



Współczesne testowanie aplikacji

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Kim jestem



- Absolwent Informatyki UMK
- Tester oprogramowania z ponad 15-to letnim doświadczeniem
- Rekruter
- Obecnie tester automatyzujący, firma Craftware



O czym będę mówił

- Po co w ogóle testować oprogramowanie
- Rodzaje testów
- Modne (i skuteczne!) metodyki: TDD, BDD
- Automatyzacja
- Narzędzia (management, frameworki, języki)
- Zagrożenia



PYTANIA

- czym jest scrum i do czego służy
- cykl rozwoju oprogramowania (SDLC)
- wersjonowanie kodu
(git)

Czym jest testowanie

Testowanie:

Proces składający się z wszystkich czynności cyklu życia, zarówno statycznych jak i dynamicznych; skoncentrowany na planowaniu, przygotowaniu i ewaluacji oprogramowania oraz powiązanych produktów w celu określenia czy spełniają one wyspecyfikowane wymagania, wykazania, że są dopasowane do swoich celów oraz wykrywania usterek.

<https://testerzy.pl/slownik/testowanie>



Oczekiwania stawiane przed testowaniem

- jakość
- reputacja
- finanse
- czas to pieniądz
- POC (positive paths)?

Czym jest Quality Assurance

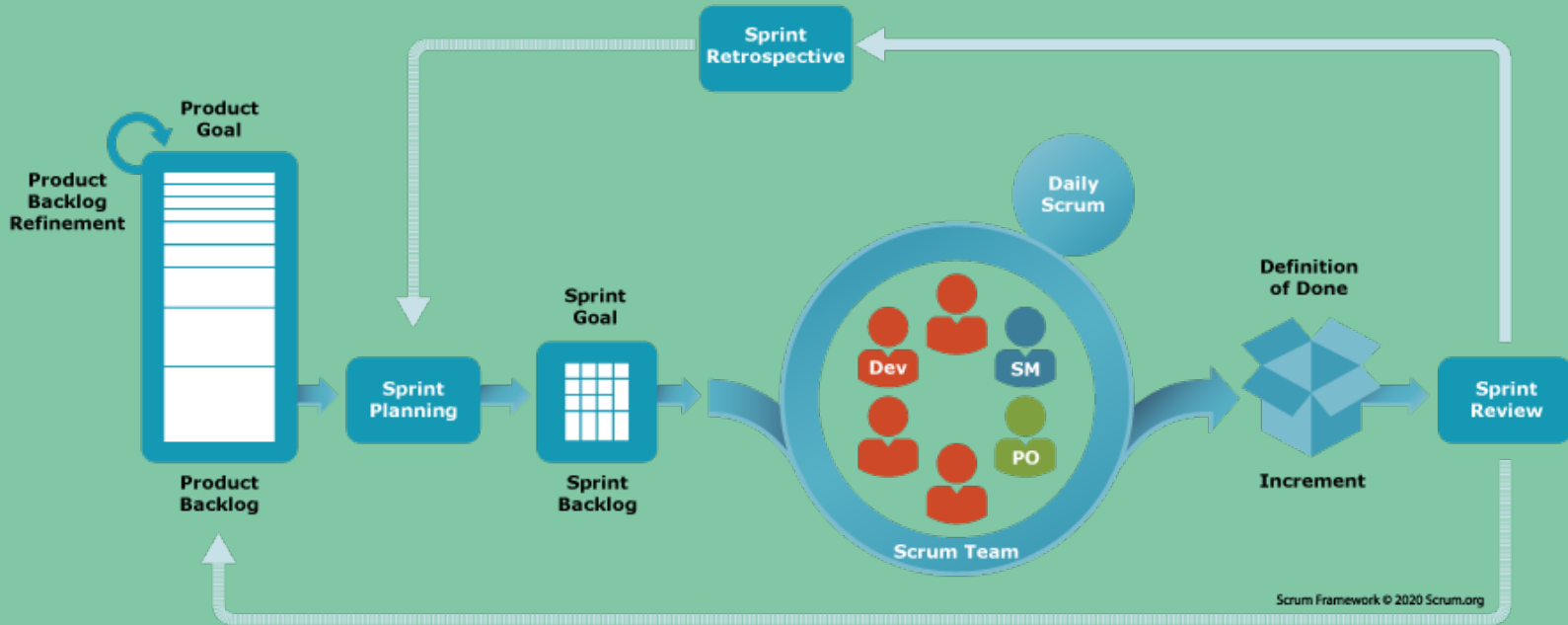
Zapewnienie jakości a testowanie

Testowanie jest często utożsamiane z zapewnieniem jakości (ang. *quality assurance*), ale w rzeczywistości są to dwa oddzielne (choć powiązane ze sobą) procesy, które zawierają się w szerszym pojęciu „zarządzania jakością” (ang. *quality management*).

