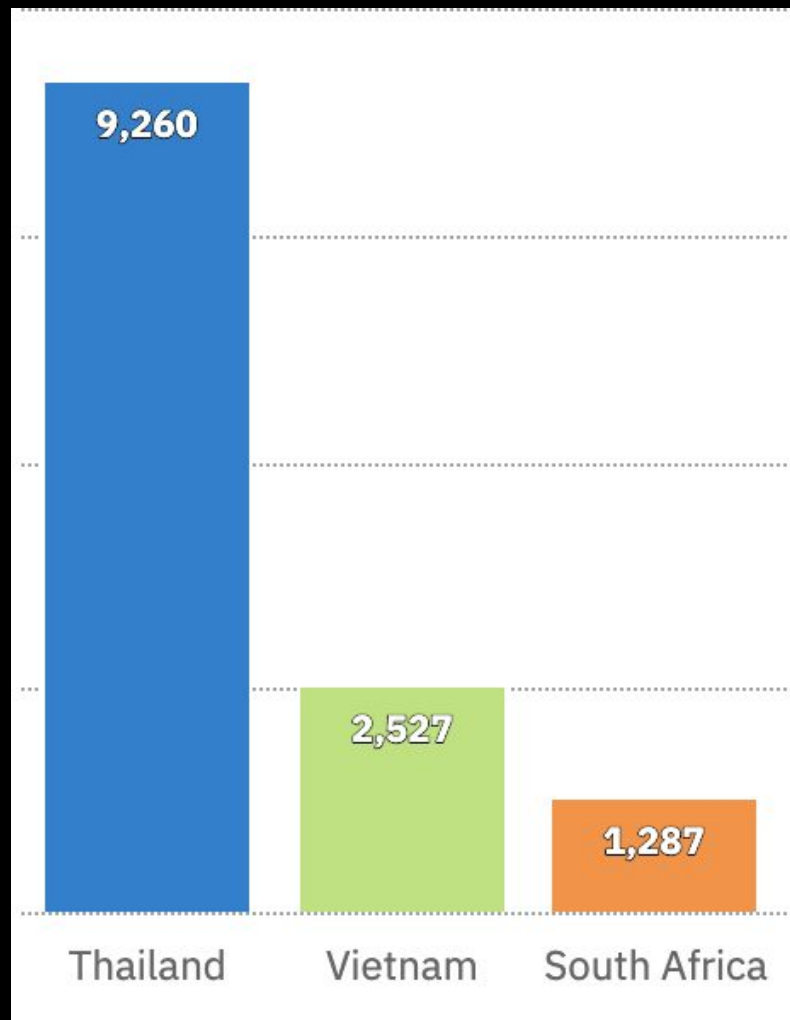
Trading volume in 2018  
**4153 billion USD**

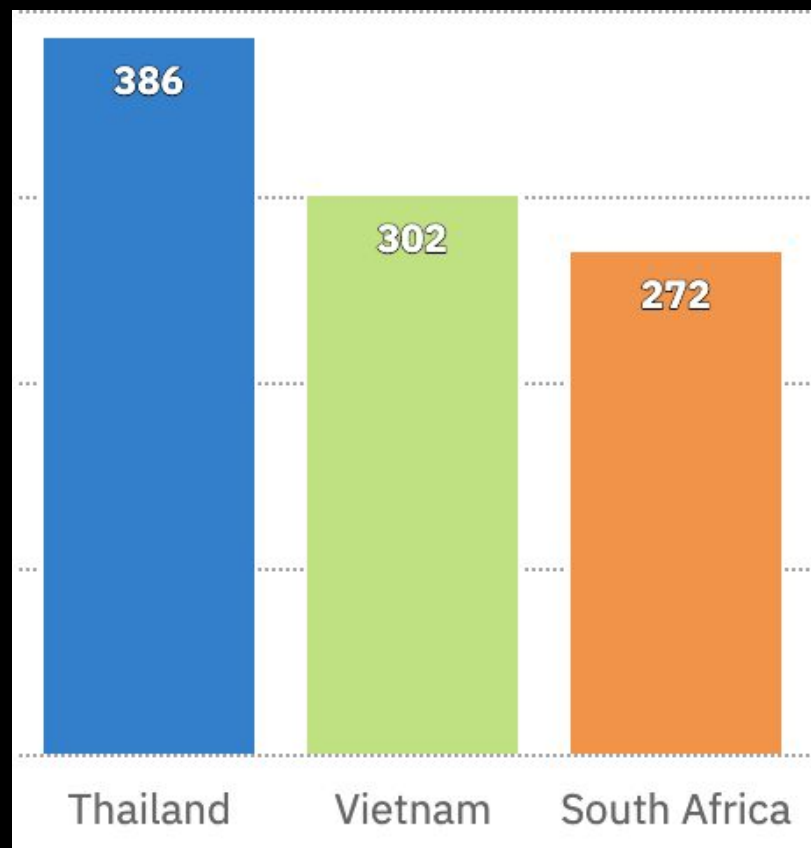


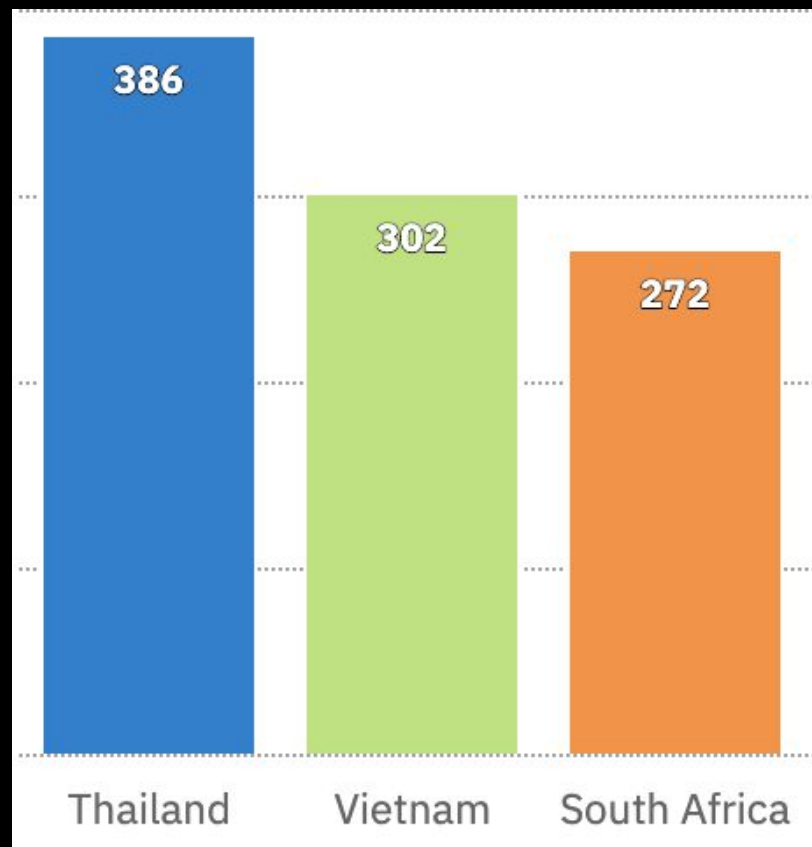
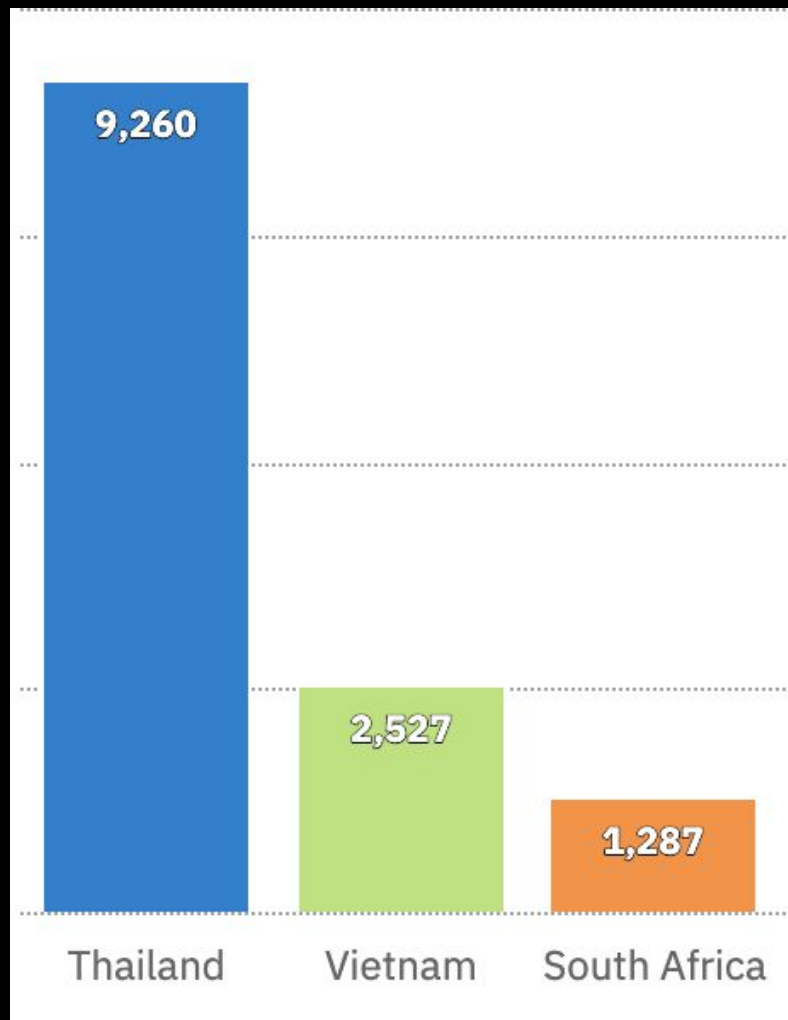
Депозиты 🏠 💰 🤖




















เฉพาะการฝากถอนแบบทันทีเท่านั้น



 <b>Bangkok Bank</b> 1.00 – 2,000.00 USD	Up to 4 hours
 <b>Bangkok Bank Cashier / ATM</b> 1.00 – 2,000.00 USD	Up to 4 hours
 <b>Bangkok Bank Mobile banking</b> 1.00 – 2,000.00 USD	Up to 4 hours
 <b>Bank of Ayudhya</b> 1.00 – 2,000.00 USD	Up to 4 hours
 <b>Kasikorn Bank Cashier</b> 1.00 – 2,000.00 USD	Up to 4 hours
 <b>Kasikornbank</b> 1.00 – 2,000.00 USD	Up to 4 hours
 <b>Krung Thai Bank</b> 1.00 – 2,000.00 USD	Up to 4 hours



## วิธีใหม่



เฉพาะการฝากถอนแบบทันทีเท่านั้น



ธนาคารกรุงเทพ iPay

1.00 – 2,000.00 USD

Up to 4 hours



ธนาคารกรุงเทพ ชำระเงินที่เคาน์เตอร์หรือตู้...

