SWEN90016

Software Processes & Project Management

Quality Assurance
Planning, Control, Monitoring

2021 – Semester 1

Tutorial 8

Today's aim

1. Understand testing in Agile
2. Testing in Formal - checklists for your team

Agile Quality Strategy

What is the role of QA in agile?

a) After development there is a separate testing done by the agile team in a number of sprints

b) As there is fast development cycles there is no time for testing

c) Agile aims to adapt to changes quickly and minimize time so there is no testing

d) Testing is done in each sprint

e) Continuous integration between development and testing

Testing in Agile

Every sprint has its own testing phase.

The tests can be ran every time new features are released.

In Agile testing, small piece of working software are delivered to the customer at the end of the sprint.

Testers and developers work closely together in Agile testing. Testing is done by the whole team.

User acceptance is performed at the end of every sprint.

The User story describes the requirement …
The acceptance criteria provides the definition of when that user story is done.

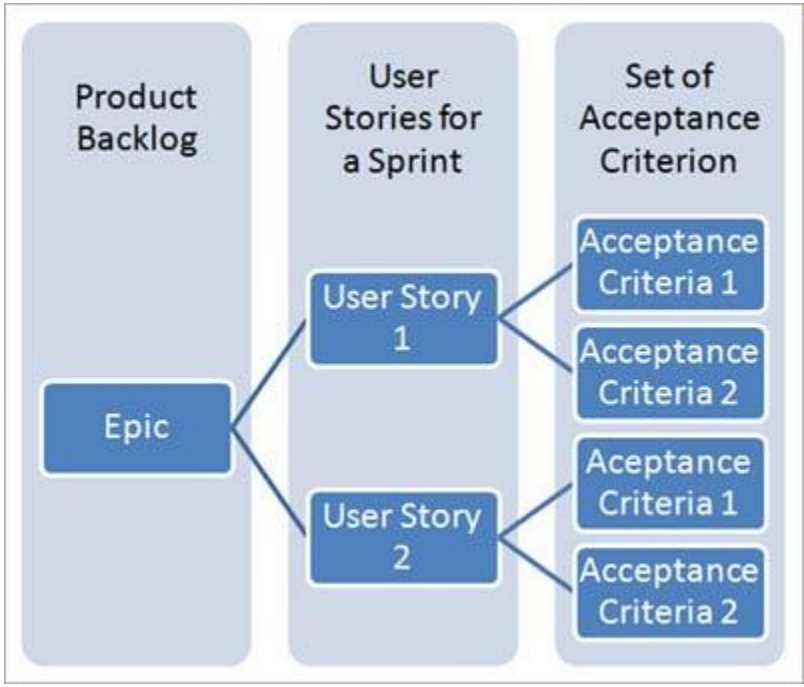
Acceptance Criteria

As a Customer… I want to be able to split my payments…
So I can pay using multiple debit cards

Activity: In your breakout groups, brainstorm three (3) Acceptance Criteria for the above User story

Examples:

- ***User can select 'split payment' on the payment page***
- ***User can choose different types of payment options***
- ***User can specify the amount they want to split***
- ***The payments page automatically calculates what is left to pay as user enters their split payment***



https://www.softwaretestinghelp.com/user-story-acceptance-criteria/

Acceptance Criteria

Examples:

- ***As a User I can select 'split payment' on the payment page so that I can choose to use multiple cards when I want to pay***
- ***As a User I can choose different types of payment options so that I can pay***
- ***As a User I can specify the amount I want to split between payment options so that I can use multiple cards when I want to pay.***
- ***As a User the payments page should automatically calculate what is left to pay so that the user knows how much to is left to pay when the user enters their split payment***

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Agile Quality – Dev Team process

Agile QA desk-audit hurdle:

Invite multi skilled audience to desk audit: a business analyst, another developer and a tester

Review the code at the developer's desk, before the code is allowed to be committed into the shared *git* repository, GITHub.