<https://testerzy.pl/slownik/testowanie>

SCRUM

- zidentyfikowanie potrzeby
- opisanie historii użytkownika (User story, KA)
- przeprocesowanie jako zadanie zespołu
- integracja/wdrożenie



Typowy przepływ zadania w projekcie

New

In progress

In testing

Done

Integracja,
Deployment

Management: Jira

Projects / Beyond Gravity

Board

SEARCH [] Q [] [Avatar] [Avatar] [Avatar] [Avatar] +3 Epic ▾ GROUP BY Choices ▾

TO DO 12	IN PROGRESS 4	IN QA 4	DONE 4
<p>Implement feedback collector NUC-205 9 [Avatar]</p>	<p>Update T&C copy with v1.9 from the writers guild in all products that have cross country compliance NUC-213 1 [Avatar]</p>	<p>Adapt web app no new payments provider NUC-346 5 [Avatar]</p>	<p>Quick booking for accommodations - web NUC-336 4 [Avatar]</p>
<p>Bump version for new API for billing NUC-206 3 [Avatar]</p>	<p>Bump feedback icon version NUC-214 3 [Avatar]</p>	<p>Purchasing error - edit fields NUC-354 3 [Avatar]</p>	<p>Fluid booking on tablets NUC-343 5 [Avatar]</p>
<p>Add NPS feedback to wallboard NUC-208 1 [Avatar]</p>	<p>Tech spike on new stripe integration with paypal NUC-215 3 [Avatar]</p>	<p>Multi-dest search UI web NUC-338 5 [Avatar]</p>	<p>Shoping cart purchasing error - quick fix required. NUC-354 1 [Avatar]</p>
<p>Add analytics events to pricing page NUC-209 3 [Avatar]</p>	<p>Change phone number field type to 'phone' NUC-217 1 [Avatar]</p>		
<p>Resize the images for the upcoming campaign NUC-210 1 [Avatar]</p>			

Test case

- warunki wstępne
- kroki
- warunki końcowe



zbiór danych wejściowych, wstępnych warunków wykonania, oczekiwanych rezultatów i końcowych warunków wykonania opracowany w określonym celu lub dla warunku testowego, jak wykonanie pewnej ścieżki programu lub zweryfikowanie zgodności z konkretnym wymaganiem.

Test case

Test case	Attached files (0)	Test run results (1)	Linked items (0)	History
ID	1			
Title	Log in			
Priority	High			
Execution result	<input type="checkbox"/> Not run			
Purpose	Verify login with valid login credentials.			
Created by	Ulf Eriksson, 2011-03-11 10:03:36			
	Description	Expected result		
Step 1	Open a browser	The browser opens		
Step 2	Go to www.reqtest.com	www.reqtest.com opens		
Step 3	Click on the "log in" button in the upper right corner.	The login page is shown.		
Step 4	Enter thomas@mycompany.com as the email address, and thomas123 as the password.			
Step 5	Check the box that indicates you accept the terms of the license (above the log in button).			
Step 6	Click the "log in" button.	The system logs you in to ReQtest.		

Test plan (Xray)

Overall Execution Status

30 PASS 5 FAIL 40 TODO

Total Tests: 75

Filter(s)



Show 25 entries

All Environments

Columns

Key	Summary	Requirements	#Test Executions	Issue Assignee	Latest Status
<input type="checkbox"/> WTAP-4	Create Part	WTAP-7, WTAP-3	6		FAIL
Key	Summary	Environment	Status		
WTAP-338	Test Execution for RunCucumberTest.json build number: 41	all	FAIL		...
WTAP-337	Test Execution for RunCucumberTest.json build number: 40	all	FAIL		...
WTAP-336	Test Execution for RunCucumberTest.json build number: 39	all	FAIL		...
WTAP-335	Test Execution for RunCucumberTest.json build number: 38	all	FAIL		...
WTAP-9	Test Execution for RunCucumberTest.json build number: 29	all	PASS		...




















Defekt - zgłoszenie

- opis
- kroki odtworzenia
- efekt uzyskany
- efekt spodziewany

dodatkowo: powiązane zgłoszenia, zadania, screenshoty, nagrania, logi

Incorrect unit price in order details if product has multi selection attribute

 Edit  Comment  Assign  To Do  In Progress  Workflow  Admin   

Type:	 Bug	Status:	 DONE (View workflow)	Assignee:	 Mustafa Alqudah (Inactive) Assign to me
Priority:	 High	Resolution:	Done	Reporter:	 Mohammed Yasser
Affects versions:	None	Fix versions:	None	Votes:	 0
Components:	iOS			Watchers:	 1 Start watching this issue
Labels:	None			Created:	07/Mar/19 4:15 PM
Severity:	High			Updated:	Just now
Sprint:	Extension Of Assembly [IOS]			Resolved:	24/Mar/19 6:10 PM

Description

Test Step

- Open Martix app
- login using +962790813631
- then open order list
- then open order number #9420

Expected Result
Find the correct unit price as a return from the backend.
Inside Order details API (Order/ID)

Actual Result
Incorrect unit price

Development
[Create branch](#)

