

# Software Quality and Testing (SQT2021)

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# Organization

**Objective:** Gaining practical and theoretical knowledge regarding software quality and testing concepts (~quality assurance)

## Organization:

- 14 courses and 14 laboratories in 12 weeks
- 2 courses and 2 labs are scheduled in addition to the normal program (1 seminar for lab practical test and 1 seminar for recap/homework/projects)

## Evaluation:

- Course + Seminar (50% of final grade): live computer test(20%), week 14 quiz test(10%), course small quizzes (5%), seminar activity (15%)
- Exam (50% of final grade)

# Topics

- Software quality concepts
- Principles regarding how to write code - Clean Code
- Source code versioning - Git, SVN
- Design Patterns
- Unit Testing - JUnit

# Bibliography

- Scott Chacon, Ben Straub - *Pro Git, 2nd edition*, Apress, 2014, available online at <http://git-scm.com/book/en/v2>
- Robert C. Martin - *Clean Code, A Handbook of Agile Software Craftsmanship*, Prentice Hall, 2009
- Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides - *Design Patterns: Elements of Reusable Object-Oriented Software*, Addison-Wesley, 1994 ([link Google books](#))
- Steve Holzner - *Design Patterns for Dummies*, Wiley, 2006
- Lasse Koskela - *Effective Unit Testing*, Manning, 2013
- Lasse Koskela - *Practical TDD and Acceptance TDD for Java Developers*, Manning, 2007
- Alasdair Allan - *Pragmatic Unit Testing in Java with JUnit*, The Pragmatic Programmers, 2004
- <http://git-scm.com/docs>
- <https://try.github.io> at [Code School](#)
- <http://acs.ase.ro/software-quality-testing>

# Prerequisites



- Java Programming course (classes, interfaces, files)
- Object Oriented Programming course (general OO concepts, C/C++ syntax)
- *Mobile Application Development and Windows Applications Programming* courses (concepts regarding application architectures)

# Prerequisites



- Object Oriented Programming basics: classes, inheritance, polymorphism, interfaces, ...
- Java Collections
- Java files (text and binary)

# Tools

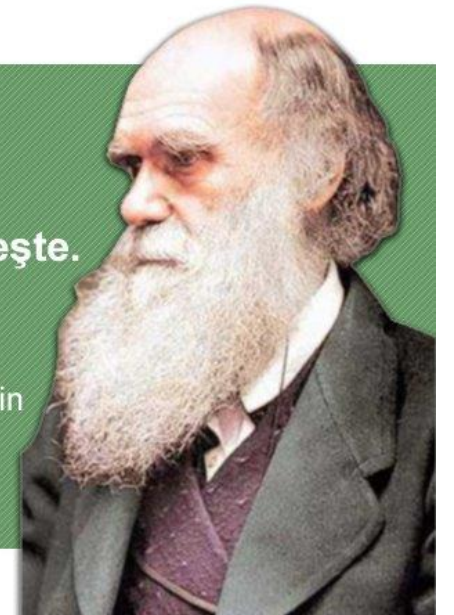


# Why Quality Assurance and Testing?

"THE ONLY THING  
THAT IS CONSTANT  
IS CHANGE."  
-HERACLITUS

Nu specia cea mai puternică  
sau cea mai inteligentă supraviețuiește.  
Ci aceea care se adaptează  
cel mai bine la schimbări.

