Test Plan

A detail plan for automated testing Travel Insurance application

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Glossary:

1. SDE : Software Development Engineer

2. SDET : Software Development Engineer in Test

3. QAE: Manual Software Test Engineer
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Project :

Automated regression test for Travel Insurance.

Goal

- Automated all possible manual regression test cases
- Reduce workload from manual works
- Verify all important business flow before deploying
- Bring confidence for each deployment to production

Assumptions

1. All new code have been reviewed by SDEs/SDETs

2. All unit and integration tests are being written, updated and reviewed by the SDEs/SDETs/QAEs

3. There are existing test cases/suites written by QAEs. (Incase we don't have any existing stuff, manual tests should be written by QAEs/SDETs

Deliverables

1. Test scripts to automated regression test every deployment

2. Test Report

3. Business Coverage Percent (estimated)

Test Approach

1. **Test types**

- **API test**

> - Interact with service layer, send calls to APIs/services then validate output (http code/ http response/ gRPC response message) .
>
> - Interact with model layer, send queries to database then validate out (records created / updated/ deleted , records match with response from api/service layer)

- Goals :

- Validate the correctness of all backend functions

- **GUI test**

> - Intera ct with browser,simulate end-user behaviors then verify how application works, how front end application responses/displays to user,. any broken elements.
>
> - All test cases represent for previous bug, issue which often happen

2. **Tools**

- API testing:

> There are many options for api testing

1. PostMan

- Pros:
- Can be share between SDEs - SDETs - QAEs
- Have GUI, everyone can you
- Cons:
- Have GUI :D, then sometime it's too complex

2. API testing lib together with GUI test framework

- Pros:
- Both api - gui tests are maintained in same location
- Cons:
- Once number of tests is becoming huge, it's complex for rookies able to understand / maintain

3. API testing lib together with backend repo

- Pros:
- Easy to maintain by both SDEs/SDETs
- Update test when feature changes could be faster
- Cons :
- Multiple languages SDETs have to write

> Overall: Depend on development process

- GUI testing:
- Programming Languages :
- Java : Common language in Vietnam, many supported libs

- Python : Common language, easy to learn ,many supported libs
- NodeJS : Many modern test framework built with this language.

> In here, I choose NodeJS, the reason is easier if GUI test framework - front end framework are same languages. If necessary we can switch FE-SDE/SDETs to develop together

- Core API:
- SeleniumJS
- Protractor
- WebdriverIO

All of them are good, I choose Protractor as it has alot of pre-build functions to help my work easier. And its community is huge.

- BDD framework:
- Cucumber: Almost SDETs/QAEs love this.
- Reporter:
- basic HTML report : able to store in local / CI workplace, view by open file
- Report Portal : Central server to store report with ML integrated [More details...]

I choose report portal to not miss any report, can analyze test report each round.

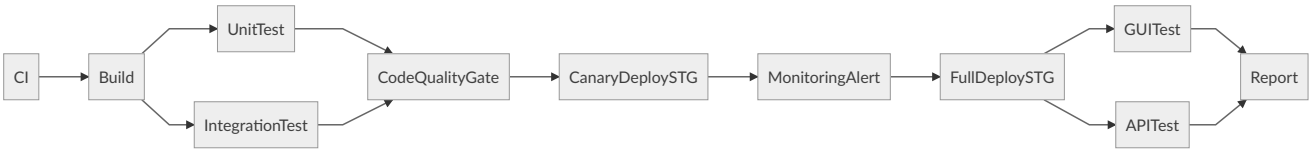
> Overall: Protractor + Cucumber + Report Portal

Schedule

> Depend on how our CI/CD pipeline work

- Idealy, this regression test should run after :
- Code is merged to protect branch
- Deploying to staging / UAT environment

- Unit test passed
- Integration test passed
- Code coverage percent on new code line are passed
- For e.g:



Facilities

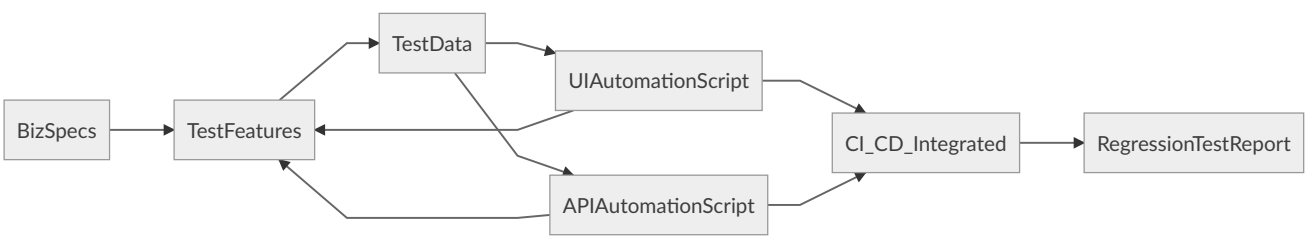
- **Must have**

- Business Specification document provide
- 1 VM instance to execute test
- Any works from SDEs to make AUT testable
- A clean, as much as posible same as Prodcution environment

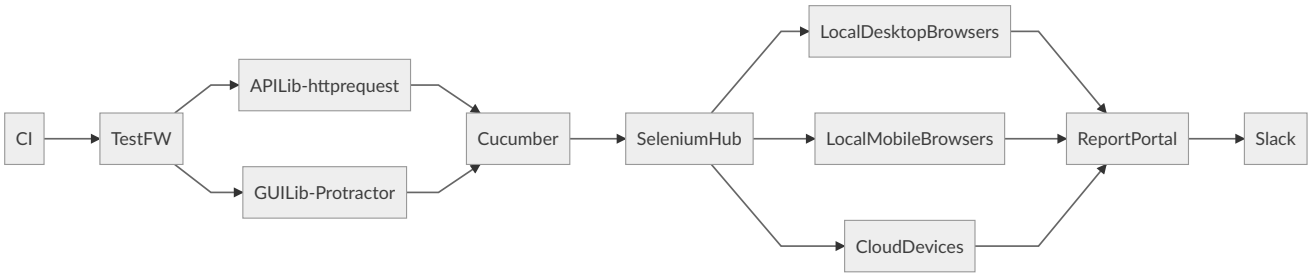
- **Nice to have**

- Test Management server
- 1 VM instance to host report portal

Process



Framework Architect



- More details, please check on assignment 2

Risks

- AUT is not testable
- In some design, application/function are not able to test. This common software architect bug. Fixing this need to involve more SDEs/Sr.TAs and making test progress would be slower than expect
- Test environment is not good enough
- Test environmnet somehow is not same config with production, then it would not behave correctly and give flaky tests, unexpected result
- Many change requests come during tests are making
- This would slowly/ add more effort for making test scripts.
- Not enough test data preparation
- Happen when SDEs/SDETs don’t understand system deeply, includemake lesson learn then

FAQ

- Does making api + gui tests duplicate work?

> No, while api test validate correctness of data, gui test only verify how application work. This reduce many effort in maintaining when frontend - backend changes

- What is system testable ?

> Refer to Design for Testability

- Can we skip unit test / integration test ?

> No, while unit tests / integration tests are low cost than api/gui tests, there is no reason to put more dependents on them.

Question

- What are the most used browsers's application?
- What are screen size most used from this application?
- Do we have Fully and updated Business Specs?