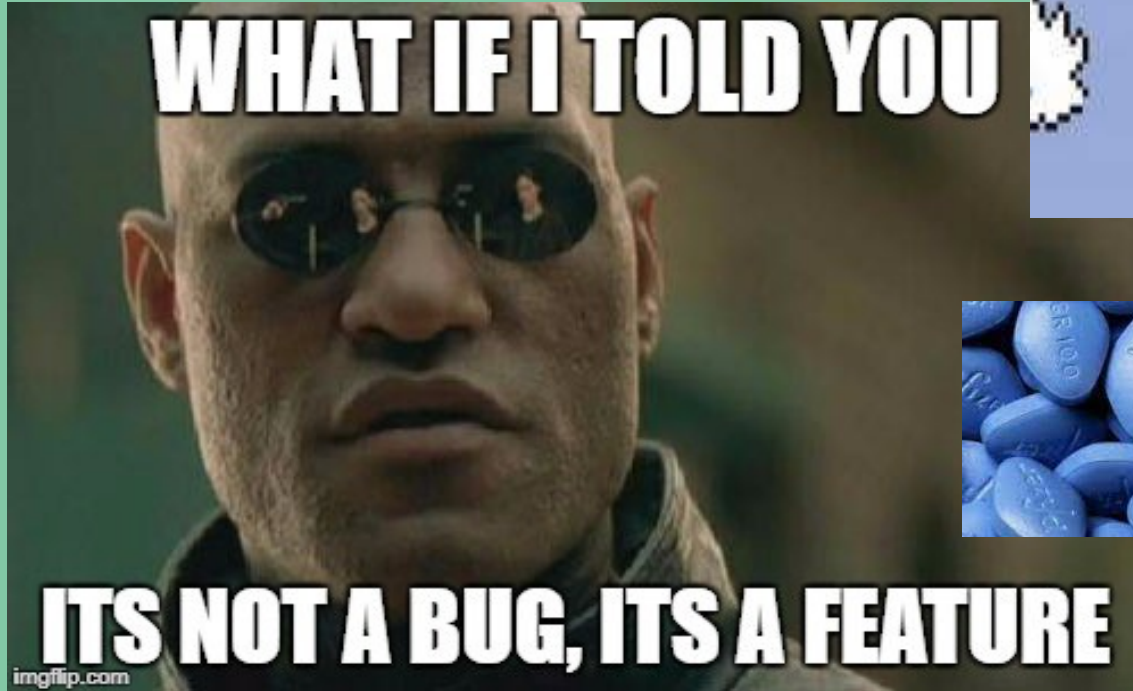


Błąd vs defekt

Błąd jako czynnik ludzki

Defekt jako rezultat błędu skutkuje (lub może) usterką oprogramowania

Feature, nie bug!

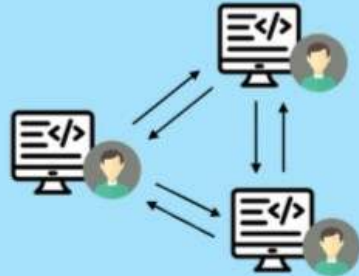


Środowiska, flow

DEV
(Development)



SIT
(System Integration Testing)



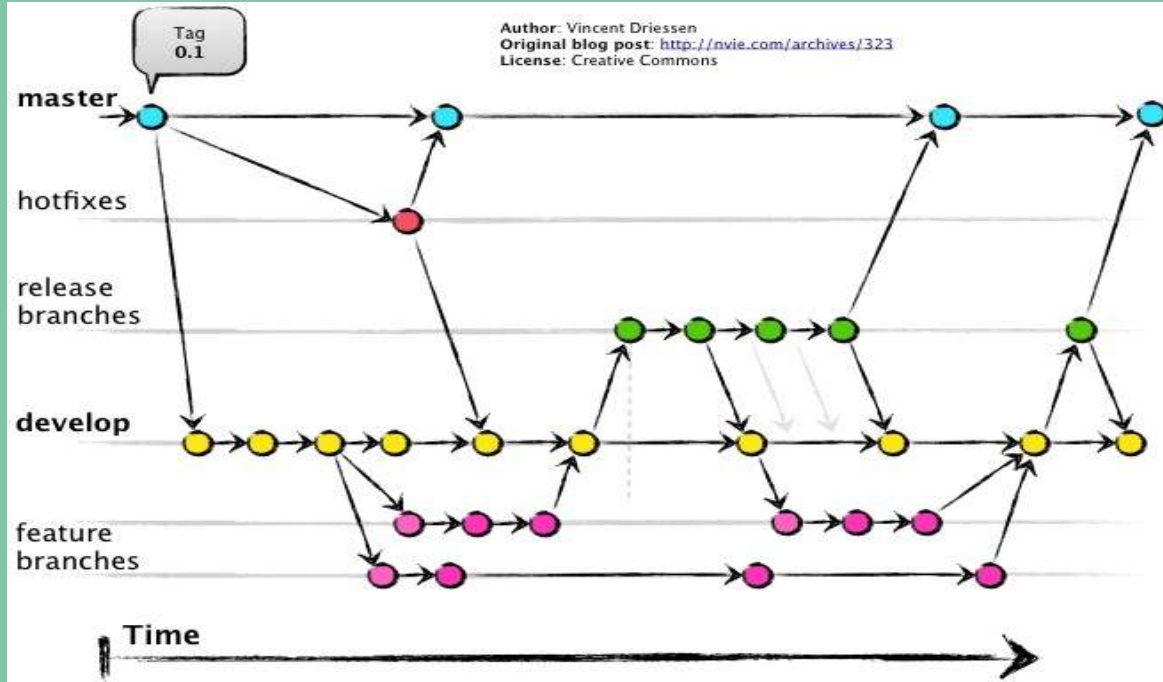
UAT
(User Acceptance Testing)