Charles Darwin



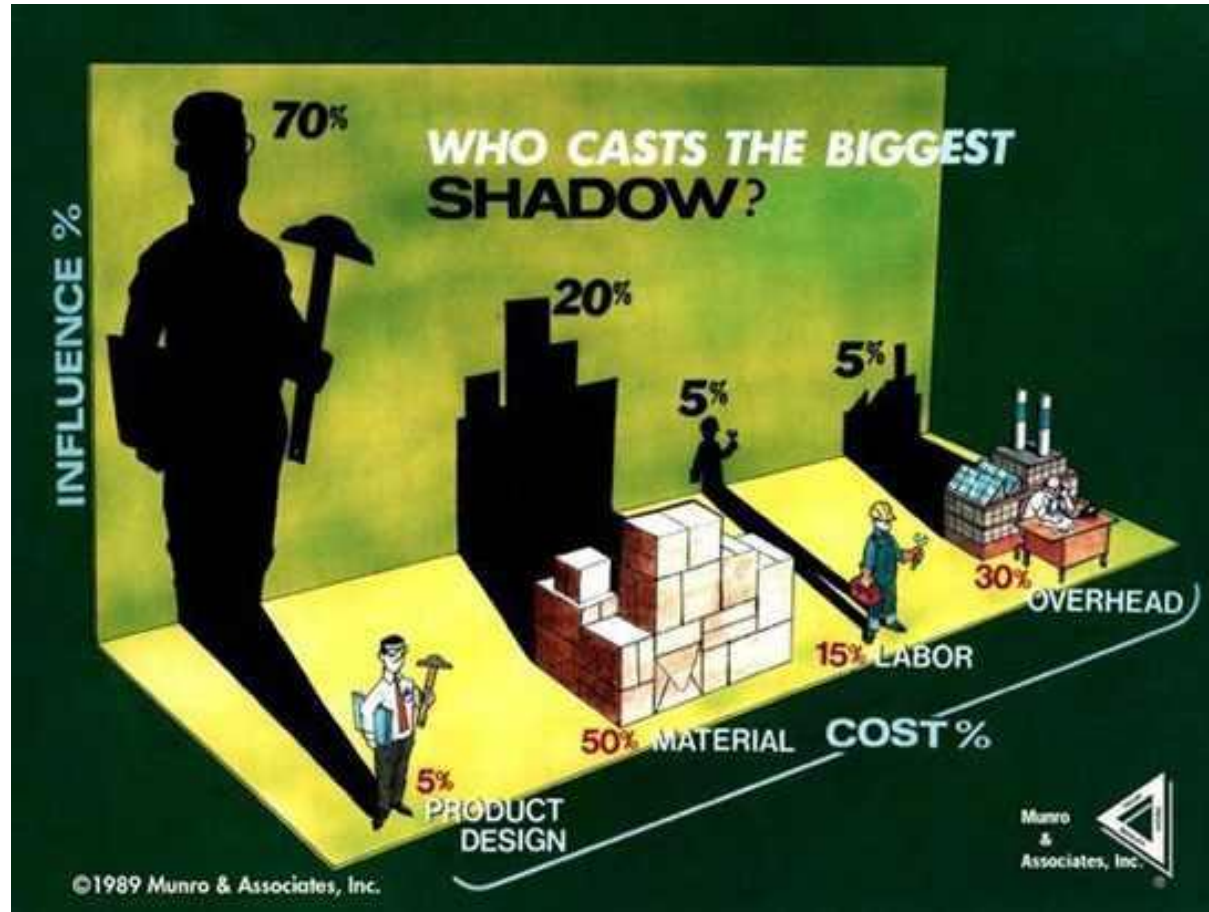
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