1.00 – 2,000.00 USD

Up to 4 hours



ธนาคารกรุงเทพ บนมมือถือ

1.00 – 2,000.00 USD

Up to 4 hours



ธนาคารกรุงศรีอยุธยา

1.00 – 2,000.00 USD

Up to 4 hours



ธนาคารกสิกรไทย ชำระเงินที่เคาน์เตอร์

1.00 – 2,000.00 USD

Up to 4 hours



ธนาคารกสิกรไทย บนมมือถือ

1.00 – 2,000.00 USD

Up to 4 hours

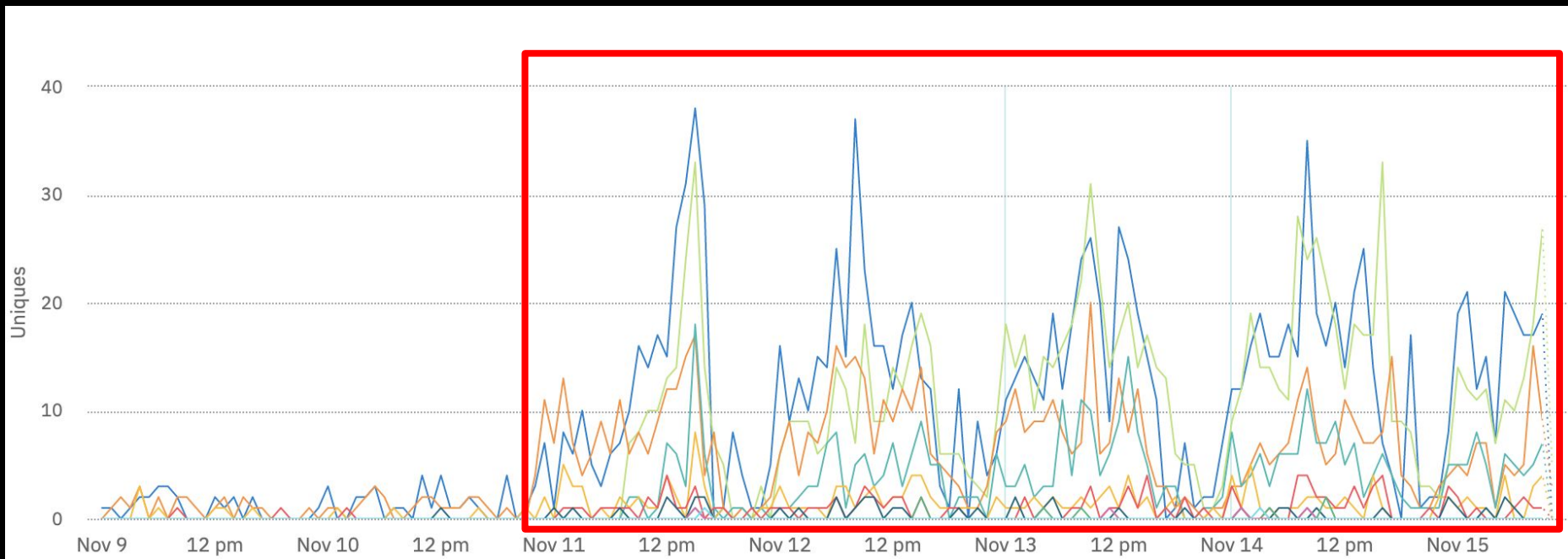


ธนาคารกรุงไทย

1.00 – 2,000.00 USD

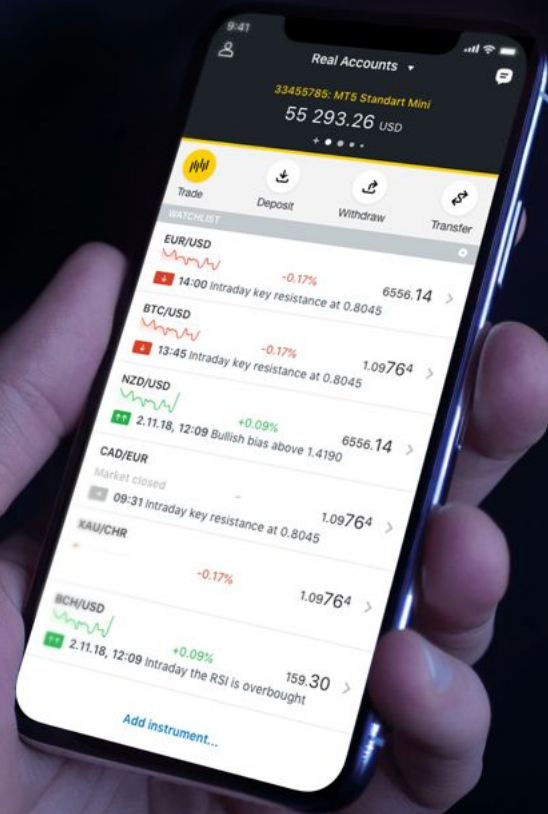
Up to 4 hours





# Exness mobile app

- Личный кабинет трейдера





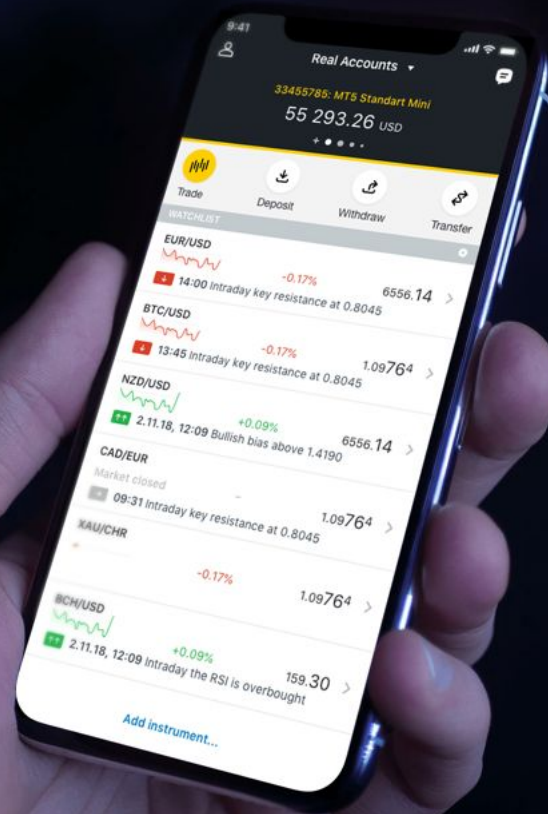
# Exness mobile app

- Личный кабинет трейдера
- Торговый терминал



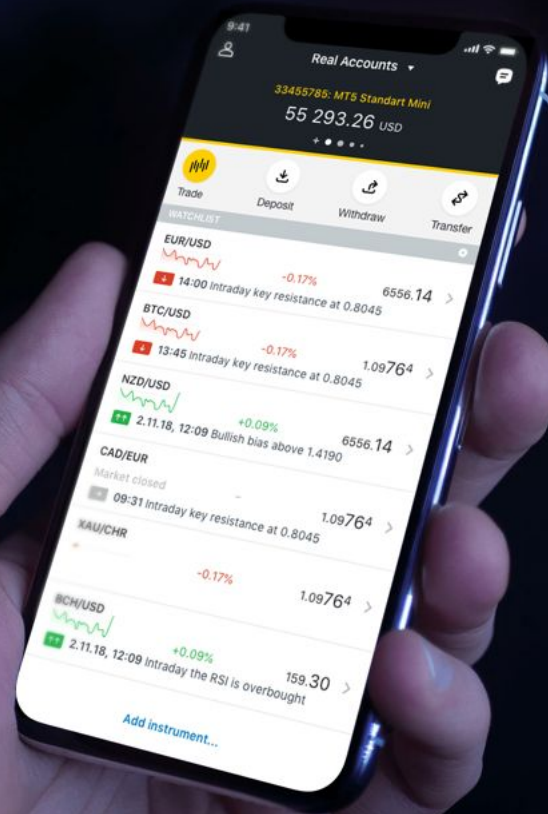
# Exness mobile app

- Личный кабинет трейдера
- Торговый терминал
- Биллинг (40+ PS)



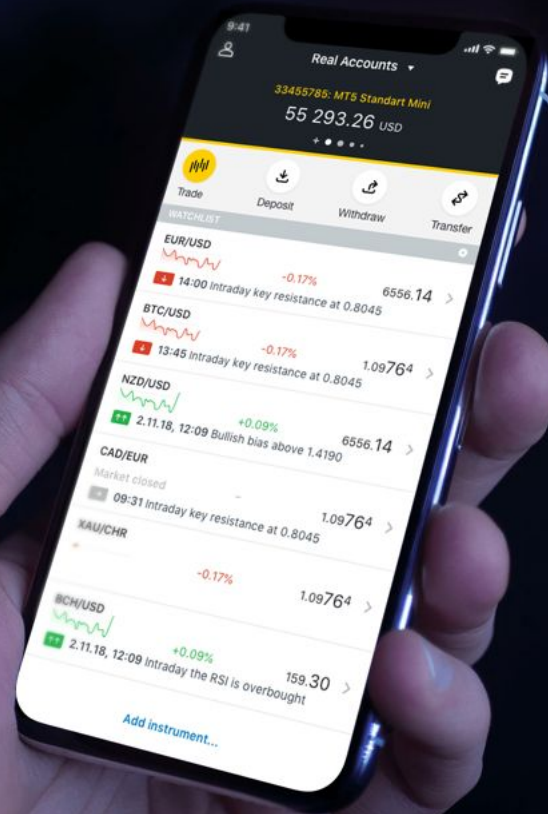
# Exness mobile app

- Личный кабинет трейдера
- Торговый терминал
- Биллинг (40+ PS)
- Торговые сигналы, экономические новости и календарь



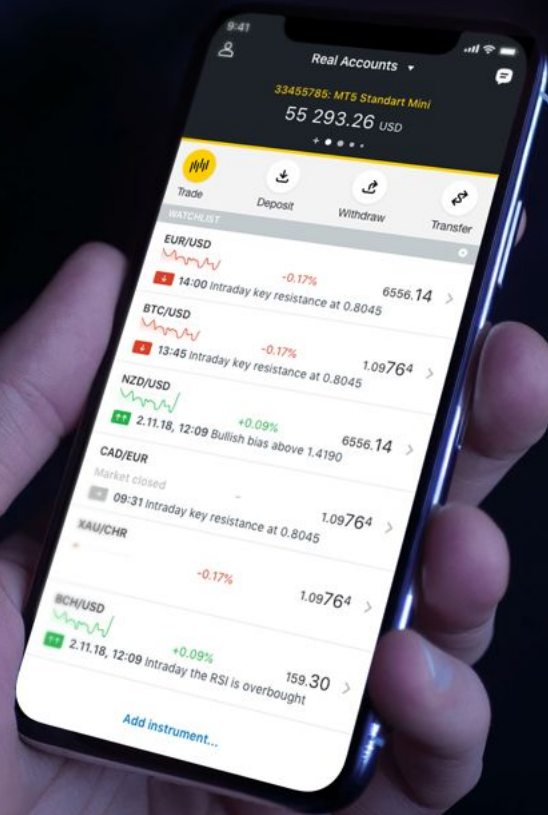
# Exness mobile app

- Личный кабинет трейдера
- Торговый терминал
- Биллинг (40+ PS)
- Торговые сигналы, экономические новости и календарь
- Реальные, демо и крипто счета



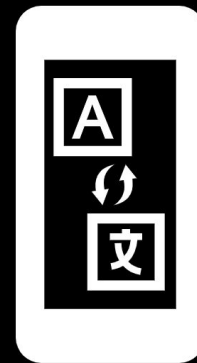
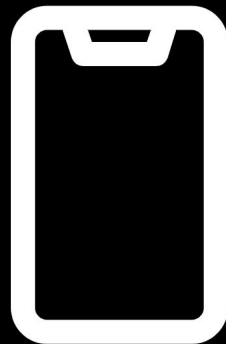
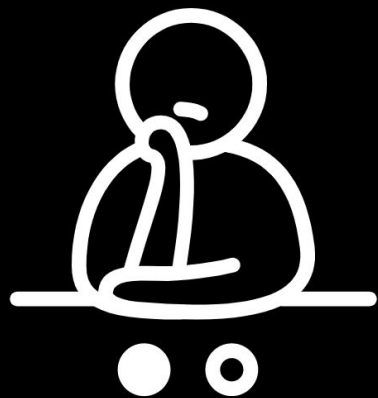
# Exness mobile app

- Личный кабинет трейдера
- Торговый терминал
- Биллинг (40+ PS)
- Торговые сигналы, экономические новости и календарь
- Реальные, демо и крипто счета
- Push-нотификации

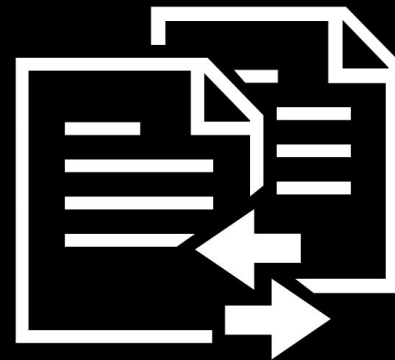
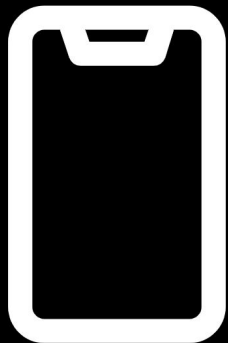


a long time ago in a galaxy far far away...