Once the code is committed into GITHub, it's test suite is run immediately by the Continuous Integration tool

CI tool displays run code's pass/fail status

Agile Quality Process

Sprint Review QA evaluation:

What
Where
Who
When
Why

- Build small piece of working software with minimal features
- Showcase the product chunk to the stakeholders **early**
- Fail **fast** and as cheaply as possible, & get timely feedback
- Capture the ***technical debt item*** in the Product Backlog, (optionally in FDD format)
- The Product Owner sets the priority of the ***technical debt item***

QA Requirements

Write QA Requirements as User Stories

As the Agile Scrum team:

5 a. *We want a Quality Plan, so that our Sprint has a strong Quality Management focus*

As a Quality Assurance **Design** team:

b. *We want a QA checklist, so that key categories and attributes are assessed at defined times*

As the System Administrator:

c. *I want a password policy guideline, so that our application has helpful processes*

I want a password policy checklist, so that our application is highly secure

Acceptance Criteria

Another example

User story: *As a user, I want to be able to recover the password to my account, so that I will be able to access my account in case I forgot the password.*

Scenario: Forgot password
Given: The user has navigated to the login page
When: The user selected *forgot password* option
And: Entered a valid email to receive a link for password recovery
Then: The system sent the link to the entered email
Given: The user received the link via the email
When: The user navigated through the link received in the email
Then: The system enables the user to set a new password

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Quality Plan: A checklist

A tool

Quality Attributes	Definition According to McCall et al.
Correctness	The extent to which a program satisfies its specifications and fulfils the user's mission objectives.
Reliability	The extent to which a program can be expected to perform its intended function with required precision.
Efficiency	The amount of computing resources and code required by a program to perform a given function.
Integrity	The extent to which access to software or data by unauthorised persons can be controlled.
Usability	The effort required to learn, operate, prepare input, and interpret output of a program.
Maintainability	The effort required to locate and fix an error in an operational program.
Testability	The effort required to test a program to ensure that it performs its intended function.
Flexibility	The effort required to modify an operational program.
Portability	The effort required to transfer a program from hardware and/or software environment to another.
Reusability	The extent to which a program (or parts thereof) can be reused in other applications.
Interoperability	The effort required to couple one system with another.

Another checklist

A tool

Checklist for software requirements specification artifact

Organisation and Completeness

- ☐ Are all internal cross-references to other requirements correct?
- ☐ Are all requirements written at a consistent and appropriate level of detail?
- ☐ Do the requirements provide an adequate basis for design?
- ☐ Is the implementation priority of each requirement included?
- ☐ Are all external hardware, software, and communication interfaces defined?
- ☐ Have algorithms intrinsic to the functional requirements been defined?
- ☐ Does the specification include all of the known customer or system needs?
- ☐ Is the expected behaviour documented for all anticipated error conditions?

Correctness

- ☐ Do any requirements conflict with or duplicate other requirements?
- ☐ Is each requirement written in clear, concise, unambiguous language?
- ☐ Is each requirement verifiable by testing, demonstration, review, or analysis?
- ☐ Is each requirement in scope for the project?
- ☐ Is each requirement free from content and grammatical errors?
- ☐ Is any necessary information missing from a requirement? If so, is it identified as "to be decided"?
- ☐ Can all of the requirements be implemented within known constraints?
- ☐ Are any specified error messages unique and meaningful?

Quality Attributes

- ☐ Are all performance objectives properly specified?
- ☐ Are all security and safety considerations properly specified?
- ☐ Are other pertinent quality attribute goals explicitly documented and quantified, with the acceptable tradeoffs specified?

Traceability

- ☐ Is each requirement uniquely and correctly identified?
- ☐ Is each software functional requirement traceable to a higher-level requirement (e.g., system require-

Verification Process

In your breakout groups, **discuss** quality processes & do these activities

2. Create an appropriate formal checklist to review the group assignment

3. Describe the outcome of this review?

Done!