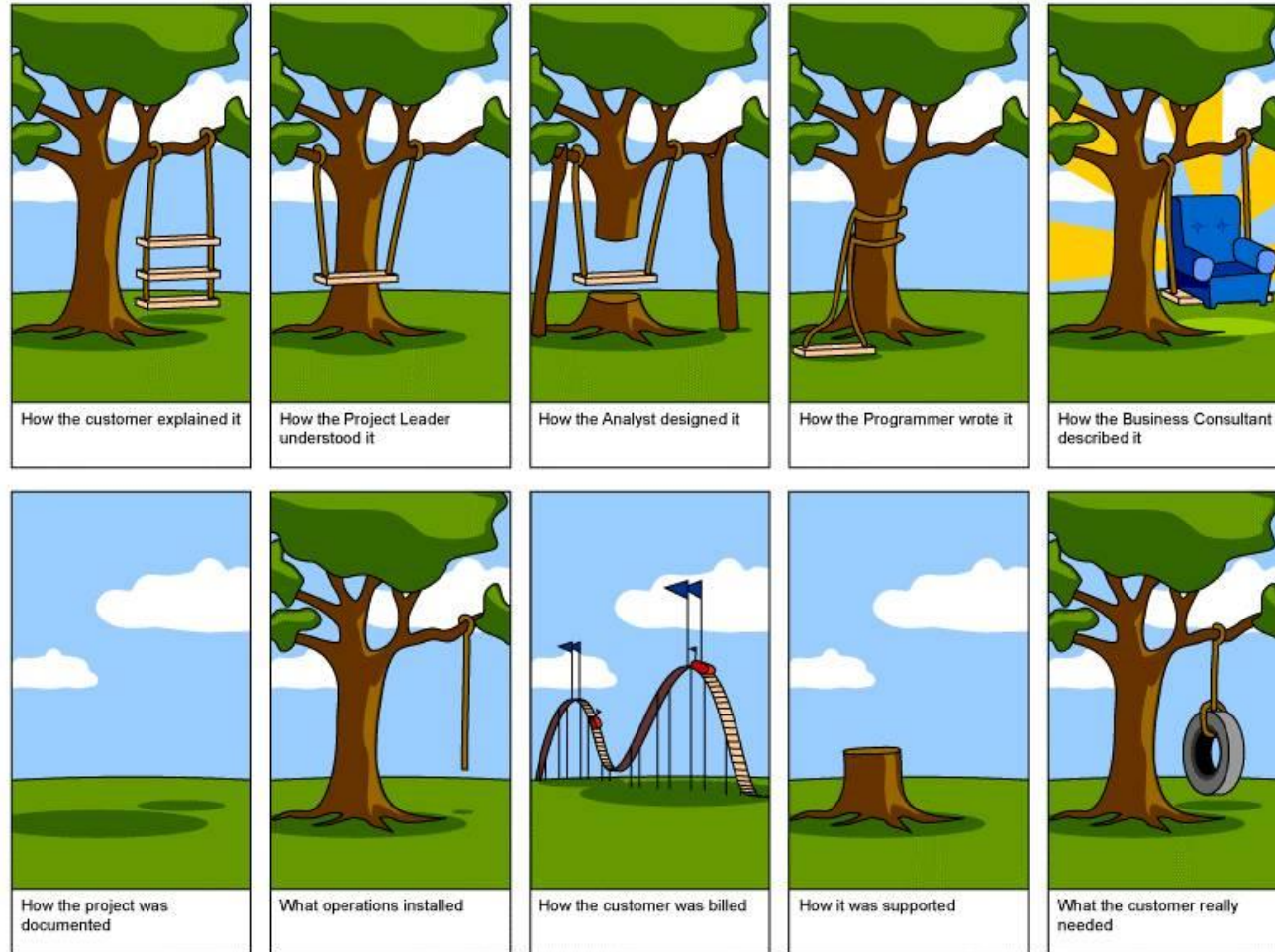
# Why QA and Testing?