## Тестирование локализации: два способа



# Тестирование локализации: два способа





# Crowdin: система менеджмента мультиязычного контента



# Crowdin: редактор переводов

The screenshot displays the Crowdin web interface for a translation project. The main area shows a list of translation items on the left and a detailed view of a selected item on the right. The selected item is "I agree to Minecraft Realms" with a context of "Request Context". The source text is "I agree to Minecraft Realms Terms of Service." and the target text is "Ik stem Minecraft Realms". A machine translation suggestion is shown with a 100% match. The interface also includes a search bar, a filter icon, and a comments section on the right with user avatars and comments in Italian, German, and Russian.

File Project Languages View

Search in the Project

Text for Translation

I agree to Minecraft Realms

Context | Request Context

mco.terms.sentence.1

This is first line of a sentence, the full sentence is:

I agree to Minecraft Realms Terms of Service.

File: [Minecraft Realms](#)

Ik stem Minecraft Realms

27 / 24 Save

Low German Suggesti... Other Languages Search TM

Ik stem Minecraft Realms  
7 hours ago by [Jens Bergensten \(jeb\\_\)](#)

Machine Translation Suggestions

Ik stem Minecraft Realms  
I agree to Minecraft Realms  
Minecraft's TM, 100% match

Comments Terms

[Apani \(allazzeri\)](#)

The strings "I agree to Minecraft Realms" and "Terms of Service" make a whole sentence. That's why they're translated this way.

7 months ago

[Kumasasa](#)

@TiroM17: Dieser String ist zweizeilig. Der zweite Teil ist mco.terms.sentence.2 (= "Nutzungsbedingungen an")

7 months ago

[Вася Пункин \(haxucgm\)](#)

это первая часть предложения, оно разбито на две строки.

введите в поиск: mco.terms.sentence  
2 years ago

[Michele Mainardi \(Capopanzo\)](#)











@SoloPhone Questa è la prima parte di una frase, che per intero è "I agree to Minecraft Realms Terms of Service", dove "Terms of Service" è un'altra stringa qui su crowdin (mco.terms.sentence.2) ed è anche un collegamento alla pagina web dei termini di servizio. Il metodo più logico per tradurre questa frase è "Accetto I" e "termini di servizio di Minecraft Realms"

a year ago

Page 1 of 62

New comment

# Crowdin: лента активности и задачник

-   Haya Nizameddin (haya.nizameddin) approved 68 suggestions in Korean, Arabic, Saudi Arabia, Chinese Simplified, French, Hindi, Indonesian, Portuguese, Spanish, Ukrainian and Vietnamese
-   Haya Nizameddin (haya.nizameddin) suggested 3 translations into Arabic, Saudi Arabia, French and Bengali
-   Haya Nizameddin (haya.nizameddin) made the string "Receive \$10,000 in virtual funds and learn how to trade with a market leader"
-   Haya Nizameddin (haya.nizameddin) hid the string "Receive \$10,000 in virtual funds and learn how to trade with a market leader"
-   t.thanintharathan suggested 7 translations into Thai

DONE

#10190 2019-09-04\_TRANSLATE-6601\_Release 3.6 T  
ranslations (proofreading)

1 contributors  
286 words

**PROOFREAD** Sep 6, 2019

Close

#10096 2019-09-04\_TRANSLATE-6601\_Release 3.6 T  
ranslations

2 contributors  
286 words

**TRANSLATE** Sep 5, 2019

Close

# Crowdin: страница проекта

The screenshot shows the Crowdin project page for 'exness-Mobile app'. The interface includes a top navigation bar with 'Projects', 'Resources', and 'Explore' menus, a search bar, and utility icons. Below the navigation, the project name 'Exness (crowdin\_exness\_team)' is displayed with user avatars, notification settings ('Mentions only'), a 'Joined' status, and a 'Settings' button. The main heading is 'exness-Mobile app' with a lock icon. A horizontal menu contains 'Home', 'Activity', 'Discussions', and 'Tasks'. The 'Translations' section features a grid of 14 language cards, each with a flag, language name, and progress bars. A 'Details' sidebar on the right provides project statistics and a list of managers with their roles and contact links.

Projects ▾ Resources ▾ Explore

Search Projects

Exness (crowdin\_exness\_team)

Mentions only ▾ Joined ▾ Settings

## exness-Mobile app

Home Activity Discussions Tasks

Translations:

★ Russian 96% • 95%	Arabic, Saudi Arabia 96% • 96%	Bengali 96% • 93%	Chinese Simplified 96% • 96%	French 96% • 96%
Hindi 96% • 96%	Indonesian 99% • 99%	Korean 96% • 96%	Portuguese 96% • 96%	Spanish 96% • 96%
Thai 99% • 96%	Ukrainian 96% • 96%	Urdu (Pakistan) 96% • 93%	Vietnamese 99% • 99%	

**Details**

Source language: English  
Project members: 77  
Words to translate: 9802  
Created: 2 years ago  
Last activity: 2 days ago

**Managers**

- Exness (crowdin\_exness\_team)  
[OWNER](#) [Contact](#)
- .alexey.  
[Contact](#)
- ahmed.essameldin  
[Contact](#)
- alexander.shtanko  
[Contact](#)

## Crowdin: плюсы и минусы

- Всеядный (.xml, .strings, .yml, .json, etc)

## Crowdin: плюсы и минусы

- Всеядный (.xml, .strings, .yml, .json, etc)
- Умный (строки отдельно, код отдельно)

## Crowdin: плюсы и минусы

- Всеядный (.xml, .strings, .yml, .json, etc)
- Умный (строки отдельно, код отдельно)
- API

## Crowdin: плюсы и минусы

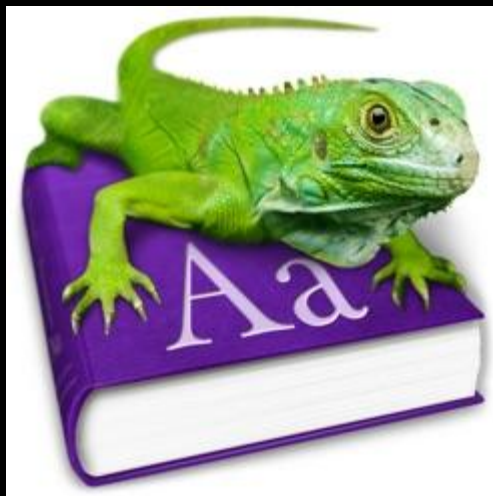
- Всеядный (.xml, .strings, .yml, .json, etc)
- Умный (строки отдельно, код отдельно)
- API
- Отдельная строка/весь файл
- Автоперевод



## Crowdin: плюсы и минусы

- Всеядный (.xml, .strings, .yml, .json, etc)
- Умный (строки отдельно, код отдельно)
- API
- Отдельная строка/весь файл
- Автоперевод
- Стоит денег

# LinguanApp: умный редактор строк в Xcode проекте



# LinguanApp: главное окно

Export Import Validate Scan Sources

SocialTrading.xcodeproj

SocialTrading

InfoPlist.strings

Localizable.strings

Last Scan

Localizable.strings (543 tokens)

Wizard All Warnings Missing Search

Name	Comment	English (en)	Indonesian (id)	Korean (South Korea) (ko-KR)
account.accountTitl	MARK: - Account	Account	Akun	계좌
account.areYouSure		Are you sure you want to Log Out of	Apakah Anda yakin ingin Keluar dari	Exness 소셜 트레이딩에서 로
account.available		Available	Tersedia	사용 가능 금액
account.floating		P&L	Keuntungan	수익
account.invested		Invested	Investasi	투자된 금액
account.logOut		Logout	Keluar	로그아웃
account.makeDiposi		Deposit Funds Now	Depositkan Dana Sekarang	지금 입금하기
account.total		Total	Total	총액
alert.dont-allow		Don't Allow	Jangan Izinkan	허락하지 않음
alert.settings	MARK: - Alert View	Settings	Pengaturan	설정
authentication.bio		Login using passcode to use again Face	Masuk dengan kode akses untuk	암호를 입력하고 Face ID를 디
authentication.bio		Biometric database was modified	Database biometrik telah dimodifikasi	생체 인식 데이터베이스가 업드
authentication.bio		Login using passcode to use again	Masuk dengan kode akses untuk	암호를 입력하고 Touch ID를
authentication.bio		Authentication	Otentikasi	인증

+ -

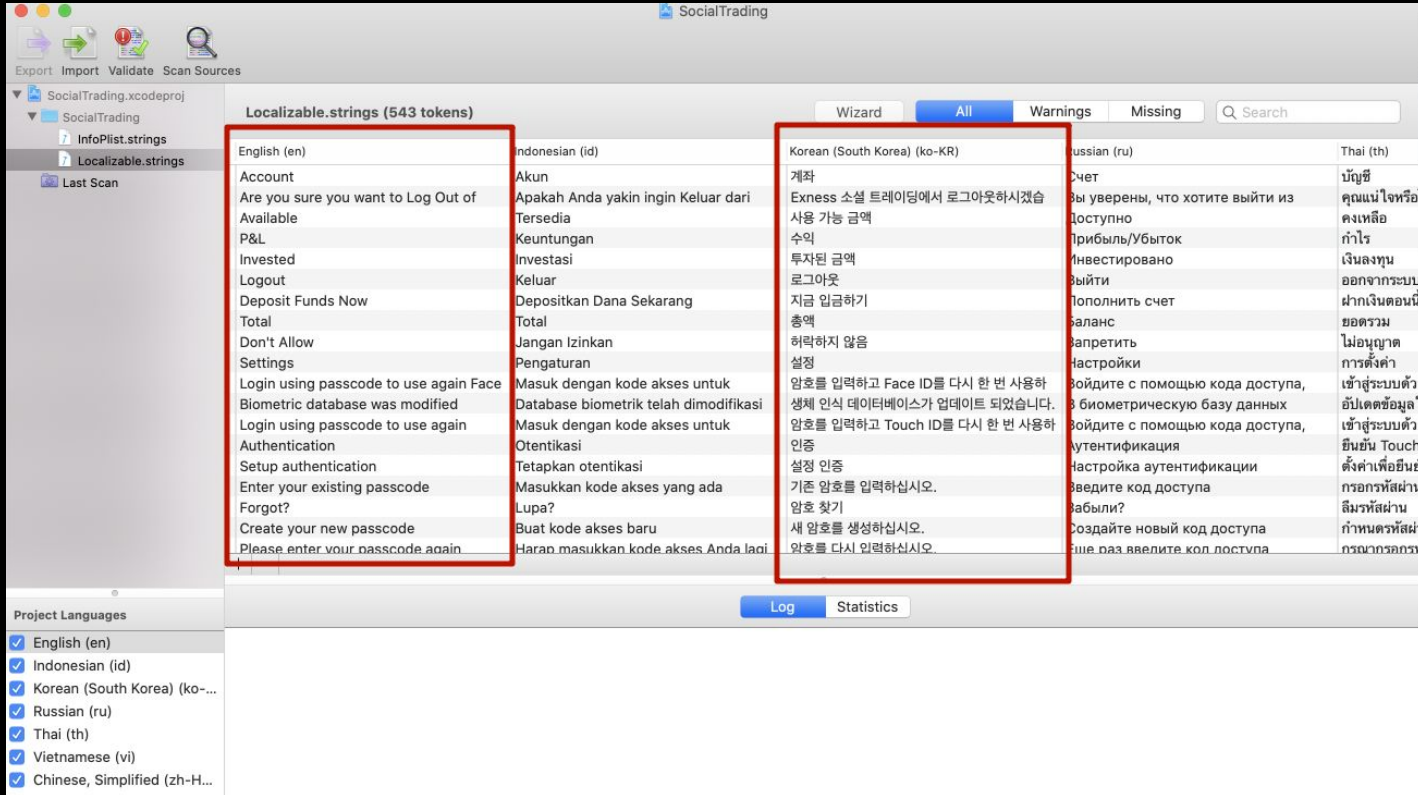
Project Languages

- English (en)
- Indonesian (id)
- Korean (South Korea) (ko-...
- Russian (ru)
- Thai (th)
- Vietnamese (vi)
- Chinese (Simplified) (zh-...