PROD
(Production)



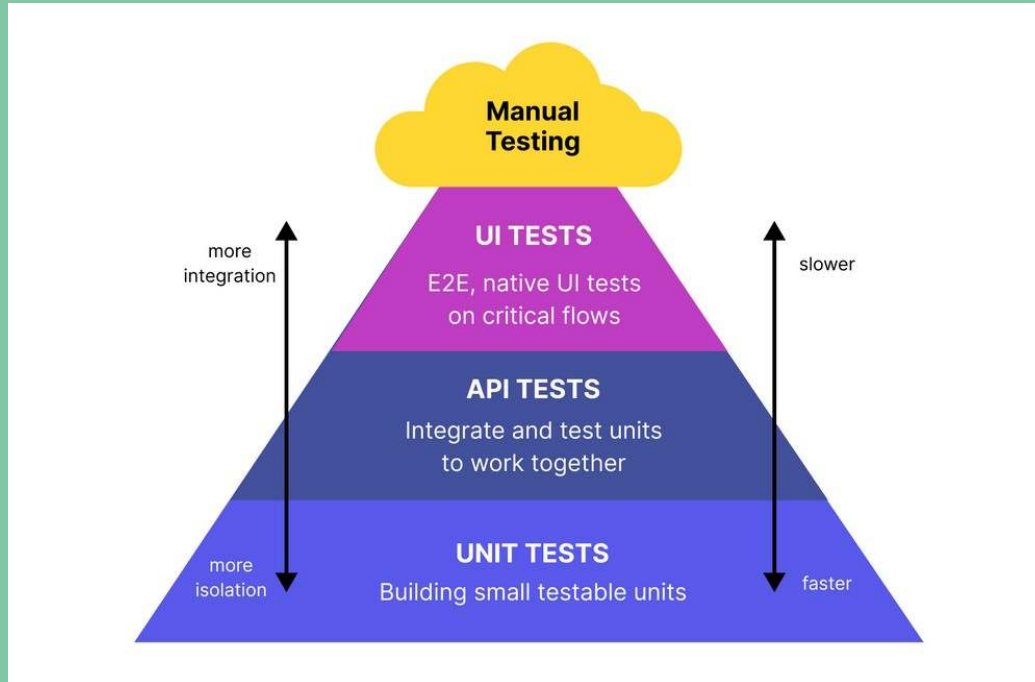
Wersjonowanie (GIT, Gitflow)



Rodzaje testów

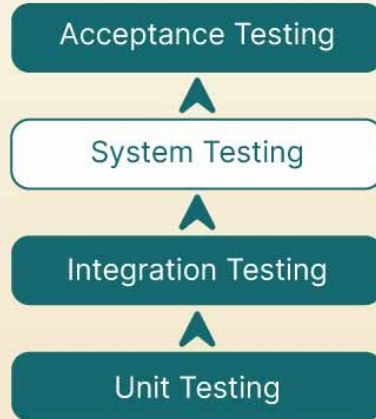
- Funkcjonalne
 - interfejsu użytkownika
 - interfejsu API
 - eksploracyjne
 - smoke testy
- Niefunkcjonalne
 - bezpieczeństwa
 - wydajności
 - responsywności
 - integracyjne, jednostkowe

Piramida testów



Poziomy testów

System Testing In software engineering



Unit test

```
namespace ExampleProject
{
    2 references
    public class ClassForTesting
    {
        2 references | 1/1 passing
        public object MethodForTesting1(string thing)
        {
            switch (thing)
            {
                case "true":
                    return true;
                case "something":
                    return "something";
                case "tomatoes":
                    return "tomatoes";
                default:
                    return thing;
            }
        }
    }
}
```