- *Around each 5 years the programmers population is doubling its number (starting with the 70s) [Bob Martin]*
- In 2013 there were 18.2 millions software engineers worldwide, and in 2019 their number will be 26.4 millions (with 45% more)  
(<http://www.computerworld.com/article/2483690/it-careers/india-to-overtake-u-s--on-number-of-developers-by-2017.html>)
- A lot of the existing programmers don't have enough experience (less than 3-5 years)

# Why QA and Testing?



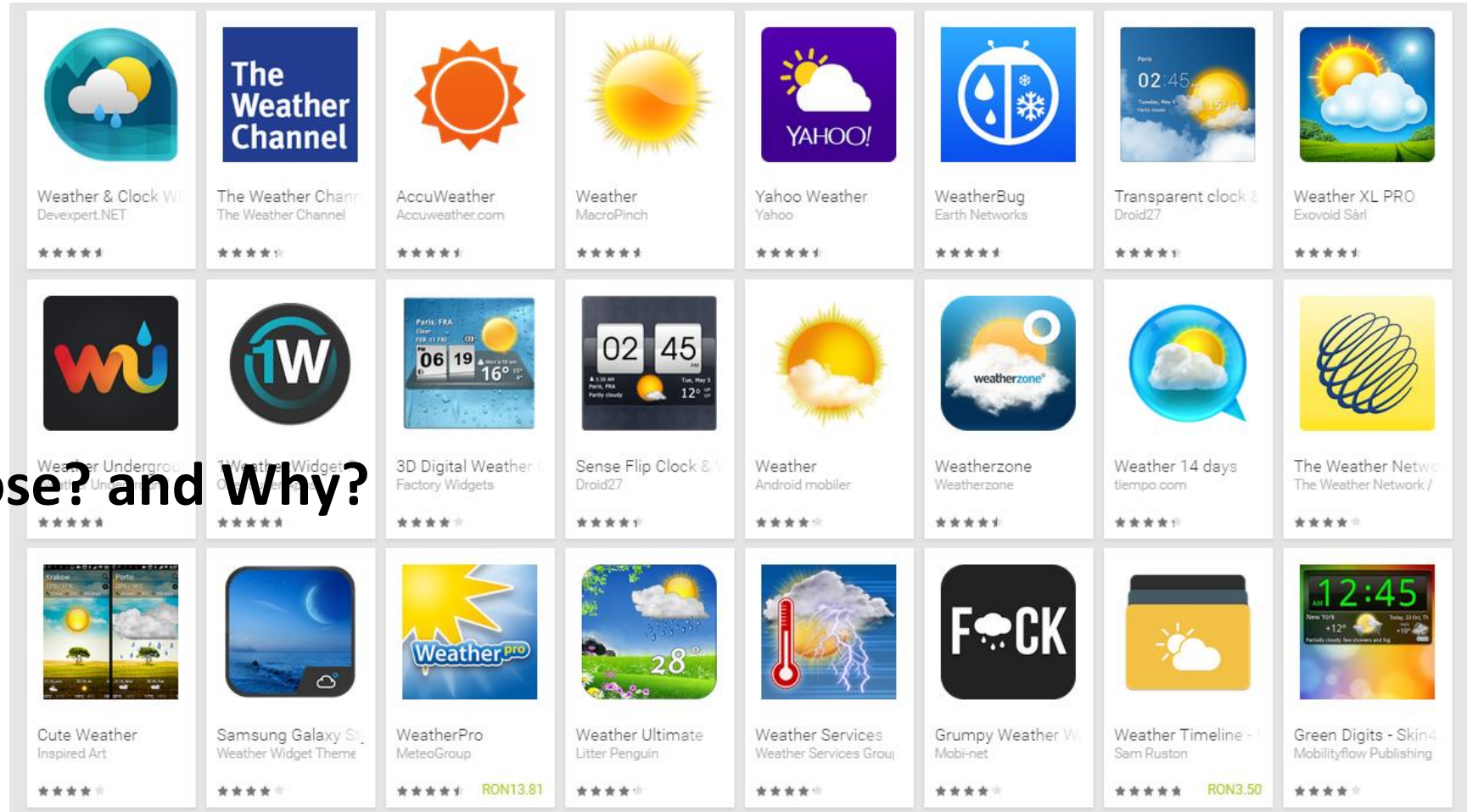
# Why QA and Testing?



