# Homework: Test Levels and Test Types

## Unit Testing in the Real Life: Testing a Battery

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| **Test #1** | Take a **bulb 1.5V** and check if the battery works as expected: the bulb should light up after connection properly. |
| **Test #2** | Take **multimeter** and check the **voltage**.   * It should be ~ 1.5 volts. |
| **Test #3** | Take the battery and check it **visually**:   * Check its **length**. * Check its **diameter**. * Check if it has a form of **cylinder**. * Check for **leakage**, **corrosion**, etc. |
| **Test #4** | Check with a compatible **flashlight**. This will check two things:   * Whether battery size matches the flashlight. * Whether the batteries work as expected (light the bulb). |
| **Test #5** | Check the **labels** on the battery.   * The denoted size should be “AA”. * The denoted voltage should “1.5V”. |
| **Test #6** | Check if “**+**” and “**-**” are correctly positioned. Use a multimeter. |
| **Test #7** | Environmental test:   * Low temperature, e.g. 2 degree Celsius. * High temperature, e.g. 45 degree Celsius. |
| **Test #8** | Check the expiration date label. It should be in the future. |
| **Test #9** | Overheating test. |

## Unit Testing in the Real Life: Testing a Light Bulb

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## Unit Testing in the Software World: Age Checker

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| --- | --- |
| **Tests** | * AgeChecker(0) 🡪 child * AgeChecker(5) 🡪 child * AgeChecker(12.99) 🡪 child * AgeChecker(13) 🡪 teenager * AgeChecker(19.5) 🡪 teenager * AgeChecker(20) 🡪 adult * AgeChecker(21) 🡪 adult * AgeChecker(50) 🡪 adult * AgeChecker(64.7) 🡪 adult * AgeChecker(65) 🡪 elder * AgeChecker(75.3) 🡪 elder * AgeChecker(95) 🡪 elder * AgeChecker(150) 🡪 elder * AgeChecker(150.1) 🡪 error * AgeChecker(15800) 🡪 error * AgeChecker(-5) 🡪 error * AgeChecker(-1) 🡪 error * AgeChecker(“Peter”) 🡪 error |

## Unit Testing in the Software World: Income Checker

|  |  |
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| **Test #1** |  |
| **Test #2** |  |
| **Test #3** |  |
| **Test #4** |  |
| **Test #5** |  |

## Integration Testing in the Real Life: Lighting the Bulb

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| --- | --- |
| **Test #1** | Implement the following circuit, using the provided components:  A picture containing shape  Description automatically generated  The bulb should light. |
| **Test #2** | Implement the following circuit, using the provided components:  Diagram  Description automatically generated  **Switch on** the switch button 🡪 the bulb should light. |
| **Test #3** | Implement the following circuit, using the provided components:  Diagram  Description automatically generated  **Switch off** the switch button 🡪 the bulb should **not light**. |
| **Test #4** |  |
| **Test #5** |  |

## \* Integration Testing in the Software World: Ads

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## \* Integration Testing in the Software World: Credit Risk

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| **Tests** | The following 12 tests cover each combination of age + income:   * CreditRisk(age: 5, income: 500) 🡪 100% * CreditRisk(age: 6, income: 2000) 🡪 100% * CreditRisk(age: 7, income: 6000) 🡪 100% * CreditRisk(age: 15, income: 700) 🡪 80% * CreditRisk(age: 15, income: 2000) 🡪 72% * CreditRisk(age: 17, income: 6700) 🡪 64% * … * … * …   Additional tests for invalid input:   * CreditRisk(age: -5, income: 500) 🡪 error * CreditRisk(age: 6, income: -2000) 🡪 error   Regression test:   * CreditRisk(age: 17, income: 0) 🡪 80%   + Bug in the sample calculator: <http://softuni-qa-loadbalancer-2137572849.eu-north-1.elb.amazonaws.com/credit-risk/> * CreditRisk(age: 0, income: 1000) 🡪 100%   + Bug in the sample calculator: <http://softuni-qa-loadbalancer-2137572849.eu-north-1.elb.amazonaws.com/credit-risk/> * CreditRisk(age: 0, income: 0) 🡪 100% |

Another solution (or way of thinking):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | child | teenager | adult | elder | negative |
| low | 100% |  |  |  |  |
| mid | 100% |  |  |  |  |
| high | 100% |  |  |  |  |
| negative | error | error | error | error | error |

I also found bug in the credit risk calculator: <http://softuni-qa-loadbalancer-2137572849.eu-north-1.elb.amazonaws.com/credit-risk/>

* When the age or income holds “0”, the messages under the “age” and “incomes” boxes are incorrect:

Diagram

Description automatically generated with low confidence

* There is a **UI bug**. When the screen is not big enough, the downside of the form gets cut. Also when we zoom-in / zoom-out, content may become missing:

Graphical user interface, text

Description automatically generated

* …

## System Testing in the Real Life: Flashlight

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| --- | --- |
| **Test #1** | Test switch on / switch off the light.  We take the flashlight. Put new batteries correctly. Switch on the flashlight 🡪 the bulb should light. Switch off the flashlight 🡪 the bulb should light off. |
| **Test #2** | Test battery replacement |
| **Test #3** | Test bulb replacement |
| **Test #4** | Test battery duration. At least 1 hour of lighting with new batteries. |
| **Test #5** | Test the illumination distance. It should illuminate cleanly at distance of 30 meters or less (with new batteries). |
| **Test #6** | Shock resistance test: fall from the table and check if it still works correctly. |
| **Test #7** | Operation under high / low temperature |
| **Test #8** | Overheat test |
| **Test #9** | Water resistance test |
| **Test #10** |  |

## System Testing in the Real Life: Digital Scale

|  |  |
| --- | --- |
| **Test #1** |  |
| **Test #2** |  |
| **Test #3** |  |
| **Test #4** |  |
| **Test #5** |  |
| **Test #6** |  |
| **Test #7** |  |
| **Test #8** |  |

## System Testing in the Software World: Number Calculator

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| --- | --- |
| **Test #1** | Calc(5, +, 3) 🡪 8  Test passed |
| **Test #2** | Calc(5, +, 0) 🡪 5  Test passed |
| **Test #3** | Calc(Infinity, +, 1) 🡪 Infinity  Test passed |
| **Test #4** | Calc(-Infinity, +, 1) 🡪 Infinity Test passed |
| **Test #5** | Calc(pesho, +, 1) 🡪 invalid input Test passed |
| **Test #6** | Calc(1000000000000, +, 5) 🡪 1000000000005  Test failed! |
| **Test #7** | … |
| **Test #8** | … |

## Acceptance Testing in the Real Life: Flashlight

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| --- | --- |
| **Test #1** | The customer takes the flashlight, **switch on / off** the light, and assures it works. |
| **Test #2** | The customer checks the flash **illumination**. |
| **Test #3** | The customer checks how easy it is to **replace the batteries**. |

## Acceptance Testing in the Real Life: Digital Scale

|  |  |
| --- | --- |
| **Test #1** |  |
| **Test #2** |  |
| **Test #3** |  |
| **Test #4** |  |
| **Test #5** |  |
| **Test #6** |  |

## Acceptance Testing in the Software World: Number Calculator

|  |  |
| --- | --- |
| **Test #1** |  |
| **Test #2** |  |
| **Test #3** |  |

## Functional and Non-Functional Tests: Flashlight

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| --- | --- |
| **Functional Tests** | **Non-Functional Tests** |
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|  |  |