Unit test

```
1 reference
public class UnitTest1
{
    private readonly ClassForTesting cft;

    private string trueString = "true";
    private string tomatoesString = "tomatoes";
    private string somethingString = "something";
    private string randomString = "blah blah blah";
    0 references
    public UnitTest1()
    {
        cft = new ClassForTesting();
    }

    [TestMethod]
    ✓ | 0 references
    public void Verify_MethodForTesting_Returns_True()
    {
        Assert.IsTrue((bool)cft.MethodForTesting1(trueString));
    }

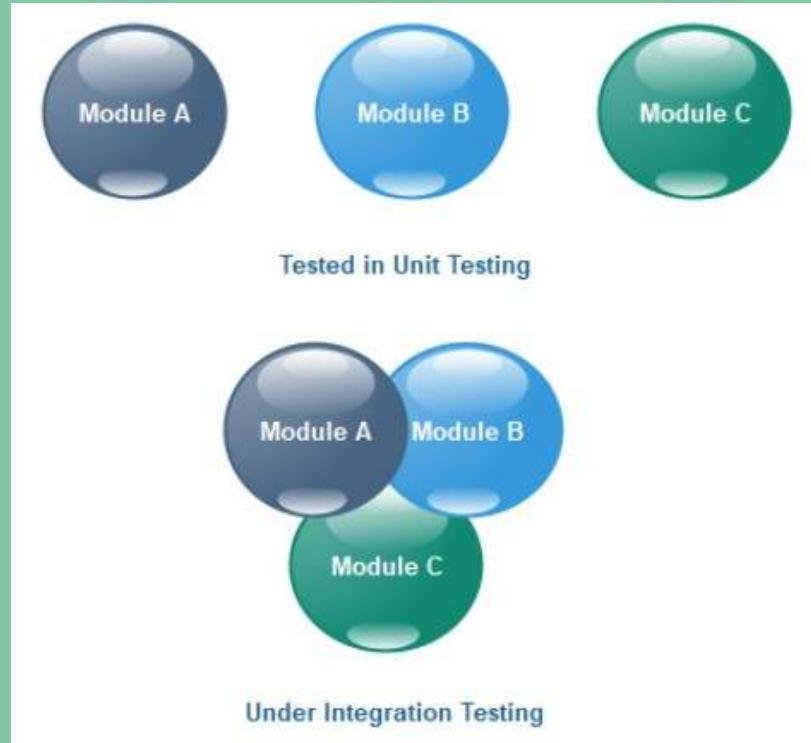
    [TestMethod]
    ✓ | 0 references
    public void Verify_MethodForTesting_EchosString_Tomatoes() =>
        this.Verify_MethodForTesting_EchosString(tomatoesString);

    [TestMethod]
    ✓ | 0 references
    public void Verify_MethodForTesting_EchosString_Something() =>
        this.Verify_MethodForTesting_EchosString(somethingString);

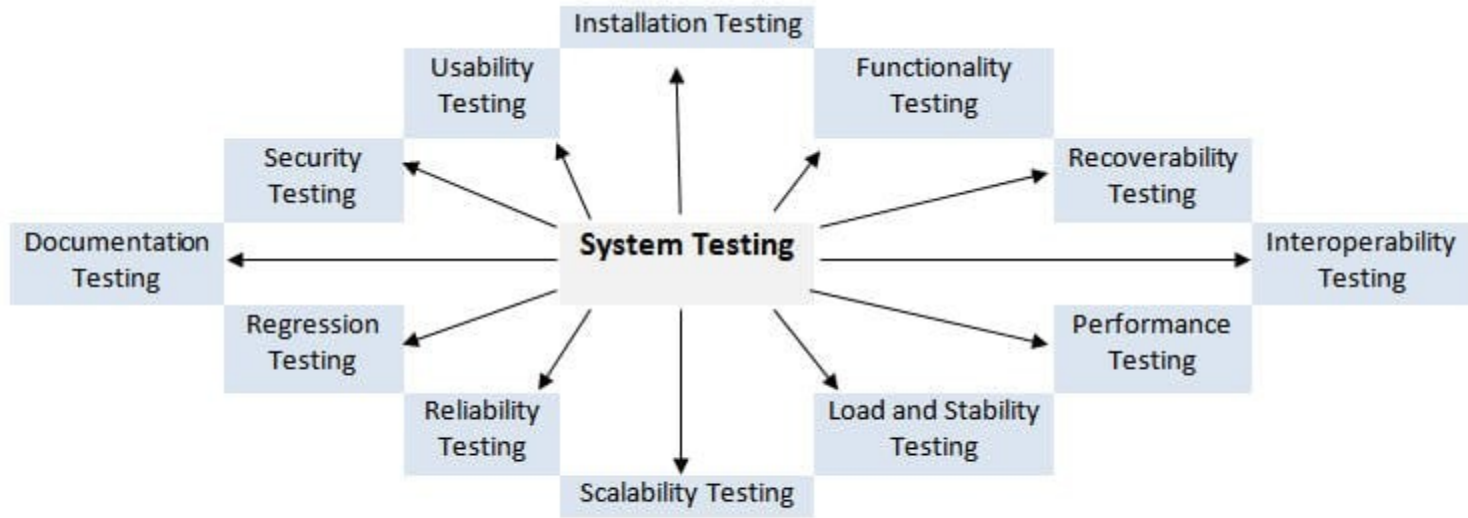
    [TestMethod]
    ✓ | 0 references
    public void Verify_MethodForTesting_EchosString_Randomness()
    {
        this.Verify_MethodForTesting_EchosString(randomString);
    }

    3 references | 3/3 passing
    private void Verify_MethodForTesting_EchosString(string testString)
    {
        Assert.AreEqual(testString, cft.MethodForTesting1(testString));
    }
}
```


Integration test



System test



System Testing - © www.SoftwareTestingHelp.com

Acceptance test



[https://www.bocasay.com/user-acceptance-testing-
uat/](https://www.bocasay.com/user-acceptance-testing-uat/)

TDD (Test Driven Development)



<https://marsner.com/blog/why-test-driven-development-tdd/>

BDD (Behaviour Driven Development)



BDD (Gherkin)

Given...
When...
Then...