2005 Paragon Innovations, Inc.

# Why QA and Testing?

**What to choose? and Why?**



# QA vs. Testing

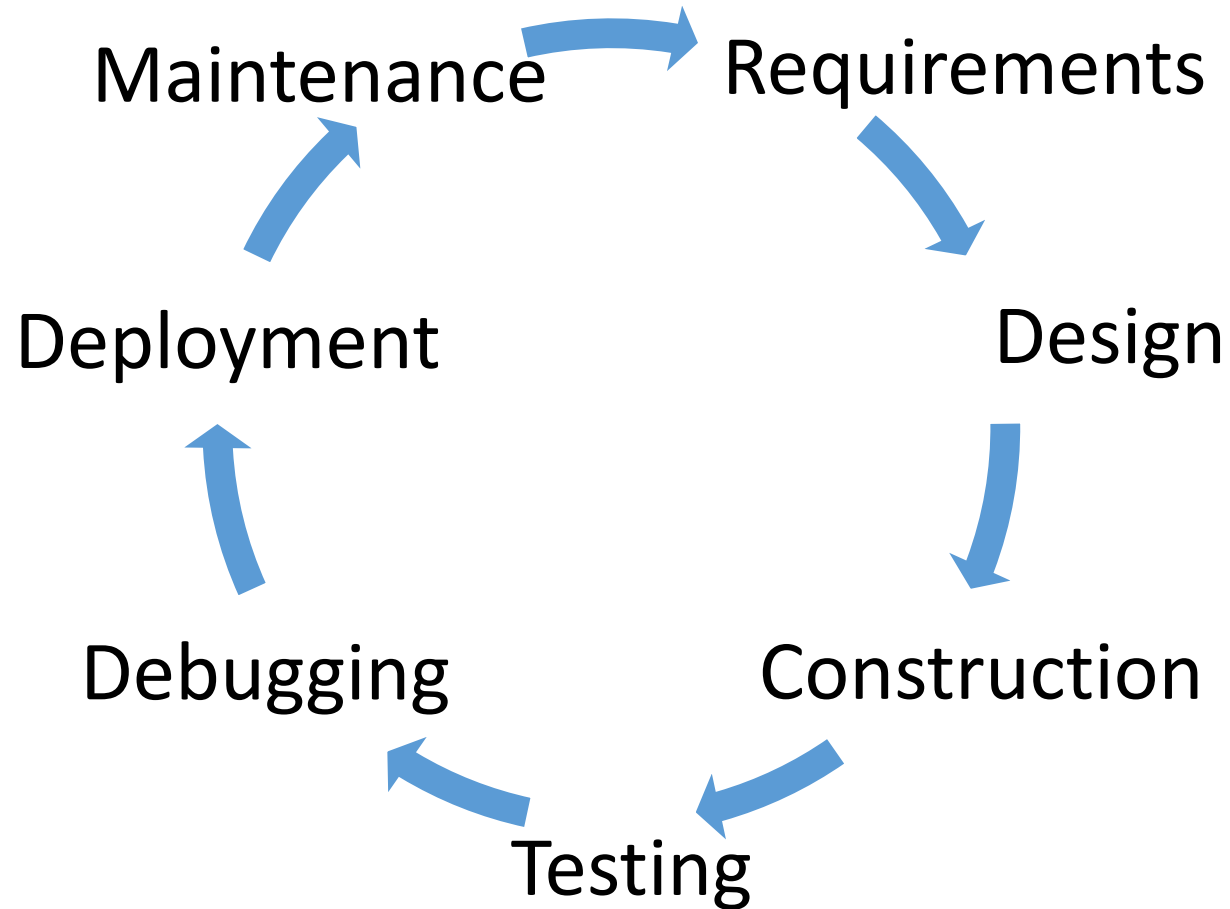
## Software Quality

- Defining product quality
- Improving development process
- Preventing errors and bugs