Log Statistics

Validation successful

# LinguanApp: главное окно



# LinguanApp: Validation Failed

The screenshot shows the LinguanApp interface for a project named "SocialTrading". The main window displays a table of localizable strings with columns for Name, Comment, English (en), Indonesian (id), and Korean (South Korea) (ko-KR). The string "account.makeDiposi" is highlighted with a yellow warning icon and the text "no translation" in the English column.

Name	Comment	English (en)	Indonesian (id)	Korean (South Korea) (ko-KR)
account.available		Available	Tersedia	사용 가능 금액
account.floating		P&L	Keuntungan	수익
account.invested		Invested	Investasi	투자된 금액
account.logOut		Logout	Keluar	로그아웃
account.makeDiposi		no translation	Depositkan Dana Sekarang	지금 입금하기
account.total		Total	Total	총액
alert.dont-allow		Don't Allow	Jangan Izinkan	허락하지 않음
alert.settings	MARK: - Alert View	Settings	Pengaturan	설정
authentication.bio		Login using passcode to use again Face	Masuk dengan kode akses untuk	암호를 입력하고 Face ID를
authentication.bio		Biometric database was modified	Database biometrik telah dimodifikasi	생체 인식 데이터베이스가 업
authentication.bio		Login using passcode to use again	Masuk dengan kode akses untuk	암호를 입력하고 Touch ID를
authentication.bio		Authentication	Otentikasi	인증
authentication.bio		Setup authentication	Tetapkan otentikasi	설정 인증
authentication.ente		Enter your existing passcode	Masukkan kode akses yang ada	기존 암호를 입력하십시오.

Project Languages:

- English (en)
- Indonesian (id)
- Korean (South Korea) (ko-...
- Russian (ru)
- Thai (th)
- Vietnamese (vi)
- Chinese (Simplified) (zh-...

Validation failed (1 warning): Missing 'English (en)' translation for token: 'account.makeDiposi' in Localizable.strings

## LinguanApp: плюсы и минусы

- Excel-подобный интерфейс

## LinguanApp: плюсы и минусы

- Excel-подобный интерфейс
- Автоматическая валидация строк

## LinguanApp: плюсы и минусы

- Excel-подобный интерфейс
- Автоматическая валидация строк
- Стоит денег (25\$)





## Тестирование локализации: Определение

Localization is a process of adapting internationalized software for a specific region or language by adding local specific components and translating text. In localization testing the tester checks to see if the application looks and behaves as expected after localizing the application

## Тестирование локализации: Переводы

1. Строки переведены для каждой локали
2. Переведенные фразы влезают в отведенные им места

## Тестирование локализации: Вручную



<https://qph.is/18DLxxO>



English



English



Finnish



French



German



Hindi



Hungarian



Indonesian



Italian



Malay



Norwegian Bokmål



Polish



Portuguese





Russian



Arabic, Saudi Arabia



Bengali



Chinese Simplified



French



Hindi



Indonesian



Korean



Portuguese



Spanish



Thai



Ukrainian



Urdu (Pakistan)



Vietnamese







11 Pro Max, Xs Max



11, XR



11 Pro, X, Xs



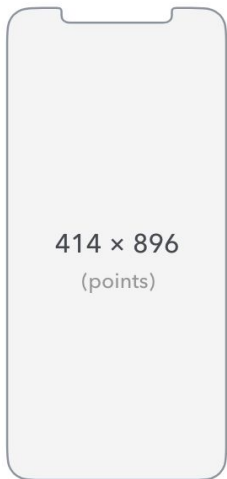
6+, 6s+, 7+, 8+



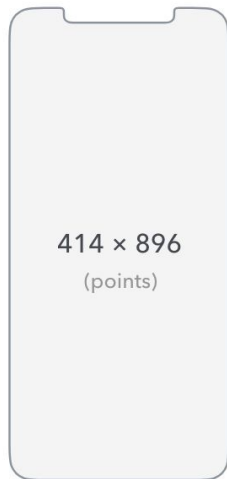
6, 6s, 7, 8



5, 5s, 5c, SE



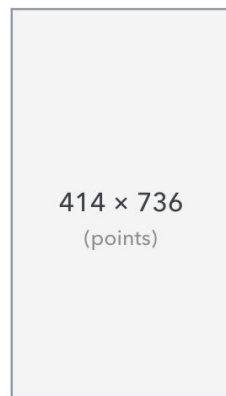
414 × 896  
(points)



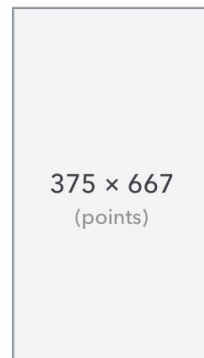
414 × 896  
(points)



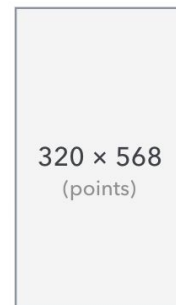
375 × 812  
(points)



414 × 736  
(points)



375 × 667  
(points)



320 × 568  
(points)

**6 экранов**





11 Pro Max, Xs Max



11, XR



11 Pro, X, Xs



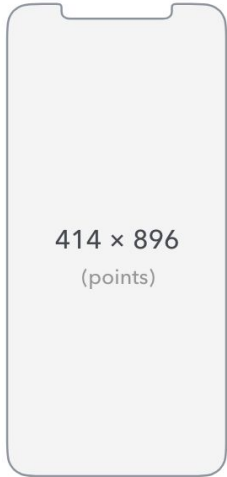
6+, 6s+, 7+, 8+



6, 6s, 7, 8



5, 5s, 5c, SE



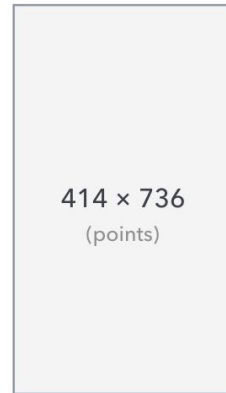
414 × 896  
(points)



414 × 896  
(points)



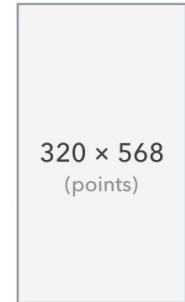
375 × 812  
(points)



414 × 736  
(points)



375 × 667  
(points)



320 × 568  
(points)



11 Pro, X, Xs



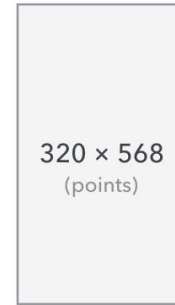
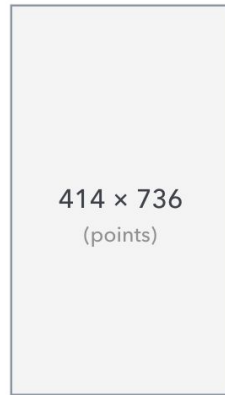
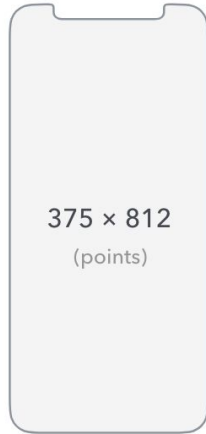
6+, 6s+, 7+, 8+



6, 6s, 7, 8











5, 5s, 5c, SE



## Девайсы в наличии:

- iPhone X
- iPhone 6s

 <p>5.8"</p>	 <p>5.5"</p>	 <p>4.7"</p>	 <p>4"</p>
11 Pro, X, Xs	6+, 6s+, 7+, 8+	6, 6s, 7, 8	5, 5s, 5c, SE
 <p>375 × 812 (points)</p>	 <p>414 × 736 (points)</p>	 <p>375 × 667 (points)</p>	 <p>320 × 568 (points)</p>

DISPLAY ZOOM

# Display Zoom



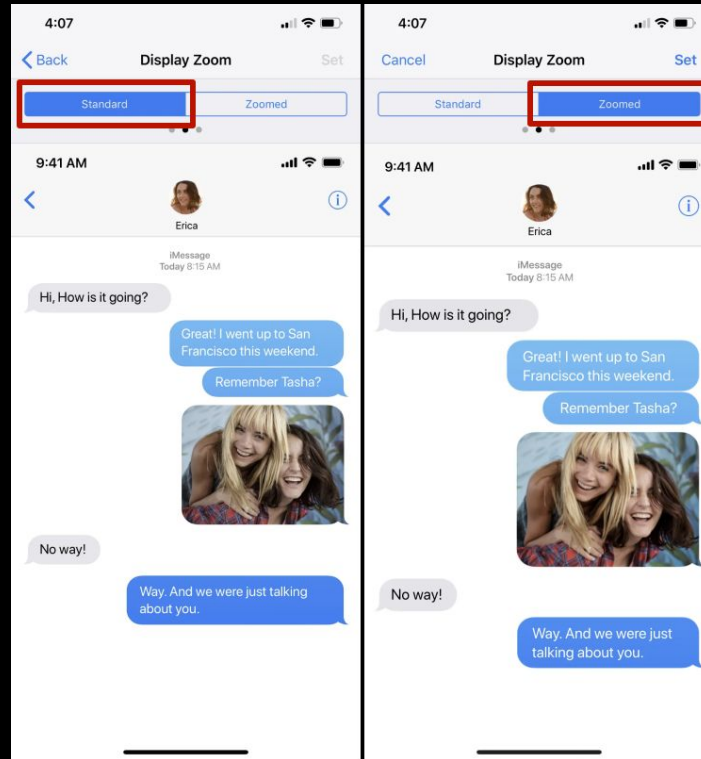
Standard



Zoomed



# Display Zoom





11 Pro Max, Xs Max



11, XR



11 Pro, X, Xs



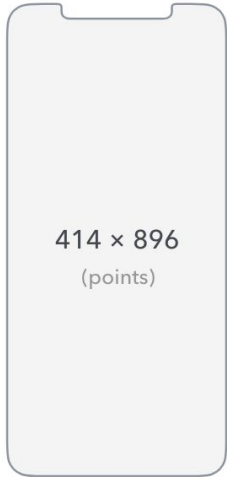
6+, 6s+, 7+, 8+



6, 6s, 7, 8



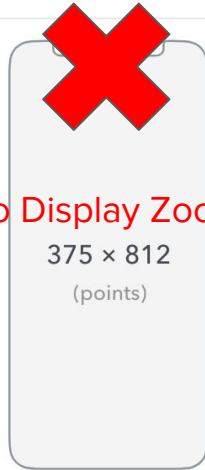
5, 5s, 5c, SE



414 × 896  
(points)



414 × 896  
(points)



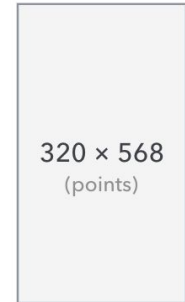
No Display Zoom  
375 × 812  
(points)



414 × 736  
(points)



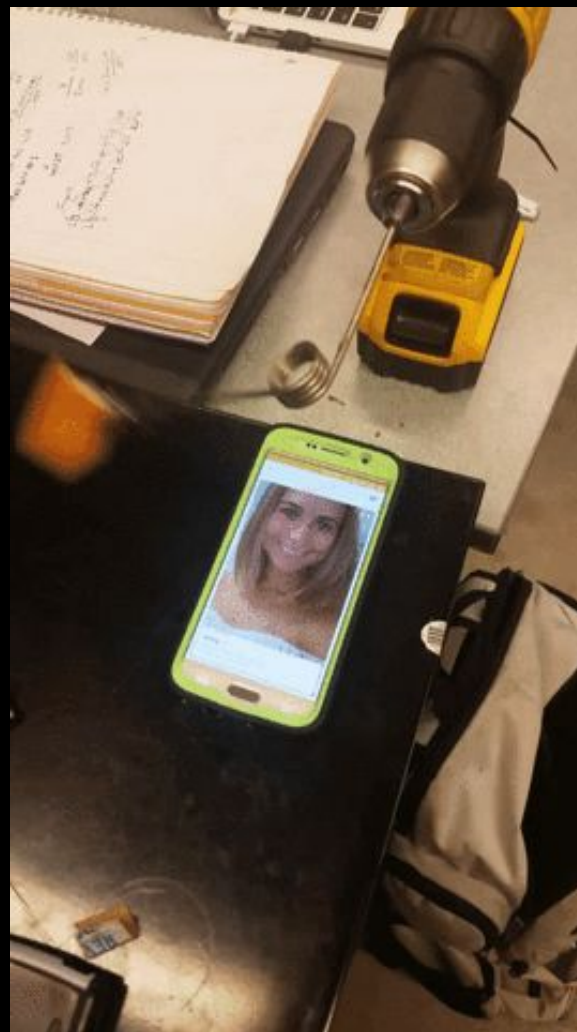
375 × 667  
(points)