Feature: Post a blog

As a customer

I want to post informative blogs

So that that I can share what I'm doing and raise my profile

Acceptance Criteria

- * Any logged in user can create a blog
- * Premium accounts can publish 5 free blogs
- * Non premium accounts can publish 0 free blogs
- * Blogs costs £0.50

Scenario: Dr Bill posts to his own blog

Given I am logged in as Dr Bill

And I have a premium account

And I have published 4 blogs

When I try to post to my blog

Then I should see "Your article was published"

Scenario: Dr Bill hits max number of free blogs

Given I am logged in as Dr Bill

And I have a premium account

And I have published 5 blogs

When I try to post to my blog

Then I should see a payment page

Scenario: Dr Bill pays for a blog

Given I am logged in as Dr Bill

And I have a premium account

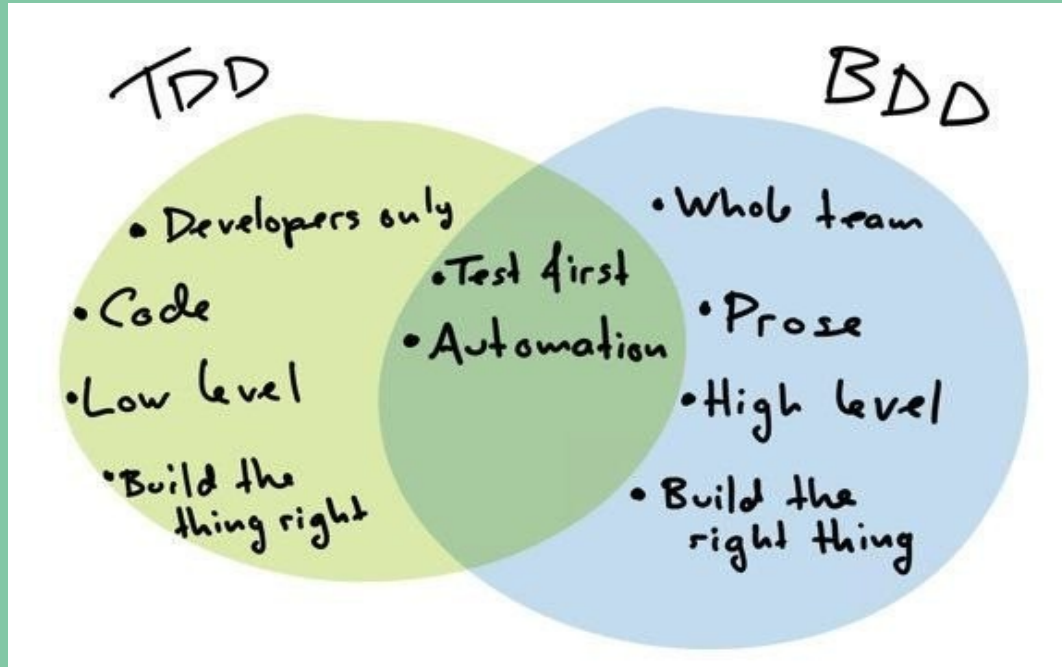
And I have paid £0.50 for a blog

When I try to post to my blog

Then I should see "Your article was published"

And my account should be updated

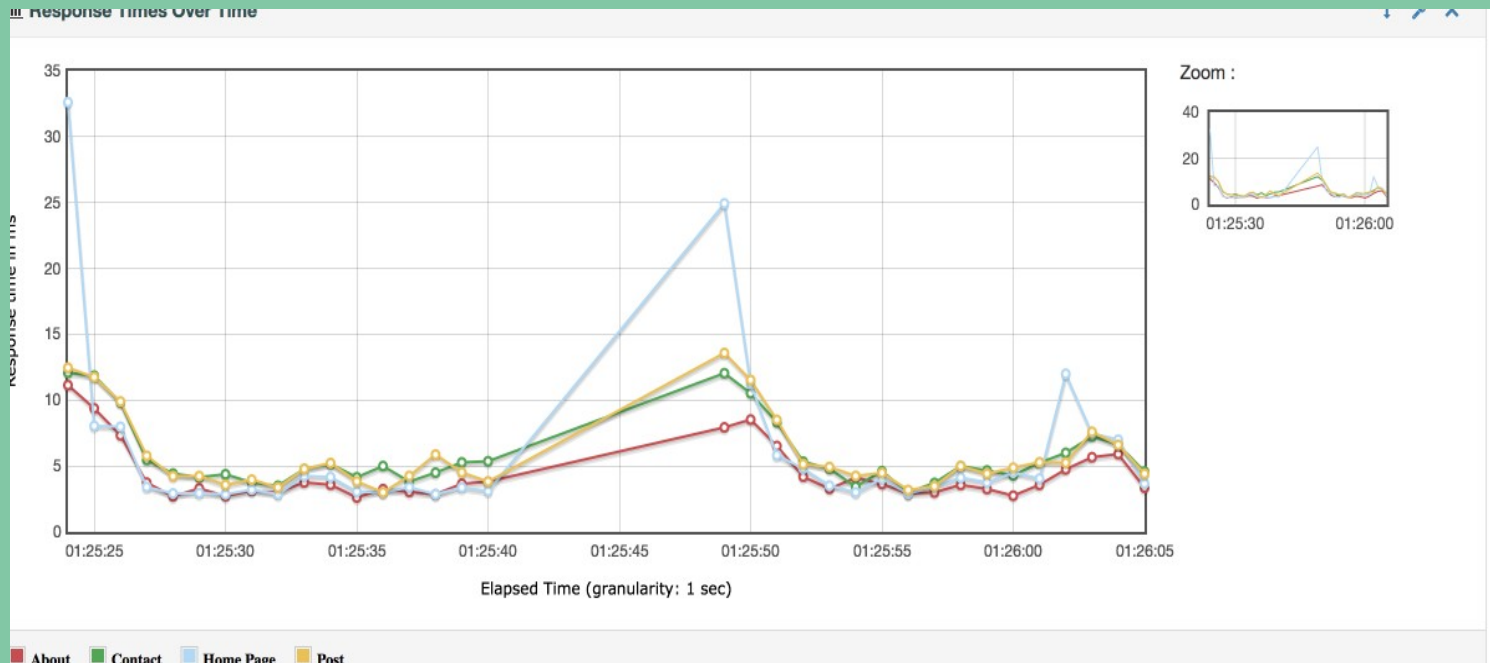
BDD vs TDD



Testy wydajnościowe



Testy wydajnościowe



Automatyzacja - GUI (Selenium)