## Software Testing

- Identifying errors and bugs before the users will see them

# Software Development



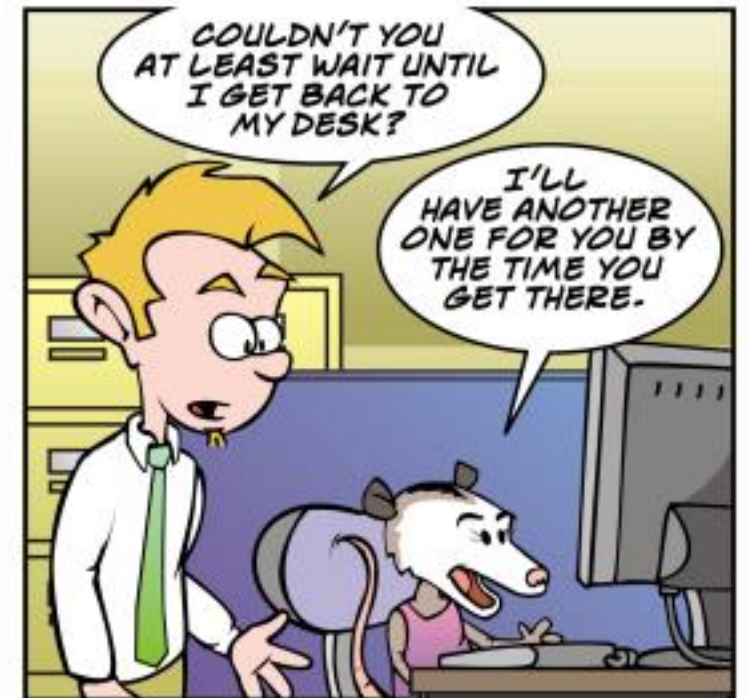
# The tester role



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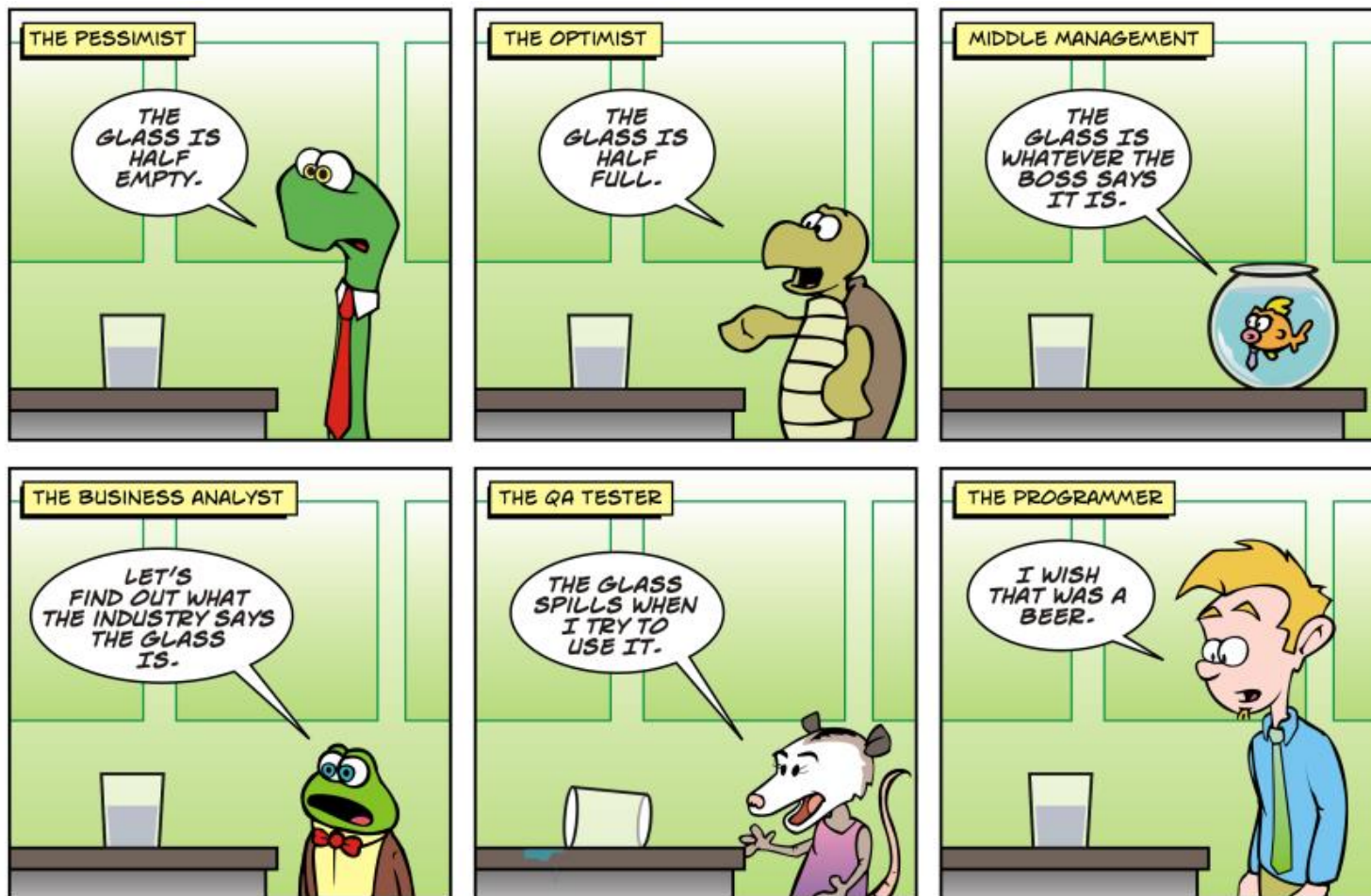


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# The tester vision of the world



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