320 × 568  
(points)



# Тестиране локализации: Автоматически



<https://qph.is/2fmg4LC>

## Accessibility Identifier

```
// Set Accessibility Identifier  
signInButton.accessibilityIdentifier = "btn_auth"
```

Source Code

# Accessibility Identifier

**Accessibility**

Accessibility  Enabled

Label

Hint

Identifier

Identity inspector

## Accessibility Identifier

```
// Use Accessibility Identifier  
app.buttons["btn_auth"].tap()
```

```
func testTutorial() {
    tutorialButton.tap()
    waitForElementToDissappear(element:
        tutorialButton, timeout: 5)
    makeScreenshot()
    for _ in 1...4 {
        app.swipeLeft()
        makeScreenshot()
    }
    tutorialCloseButton.tap()
    waitForElementToDissappear(element:
        tutorialCloseButton, timeout: 3)
}
```

```
func testTutorial() {  
    tutorialButton.tap()  
    waitForElementToDissappear(element:  
        tutorialButton, timeout: 5)  
    makeScreenshot()  
    for _ in 1...4 {  
        app.swipeLeft()  
        makeScreenshot()  
    }  
    tutorialCloseButton.tap()  
    waitForElementToDissappear(element:  
        tutorialCloseButton, timeout: 3)  
}
```


```
func testTutorial() {
    tutorialButton.tap()
    waitForElementToDissappear(element:
        tutorialButton, timeout: 5)
    makeScreenshot()
    for _ in 1...4 {
        app.swipeLeft()
        makeScreenshot()
    }
    tutorialCloseButton.tap()
    waitForElementToDissappear(element:
        tutorialCloseButton, timeout: 3)
}
```

```
func testTutorial() {
    tutorialButton.tap()
    waitForElementToDissappear(element:
        tutorialButton, timeout: 5)
    makeScreenshot()
    for _ in 1...4 {
        app.swipeLeft()
        makeScreenshot()
    }
    tutorialCloseButton.tap()
    waitForElementToDissappear(element:
        tutorialCloseButton, timeout: 3)
}
```



```
func testTutorial() {
    tutorialButton.tap()
    waitForElementToDissappear(element:
        tutorialButton, timeout: 5)
    makeScreenshot()
    for _ in 1...4 {
        app.swipeLeft()
        makeScreenshot()
    }
    tutorialCloseButton.tap()
    waitForElementToDissappear(element:
        tutorialCloseButton, timeout: 3)
}
```

```
func testTutorial() {
    tutorialButton.tap()
    waitForElementToDissappear(element:
        tutorialButton, timeout: 5)
    makeScreenshot()
    for _ in 1...4 {
        app.swipeLeft()
        makeScreenshot()
    }
    tutorialCloseButton.tap()
    waitForElementToDissappear(element:
        tutorialCloseButton, timeout: 3)
}
```



```
func testTutorial() {
    tutorialButton.tap()
    waitForElementToDissappear(element:
        tutorialButton, timeout: 5)
    makeScreenshot()
    for _ in 1...4 {
        app.swipeLeft()
        makeScreenshot()
    }
    tutorialCloseButton.tap()
    waitForElementToDissappear(element:
        tutorialCloseButton, timeout: 3)
}
```

```
func testTutorial() {
    tutorialButton.tap()
    waitForElementToDissappear(element:
        tutorialButton, timeout: 5)
    makeScreenshot()
    for _ in 1...4 {
        app.swipeLeft()
        makeScreenshot()
    }
    tutorialCloseButton.tap()
    waitForElementToDissappear(element:
        tutorialCloseButton, timeout: 3)
}
```

```

1 import XCTest
2
3 class TutorialTest: XCTestCase {
4
5     let app = XCUIApplication()
6
7     private lazy var tutorialButton = app.buttons["tutorial_btn"]
8     private lazy var tutorialCloseButton = app.buttons["close_tutorial_btn"]
9
10    func makeScreenshot() {
11        XCTContext.runActivity(named: "Making a full screenshot and saving it") { (activity) in
12            let screen = XCUIScreen.main
13            let fullScreenshot = screen.screenshot()
14            let fullScreenshotAttachment = XCTAttachment(screenshot: fullScreenshot)
15            fullScreenshotAttachment.lifetime = .keepAlways
16            activity.add(fullScreenshotAttachment)
17        }
18    }
19
20    func waitForElementToDissappear(element: XCUIElement, timeout: Double) {
21        let doesNotExistPredicate = NSPredicate(format: "exists == FALSE")
22        expectation(for: doesNotExistPredicate, evaluatedWith: element, handler: nil)
23        waitForExpectations(timeout: timeout, handler: nil)
24    }
25
26    override func setUp() {
27        continueAfterFailure = false
28        app.launch()
29    }
30
31    override func tearDown() {
32
33    }

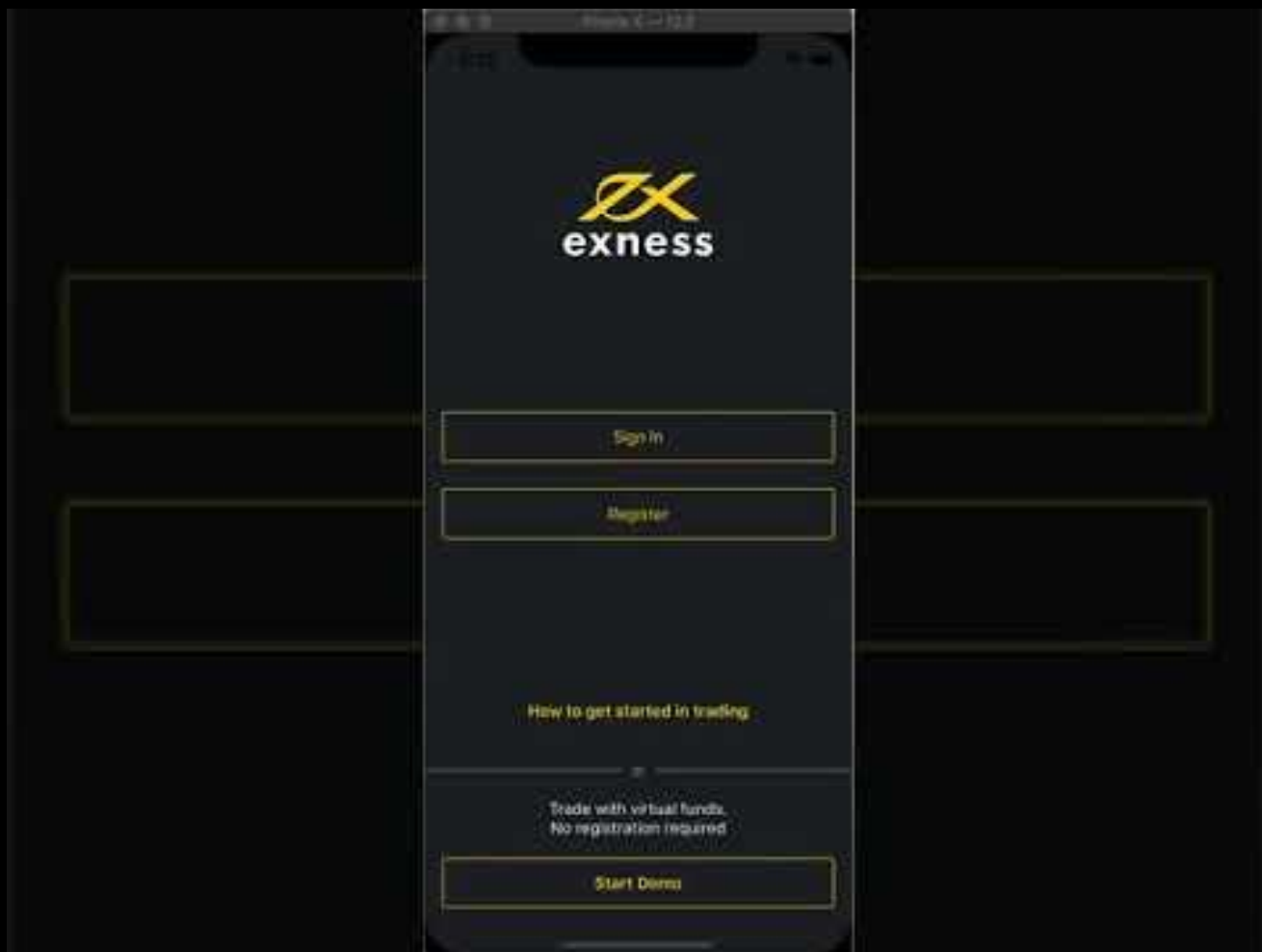
```

```
private lazy var tutorialButton =  
    app.buttons["tutorial_btn"]  
private lazy var tutorialCloseButton =  
    app.buttons["close_tutorial_btn"]
```

```
func makeScreenshot() {
    XCTContext.runActivity(named: "Making a full
        screenshot and saving it") { (activity)
        in
        let screen = XCUIScreen.main
        let fullscreenshot = screen.screenshot()
        let fullScreenshotAttachment =
            XCTAttachment(screenshot:
                fullscreenshot)
        fullScreenshotAttachment.lifetime =
            .keepAlways
        activity.add(fullScreenshotAttachment)
    }
}
```

```
func waitForElementToDissappear(element:
    XCUIElement, timeout: Double) {
    let doesNotExistPredicate =
        NSPredicate(format: "exists == FALSE")
    expectation(for: doesNotExistPredicate,
        evaluatedWith: element, handler: nil)
    waitForExpectations(timeout: timeout,
        handler: nil)
}
```





# Автоматическое создание скриншотов



[Image source](#)

www.thefarmgroup.com



- Сборка и выкладка приложения в AppStore и TestFlight
- Запуск тестов
- 🐱 Скриншоты 📷

## Fastlane: установка и настройка:

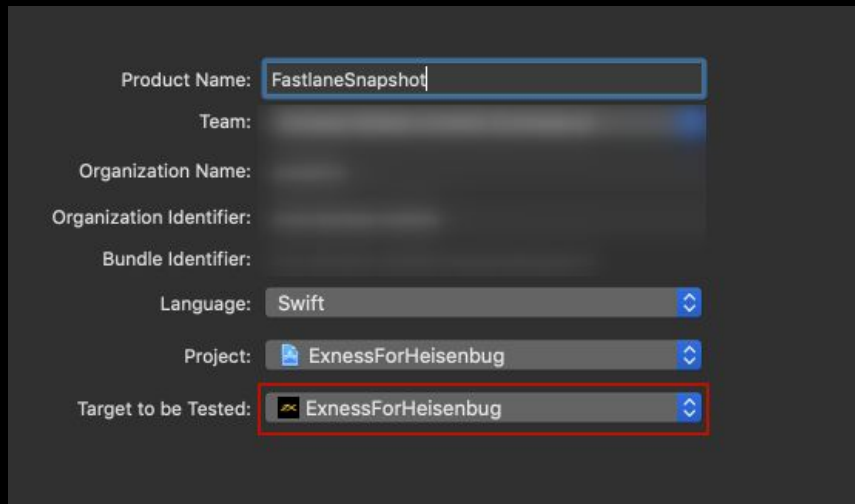
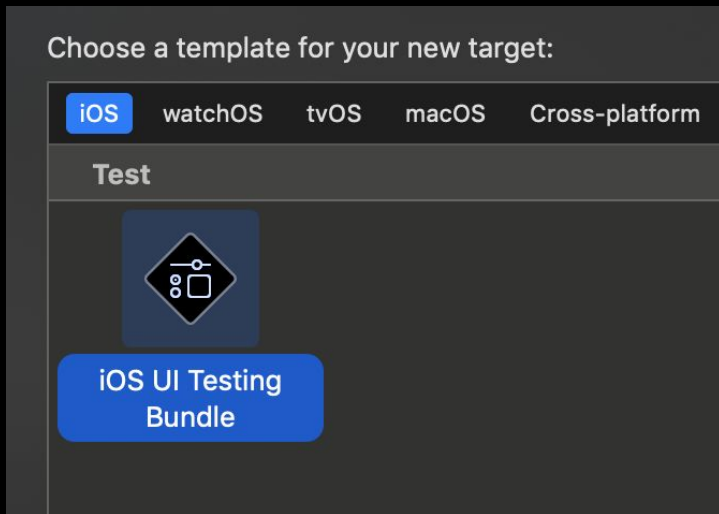
```
1
2  # Обновляем Xcode Command Tools:
3  $ xcode-select --install
4
5  # Устанавливаем пакет с помощью RubyGems:
6  sudo gem install fastlane -NV
7
8  # Или с помощью Homebrew:
9  brew cask install fastlane
10
11 # В корневой директории проекта запускаем:
12 fastlane snapshot init
13
```