<https://www.scnsoft.com/software-te>

Selenium WebDriver Basic Commands

```
-driver.get();  
-driver.navigate().to();  
-webElement.click();  
-webElement.sendKeys();  
-webElement.clear();
```

<https://artoftesting.com/selenium-webdriver-commands-list>

Automatyzacja - API (Postman, RestAssured)



POSTMAN



REST-assured
TESTING FRAMEWORK

Automatyzacja - API (Postman)



OSTMAN

http://localhost:60263/api/products

GET **2** http://localhost:60263/api/products **1** Send **4** Save

Params Authorization Headers Body Pre-request Script Tests **3** Cookies Code Comments (0)

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Body Cookies Headers (10) Test Results **5** Status: 200 OK Time: 362 ms Size: 1.12 KB Download

6

Pretty Raw Preview JSON **5**

```
1 [
2   {
3     "Id": 1,
4     "Name": "Sleek Plastic Chair",
5     "Category": "Beauty",
6     "Price": 479.49
7   },
8   {
9     "Id": 2,
10    "Name": "Handmade Concrete Tuna",
11    "Category": "Kids",
12    "Price": 750.64
13  },
14  {
15    "Id": 3,
16    "Name": "Awesome Concrete Tuna",
17    "Category": "Shoes",
18    "Price": 148.94
19  }
20 ]
```

<https://pl.linkedin.com/pulse/postman-testowanie-api-daniel-plawgo>

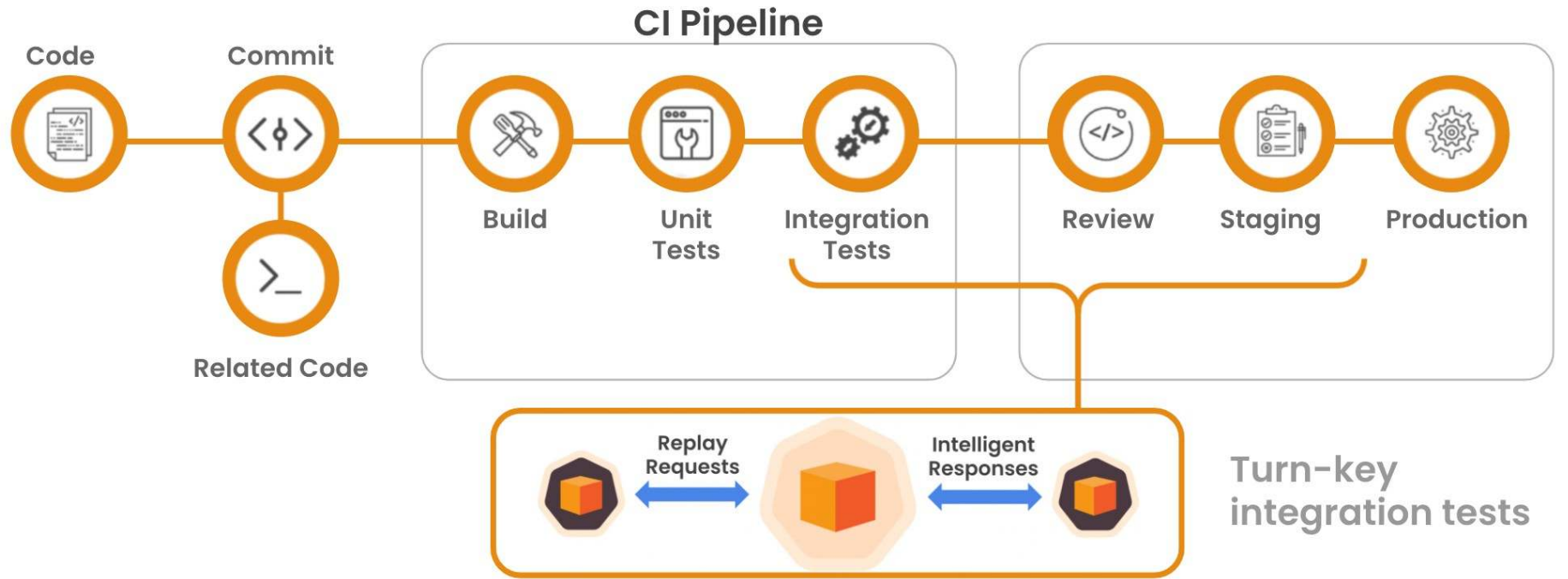
Automatyzacja - API (RestAssured)