Fastlane: установка и настройка:

Два файла SnapshotHelper.swift и Snapfile

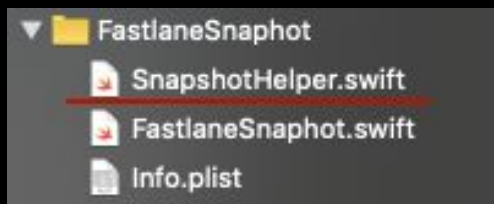
# Fastlane: установка и настройка:

## Создаем новую UI Test Target для Fastlane



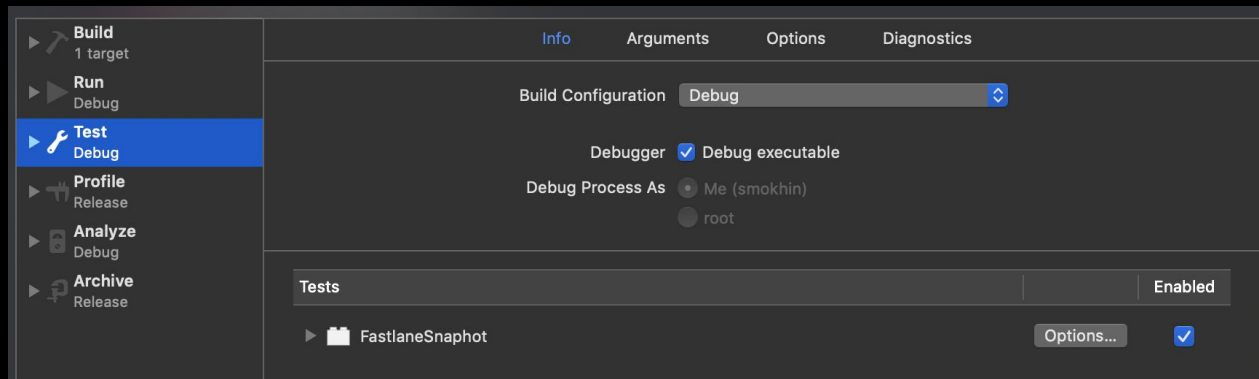
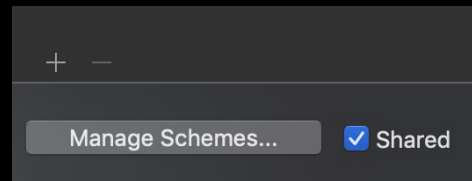
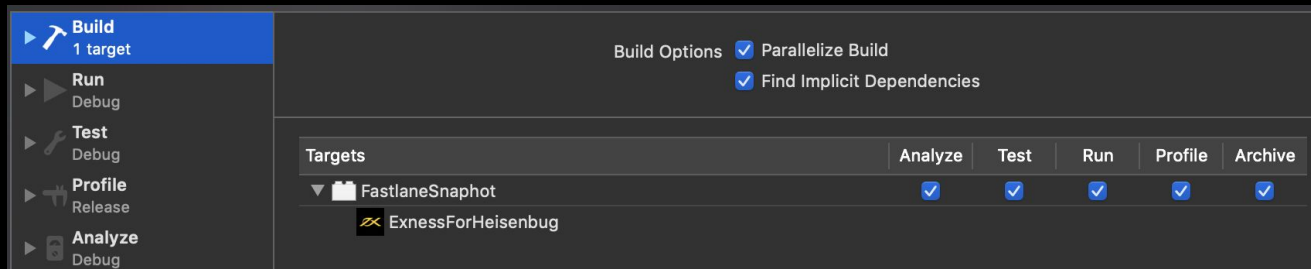
# Fastlane: установка и настройка:

## Создаем новую UI Test Target для Fastlane



# Fastlane: установка и настройка:

## Создаем новую схему для UI Test Target





Fastlane: установка и настройка:

Добавляем инициализацию Fastlane в функцию setUp()

```
override func setUp() {  
    continueAfterFailure = false  
    setUpSnapshot(app)  
    app.launch()  
}
```

Fastlane: создание скриншота:

Добавляем вызов `snapshot("String")`

```
snapshot("Snapshot_name")
```

Fastlane: Вносим изменения в тест (было):

```
func testTutorial() {
  tutorialButton.tap()
  waitForElementToDissappear(element: tutorialButton, timeout: 5)
  makeScreenshot()
  for _ in 1...4 {
    app.swipeLeft()
    makeScreenshot()
  }
  tutorialCloseButton.tap()
  waitForElementToDissappear(element: tutorialCloseButton,
    timeout: 3)
}
```

## Fastlane: Вносим изменения в тест (стало):

```
func testExample() {
    tutorialButton.tap()
    waitForElementToDissappear(element: tutorialButton, timeout: 5)
    snapshot("Tutorial_page_1")
    var i: Int = 2
    repeat {
        app.swipeLeft()
        snapshot("Tutorial_page_\(i)")
        i += 1
    } while i <= 5
    tutorialCloseButton.tap()
    waitForElementToDissappear(element: tutorialCloseButton,
        timeout: 3)
}
```

## Девайсы:

- iPhone SE
- iPhone 6s
- iPhone 7 plus
- iPhone Xs

## Языки:

- Русский
- 中文
- ไทย
- Tiếng Việt
- 한국어

# Fastlane: Настраиваем Snapfile

```
Snapfile > No Selection
1 # Uncomment the lines below you want to change by removing the # in the beginning
2
3 # A list of devices you want to take the screenshots from
4 devices([
5     "iPhone SE",
6     "iPhone 6s",
7     "iPhone 7 Plus",
8     "iPhone Xs"
9 ])
10
11 languages([
12     "th",
13     "vi",
14     "zh-Hans",
15     "ko",
16     "ru"
17 ])
18
19 # The name of the scheme which contains the UI Tests
20 scheme("FastlaneSnapshot")
21
22 # Where should the resulting screenshots be stored?
23 output_directory("./screenshots")
24
25 # remove the '#' to clear all previously generated screenshots before creating new ones
26 clear_previous_screenshots(true)
```

```
# A list of devices you want to take the screenshots from
devices([
    "iPhone SE",
    "iPhone 6s",
    "iPhone 7 Plus"
    "iPhone Xs"
])
```

```
languages ( [  
  "th",  
  "vi",  
  "zh-Hans",  
  "ko",  
  "ru"  
])
```



```
# The name of the scheme which contains the UI Tests
scheme("FastlaneSnaphot")

# Where should the resulting screenshots be stored?
output_directory("./screenshots")

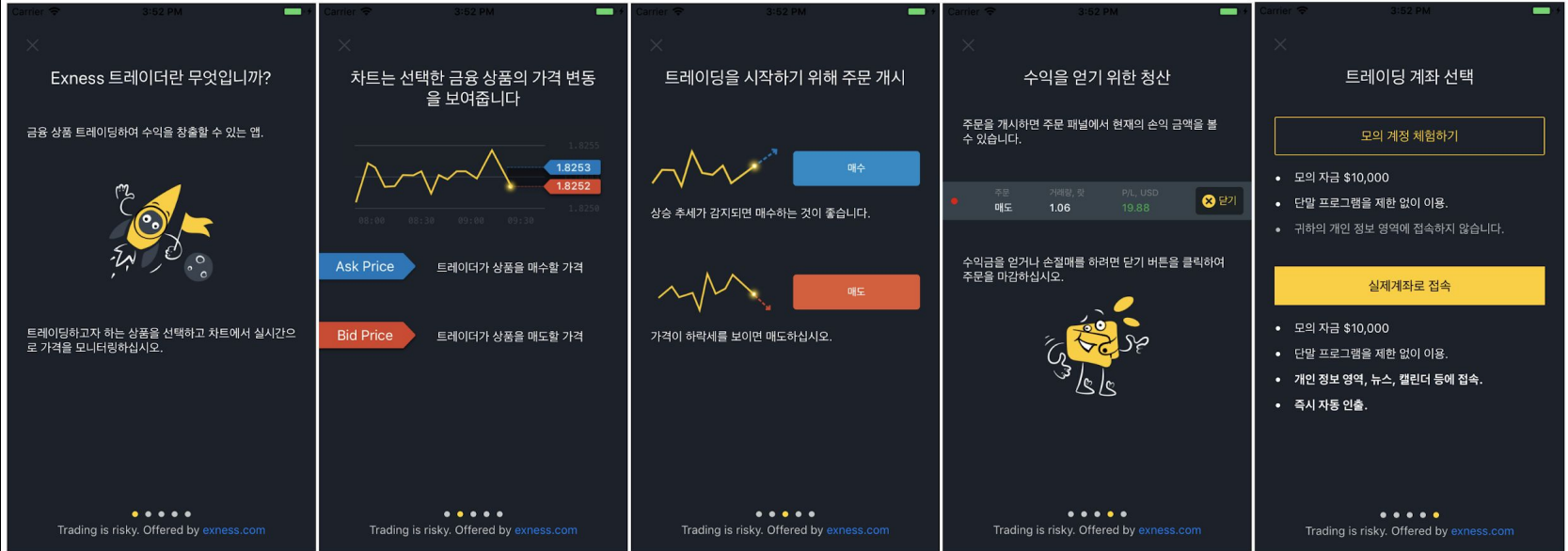
# remove the '#' to clear all previously generated screenshots
clear_previous_screenshots(true)
```

## Fastlane: Запуск

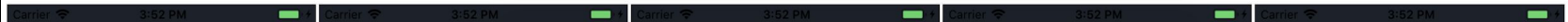
```
# Запускаем fastlane:  
$ fastlane snapshot
```

ko

## iPhone 7 (4.7-Inch)

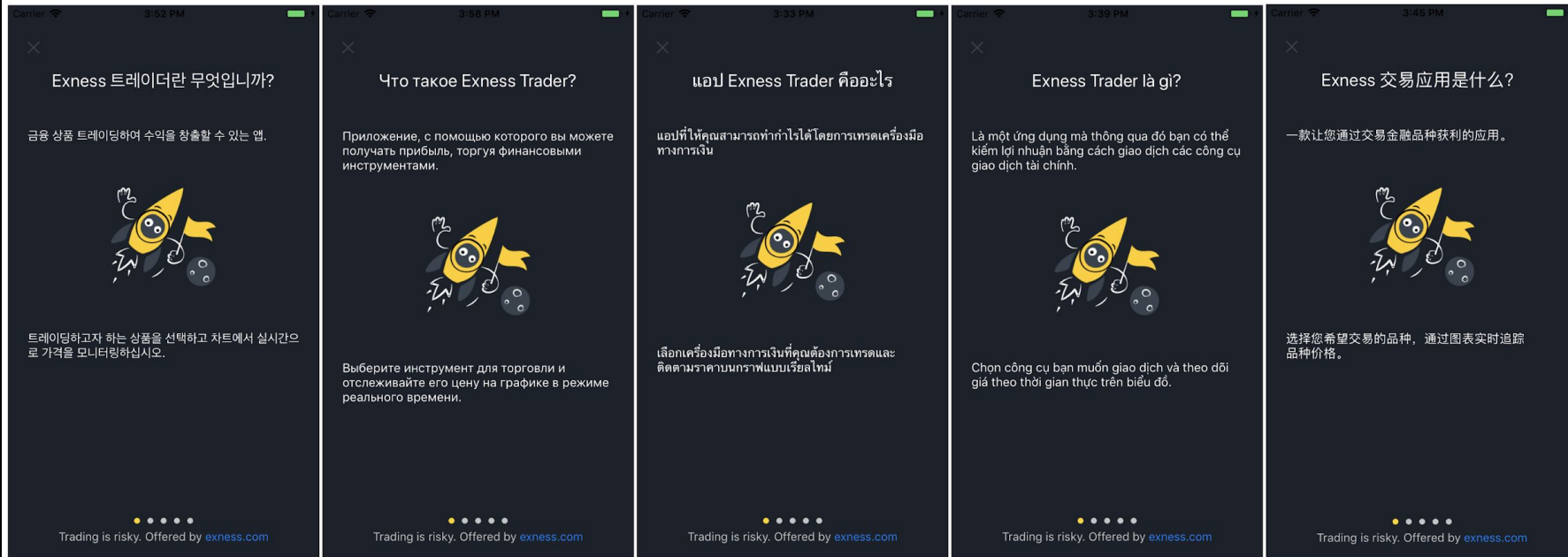


## iPhone SE



## Tutorial\_page\_1

## iPhone 7 (4.7-Inch)



ko

ru

th

vi

zh-Hans

```
[14:55:19]: Get started using a Gemfile for fastlane https://docs.fastlane.tools/getting-started/ios/setup/#use-a-gemfile
[14:55:23]: Successfully loaded '/Users/smokhin/Desktop/ExnessForHeisenbug/Snapfile' 📄
```



```
[15:23:26]: Generating HTML report
[15:23:26]: Successfully created HTML file with an overview of all the screenshots /Users/smokhin/
```



<https://www.freepng.ru/png-qrnvzu/download.html>

## Fastlane: плюсы и минусы

- Удобно смотреть скрины

## Fastlane: плюсы и минусы

- Удобно смотреть скрины
- Большое комьюнити

## Fastlane: плюсы и минусы

- Удобно смотреть скрины
- Большое комьюнити
- Не только скриншоты



## Fastlane: плюсы и минусы

- Удобно смотреть скрины
- Большое комьюнити
- Не только скриншоты
- Медленный

## Fastlane: плюсы и минусы

- Удобно смотреть скрины
- Большое комьюнити
- Не только скриншоты
- Медленный
- На Ruby

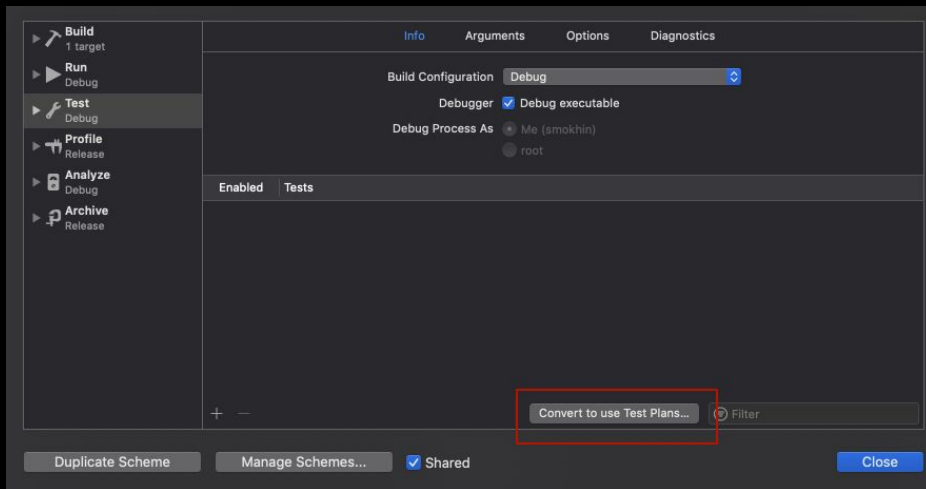


XCTESTPLAN

## XCTestPlan:

- WWDC 2019
- Xcode 11

# XCTestPlan: подготовка



## Convert scheme "Signals" to use Test Plans

This scheme will be upgraded to use Test Plans, which allows you to run your tests under different configurations.

- Create Test Plan from scheme**  
Create a test plan with the same tests and settings as this scheme.
- Create empty Test Plan**  
Create an empty test plan and add it to the scheme.
- Choose Test Plan**  
Pick an existing test plan to add to the scheme.

Cancel

Convert...


# XCTestPlan: подготовка

	Tests	Configurations
Shared Settings	Setting	Shared Settings
Configuration 1	<b>▼ Arguments</b>	
	Arguments Passed On Launch	
	Environment Variables	
	<b>▼ Localization</b>	
	Application Language	System Language ⌵
	Application Region	System Region ⌵
	Simulated Location	None ⌵
	<b>▼ UI Testing</b>	
	Automatic Screenshots	On, and delete if test succeeds ⌵
	Localization Screenshots	Off ⌵
	<b>▼ Attachments</b>	
	Attachments	On, and delete if test succeeds ⌵
	<b>▼ Test Execution</b>	
	Execution Order	Lexical ⌵
	<b>▼ Code Coverage</b>	
	<b>Code Coverage</b>	Off ⌵
	<b>▼ Runtime Sanitization</b>	
	Address Sanitizer	Off ⌵
	Thread Sanitizer	Off ⌵
	Undefined Behavior Sanitizer	Off ⌵
	<b>▼ Runtime API Checking</b>	
	Main Thread Checker	On ⌵
	<b>▼ Memory Management</b>	
	Malloc Scribble	Off ⌵
	Malloc Guard Edges	Off ⌵
	Guard Malloc	Off ⌵
	Zombie Objects	Off ⌵
	Malloc Stack Logging	Off ⌵

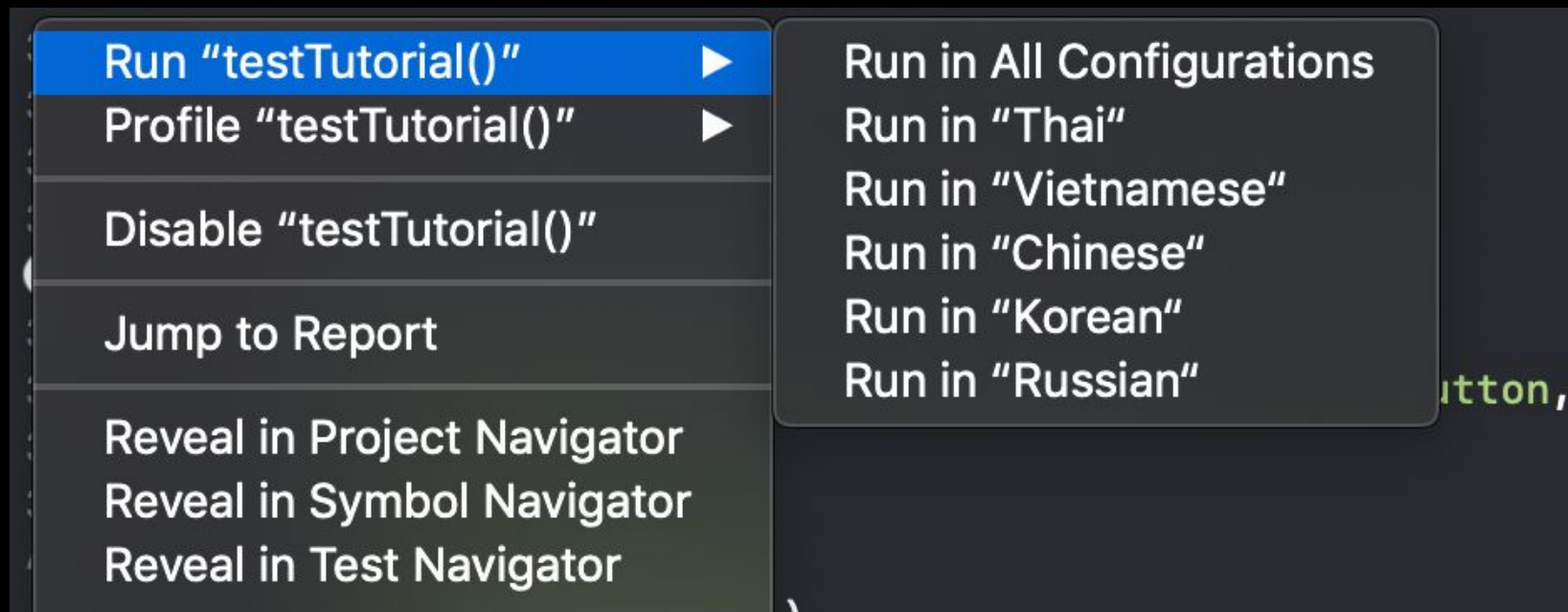
# XCTestPlan: создание конфигураций

▼ Localization	
Application Language	System Language ⌵
Application Region	System Region ⌵
Simulated Location	None ⌵

Shared Settings	Setting	Russian
⊛ Thai	▼ Arguments	
⊛ Vietnamese	Arguments Passed On Launch	
⊛ Chinese	Environment Variables	
⊛ Korean	▼ Localization	
⊛ Russian	Application Language	<u>Russian</u> ⌵
	Application Region	System Region ⌵
	Simulated Location	None ⌵



## XCTestPlan: запуск



## XCTestPlan: запуск

### Xcodebuild

```
-workspace ExnessForHeisenbug.xcworkspace/  
-scheme ExnessForHeisenbug  
-destination 'platform=iOS Simulator,OS=10.3.1,name=iPhone 6s'  
-destination 'platform=iOS Simulator,OS=11.4,name=iPhone 7 plus'  
-destination 'platform=iOS Simulator,OS=12.2,name=iPhone Xs'  
-destination 'platform=iOS Simulator,OS=12.2,name=iPhone SE'  
test -testPlan ExnessForHeisenbug
```





# XCTestPlan: отчет

▼ TutorialTest > ExnessForHeisenbugUITests	1 passed (100%) in 16s
▼ ✓ t testTutorial()	16s
▼ ✓ iPhone 6s	16s
▶ ✓ Thai	16s
▶ ✓ Vietnamese	15s
▶ ✓ Chinese	15s
▶ ✓ Korean	14s
▶ ✓ Russian	14s
▶ ✓ iPhone SE	13s
▶ ✓ iPhone 7 Plus	15s
▶ ✓ iPhone Xs	15s

Test-ExnessForHeisenbug-2019.11.14-35-29-+0200.xcres

By Group By Time

Test-ExnessForHeisenbug-2019.11.14-...  
 Test Today, 2:35 PM  
 Build  
 Log  
 Test-ExnessForHeisenbug-2019.11.14-...  
 ExnessForHeisenbug

All Passed Failed Mixed

Tests

TutorialTest > ExnessForHeisenbugUITests 1 passed (100%) in 16s

- testTutorial()
  - iPhone 6s
    - Thai
      - Start Test at 2562-11-14 12:36:07.627 (Start)
        - Set Up (0.00s)
        - Tap "tutorial\_btn" Button (8.17s)
        - Checking `Expect predicate `exists == 0` for object "tutorial\_bt...
        - Making a full screenshot and saving it (10.23s)
        - Swipe left Target Application 'com.exness.mobile.ExnessForHei...
        - Making a full screenshot and saving it (11.26s)
        - Swipe left Target Application 'com.exness.mobile.ExnessForHei...
        - Making a full screenshot and saving it (12.26s)
        - Swipe left Target Application 'com.exness.mobile.ExnessForHei...
        - Making a full screenshot and saving it (13.33s)
        - Swipe left Target Application 'com.exness.mobile.ExnessForHei...
        - Making a full screenshot and saving it (14.36s)
        - Tap "close\_tutorial\_btn" Button (14.40s)
        - Checking `Expect predicate `exists == 0` for object "close\_tuto...
        - Tear Down (16.25s)
      - Vietnamese
      - Chinese
      - Korean
      - Russian
      - English