REST-assured
TESTING FRAMEWORK

```
RequestSpecification request = RestAssured.given();  
request.header("Accept", "application/json");  
Response response = request.body("{\"client_id\":\"" + clientId + "\", \"client_secret\":\"" + clientSecret + "\", \"refresh_token\":\"" + refreshToken + "\"}")  
    .post();  
Assert.assertEquals(response.getStatusCode(), expected: 200);
```

(CI/CD) Typical pipeline



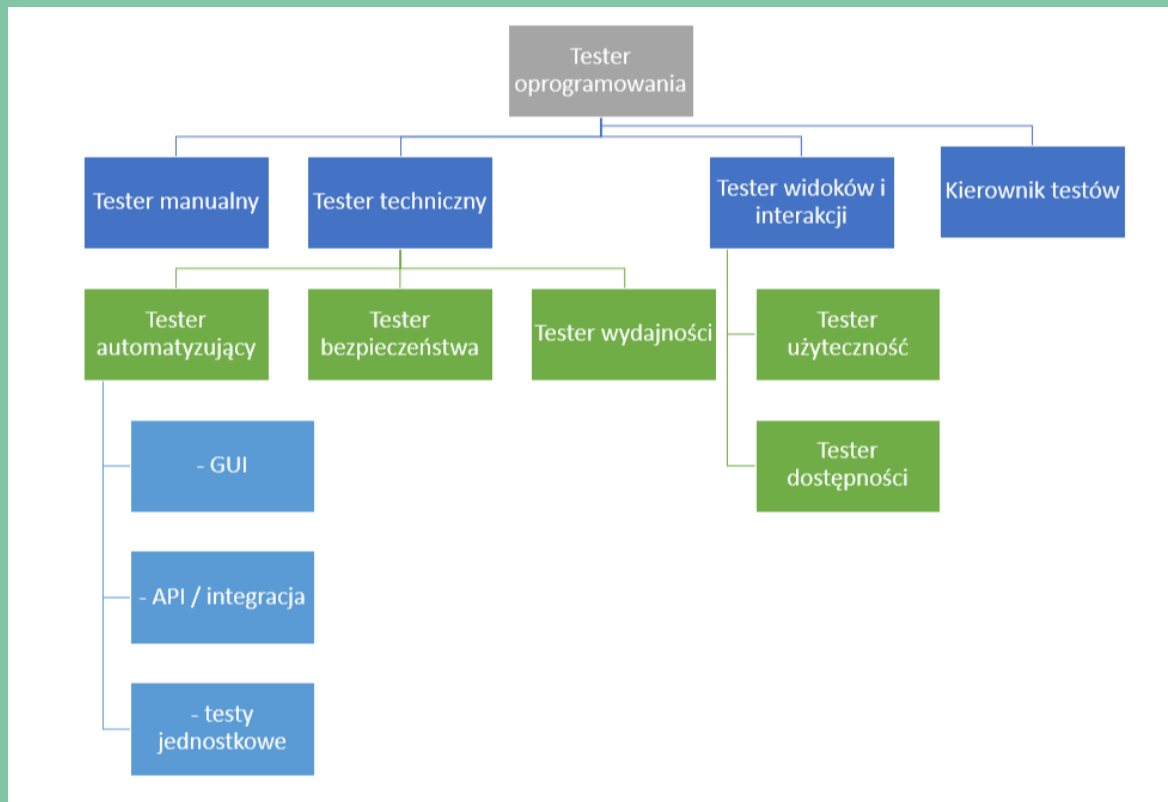
(CI/CD) Jenkins - monitor

The screenshot shows the Jenkins Build Monitor plugin interface for a project named 'Search Services'. The interface is a dashboard with several colored tiles representing different build jobs. The tiles are arranged in a grid. The top row contains three tiles: 'Librarian' (red), 'Librarian Acceptance' (green), and 'Performance Benchmark' (green). The second row contains three tiles: 'Promote to PROD' (green), 'Promote to UAT' (red), and 'Search API Contract Tests (PROD)' (green). The third row contains one large green tile for 'Search API Contract Tests (UAT)'. Each tile displays the job name, a status indicator (red for failed, green for successful), and some additional information like build number and duration. The 'Promote to UAT' tile shows a specific error: 'Identified Problems: SSH connection timeout'. The browser address bar shows the URL 'localhost:8080/jenkins/view/Search%20Services/'.

Job Name	Status	Build Info	Duration
Librarian	Failed	1.5.0+build.11.sha.7d22a8	15s
Librarian Acceptance	Success	v1.5.0, run #3	1m 12s
Performance Benchmark	Success	#1	1m 13s
Promote to PROD	Success	#2	1m 2s
Promote to UAT	Failed	#8	31s 2m 7s
Search API Contract Tests (PROD)	Success	#1	17s
Search API Contract Tests (UAT)	Success	#2	12s 37s

<https://plugins.jenkins.io/build-monitor-plugin/>

Kariera



Zagrożenia

- naciski (dev team, RM, PM)
- rutyna
- konflikty w zespole (nadwrażliwość na uwagi)
- rola zespołowego hejtera
- szkolenia miękkie, komunikacja



Źródła

- testerzy.pl
- atlassian.com
- katalon.com
- softwaretesting.com
- testuj.pl/blog
- scrum.org

Pytania...