Screenshot of main screen (ID 1)\_1\_74878... Open with Preview

Carrier 12:36 PM

×

## แอป Exness Trader คืออะไร

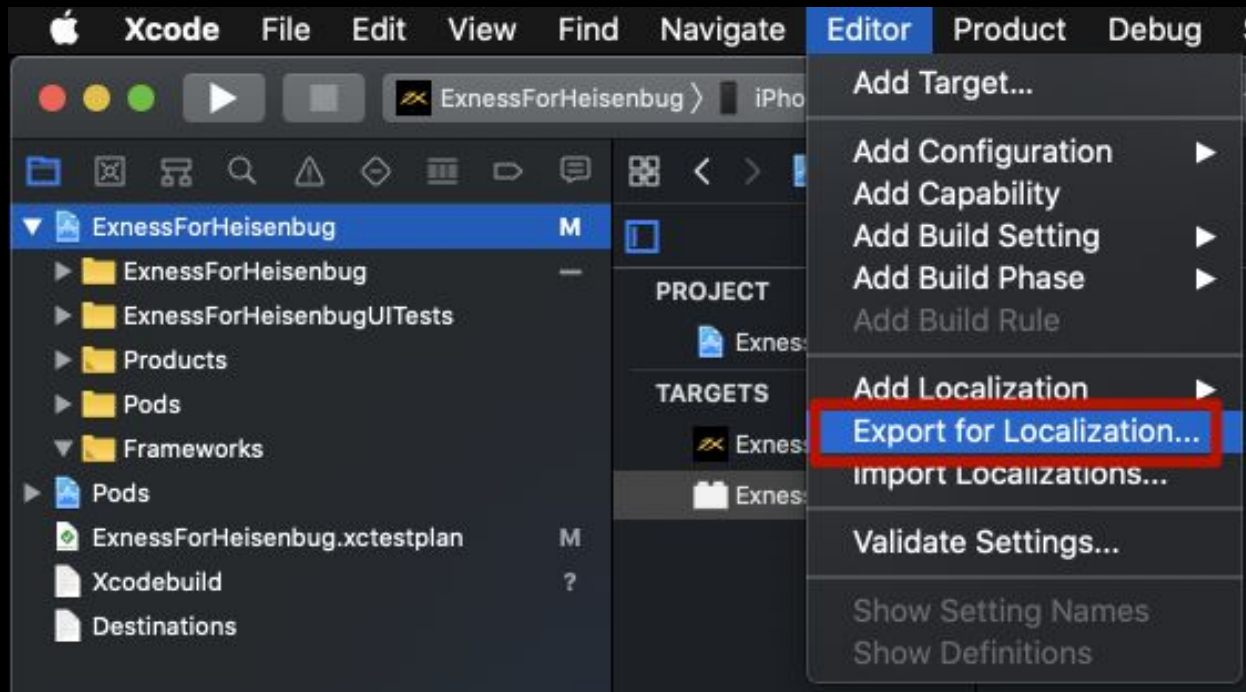
แอปที่ให้คุณสามารถทำอะไรก็ได้โดยการเทรดเครื่องมือทางการเงิน



เลือกเครื่องมือทางการเงินที่คุณต้องการเทรดและติดตามราคาบนกราฟแบบเรียลไทม์

● ● ● ● ●

Trading is risky. Offered by [exness.com](https://www.exness.com)



Save As:


Tags:

Where:

Localizations:

- English — Development Language
- Thai
- Vietnamese
- Chinese, Simplified

Include screenshots  0 of 0 selected

 Screenshot for localization issue.

Cancel

Export

# Xcode 11.1 (11A1027): Headless mode



## XCTestPlan: плюсы и минусы

- Нативный

## XCTestPlan: плюсы и минусы

- Нативный
- Быстрый



## XCTestPlan: плюсы и минусы

- Нативный
- Быстрый
- Сыроват

# Snapshot тестирование



<https://gph.is/2qselq7>

## Ios-snapshot-test-case

<https://github.com/uber/ios-snapshot-test-case>

- Objective-C
- UIView/CALayer → UIImage
- Первый запуск recordMode = true
- Последующие recordMode = false



**Deposit is in Your Account! Long  
title! Test it Elon Musk!**

**120 000 000.00 USD**

● Rejected



Transaction ID

123456789

[Contact Support](#)

[Choose another method](#)



**Deposit is in Your Account! Long  
title! Test it Elon Musk!**

**120 000 000.00 USD**

● Rejected



Transaction ID  
123456789

Contact Support

Choose another method



**Deposit is in Your Account! Long  
title! Test it Elon Musk!**

**120 000 000.00 USD**

● Rejected



Transaction ID  
123456789

Contact Support

Choose another method



**Deposit is in Your Account! Long title! Test it Elon Musk!**

**120 000 000.00 USD**

● Rejected



Transaction ID  
123456789

Contact Support

Choose another method



**Deposit is in Your Account! Long title! Test it Elon Musk!**

**120 000 000.00 USD**

● Rejected



Transaction ID  
123456789

Contact Support

Choose another method



**Deposit is in Your Account! Long title! Test it Elon Musk!**

**120 000 000.00 USD**



**Deposit is in Your Account! Long  
title! Test it Elon Musk!**

**120 000 000.00 USD**

● Rejected



Transaction ID



[Contact Support](#)

[Choose another method](#)

# Ios-snapshot-test-case: настройка

```
target "Tests" do
  use_frameworks!
  pod 'iOSSnapshotTestCase'
end
```

Name	Value
FB_REFERENCE_IMAGE_DIR	\$(SOURCE_ROOT)/\$(PROJECT_NAME)Tests/ReferenceImages
IMAGE_DIFF_DIR	\$(SOURCE_ROOT)/\$(PROJECT_NAME)Tests/FailureDiffs



## Ios-snapshot-test-case: плюсы и минусы

- Diff

## Ios-snapshot-test-case: плюсы и минусы

- Diff
- Screenshot naming

## Ios-snapshot-test-case: плюсы и минусы

- Diff
- Screenshot naming
- Folders

## Ios-snapshot-test-case: плюсы и минусы

- Diff
- Screenshot naming
- Folders
- Только Test Target для unit тестов

## Ios-snapshot-test-case: плюсы и минусы

- Diff
- Screenshot naming
- Folders
- Только Test Target для unit тестов
- Не работает на симуляторах

## Ios-snapshot-test-case Fork

<https://github.com/maxibello/ios-snapshot-test-case/tree/agnostic-without-os-version>

- + UITest Target
- + Simulators



# swift-snapshot-testing

<https://github.com/pointfreeco/swift-snapshot-testing/>

- Swift
- Snapshots, json, dump
- Запись и сравнение

```
assertSnapshot(matching: urlRequest, as: .raw)
// POST http://localhost:8080/account
// Cookie: pf_session={"userId":"1"}
//
// email=blob%40pointfree.co&name=Blob
```

```
assertSnapshot(matching: user, as: .json)
// {
//   "bio" : "Blobbed around the world.",
//   "id" : 1,
//   "name" : "Blobby"
// }
```

```
assertSnapshot(matching: user, as: .dump)
// ▽ User
//   - bio: "Blobbed around the world."
//   - id: 1
//   - name: "Blobby"
```



```
import SnapshotTesting
import XCTest

class MyViewControllerTests: XCTestCase {
    func testMyViewController() {
        let vc = MyViewController()

        assertSnapshot(matching: vc, as: .image)
    }
}
```



failed - No reference was found on disk. Automatically recorded snapshot: ...



```
open "/Users/smokhin/Desktop/ExnessForHeisenbug/  
ExnessForHeisenbugUITests/__Snapshots__/TutorialTest/  
testExample.1.png"
```

Re-run "testExample" to test against the newly-recorded snapshot.

```
func testExample() {  
    let storyboard = UIStoryboard(name: "Main", bundle: Bundle(for: type(of: self)))  
  
    let vc = storyboard.instantiateViewController(withIdentifier: "ABC")  
    assertSnapshot(matching: vc, as: .image)  
}
```

failed - Snapshot does not match reference.

@-  
"/Users/smokhin/Desktop/ExnessForHeisenbug/  
ExnessForHeisenbugUITests/\_\_Snapshots\_\_/TutorialTest/  
testExample.1.png"  
@+  
"/Users/smokhin/Library/Developer/CoreSimulator/Devices/64A8A182-  
B752-4EF2-A8CB-12566BCF9AD0/data/Containers/Data/Application/  
AAB75842-6F98-4D9E-B718-6E7553B242F2/tmp/TutorialTest/  
testExample.1.png"

Newly-taken snapshot does not match reference.

## swift-snapshot-testing: плюсы и минусы

- На Swift

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- На Swift
- Всеядный

## swift-snapshot-testing: плюсы и минусы

- На Swift
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- Нет дифа

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- На Swift
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- Полный хаос в скринах:

## swift-snapshot-testing: плюсы и минусы

- На Swift
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- Имя скриншота



## swift-snapshot-testing: плюсы и минусы

- На Swift
- Всеядный
- Нет дифа
- Полный хаос в скринах:
- Имя скриншота
- Локация скриншота

Итак:

- Crowdin + LinguanApp
- Fastlane
- XCTestPlan
- ios-snapshot-test-case + swift-snapshot-testing

ios-snapshot-test-case

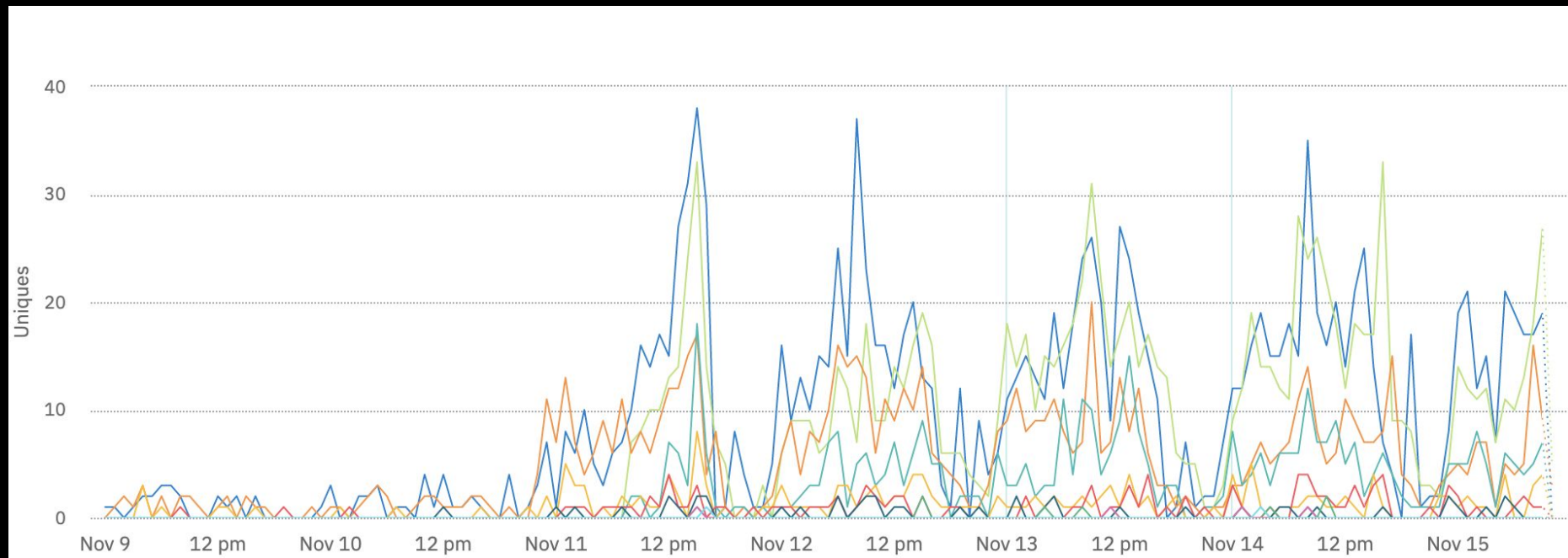


У нас в Exness сейчас:

	Exness trader app	Social trading app
Crowdin	✓	✓
LinguanApp	✗	✓
Fastlane	✗	✓
XCTestPlan	✓	✓
ios-snapshot-test-case	✗	✓
swift-snapshot-testing	✓	✗

Полезные ссылки:





Спасибо!



@qaban



[sergeymokhin](#)