# 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 is works as expected: the bulb should light up after connection properly |
| **Test #2** | The **multimeter** and check the voltage. It should be ~ 1.5V |
| **Test #3** | Take the battery and check it **visually**   * Check **length** * Check its **diameter** * Check if it has a form of **cylinder** * Check for **corrosion**, **leaks**, et. |
| **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 degrees Celsius * High temperature, e.g. 35 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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| **Test #1** | **Continuity Test**: Measure the **resistance** of the light bulb using a multimeter to check if it is intact or if it has a broken filament. |
| **Test #2** | The **multimeter** and check the voltage. It should be ~ 1.5V |
| **Test #3** | Take the battery and check it **visually**   * Check **length** * Check **height** * Check its **diameter** * Check for **physical damage** or obvious **defects**. |
| **Test #4** | Check the **labels** on the battery.   * The denoted size should be “E10”. * The denoted voltage should “1.5V” |
| **Test #5** | Environmental test:   * Low temperature, e.g. 2 degrees Celsius * High temperature, e.g. 35 degree Celsius |
| **Test #6** | Overheating test. |
| **Test #7** | Power Test: **Connect** the light bulb to a **1.5V power source** and observe if it illuminates. |
| **Test #8** | Check if “**+**” and “**-**” are correctly positioned. Use a multimeter |
| **Test #9** | Check with a compatible **flashlight**. This will check two things.   * Whether bulb size matches the flashlight * Whether the bulb work as expected (light the bulb) |
| **Test #10** | Check the **expiration date label**. It should be in the future |

## Unit Testing in the Software World: Age Checker

|  |  |
| --- | --- |
| **Test #1** | AgeChecker(0) 🡪 child |
| **Test #2** | Age Checker(5) -> child |
| **Test #3** | Age Checker(12.99) -> child |
| **Test #4** | AgeChecker(13) 🡪 teenager |
| **Test #5** | AgeChecker(19.5) 🡪 teenager |
| **Test #6** | AgeChecker(20) 🡪 adult |
| **Test #7** | AgeChecker(21) 🡪 adult |
| **Test #8** | AgeChecker(50) 🡪 adult |
| **Test #9** | AgeChecker(64.7) 🡪 adult |
| **Test #10** | AgeChecker(65) 🡪 elder |
| **Test #11** | AgeChecker(75.3) 🡪 elder |
| **Test #12** | AgeChecker(150) 🡪 elder |
| **Test #13** | AgeChecker(150.1) 🡪 error |
| **Test #14** | AgeChecker(-5) 🡪 error |
| **Test #15** | AgeChecker(-1) 🡪 error |
| **Test #16** | AgeChecker(12800) 🡪 Error |
| **Test #17** | AgeChecker(“Peter”) 🡪 Error |

## Unit Testing in the Software World: Income Checker

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| --- | --- |
| **Test #1** | IncomeChecker(0) 🡪 low |
| **Test #2** | IncomeChecker(250) 🡪 low |
| **Test #3** | IncomeChecker(999.99) 🡪 low |
| **Test #4** | AgeChecker(1000) 🡪 mid |
| **Test #5** | AgeChecker(2300.70) 🡪 mid |
| **Test #6** | AgeChecker(2999.99) 🡪 mid |
| **Test #7** | AgeChecker(3000) 🡪 high |
| **Test #8** | AgeChecker(7000) 🡪 high |
| **Test #9** | AgeChecker(-5) 🡪 error |
| **Test #10** | AgeChecker(-1) 🡪 error |
| **Test #11** | AgeChecker(“Peter”) 🡪 error |

## 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** | Implement the following circuit, using the provided components.  But switch the “+” and “-“ of the battery.  A picture containing shape  Description automatically generated  The bulb should light. |
| **Test #5** | Implement the following circuit, using the provided components.  But turn the switch button to 180 degrees.  Diagram  Description automatically generated  Switch on the switch button --> The bulb should light |

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

|  |  |
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| **Test #1** | **Check** if user can browse **ads by categories**. Steps:   1. Choose first category. 2. Check if the ads are from the relevant category. 3. Repeat with other categories   Expect ads from the relevant category. This check if the main section collaborate with category filter section. |
| **Test #2** | **Check** if user can browse **ads by towns**.   1. Choose first town. 2. Check if the ads are from the relevant town. 3. Repeat with other towns.   Expect ads from the relevant town. This check if the main section collaborate with filter town section |
| **Test #3** | **Check** if user can browse **ads by towns and by categories**.   1. Choose first town. 2. Choose first category 3. Check if the ads are from the relevant town. 4. Repeat with other towns and categories.   Expect ads from the relevant town and category. This check if the main section collaborate with both filter section. |
| **Test #4** | Navigation **from Homepage to Login**. The [Login] button should navigate to Login form page. |
| **Test #5** | Navigation **from Login to Homepage**. [Home] button should navigate to Home Page unlogged. The user can`t publish an ads. |
| **Test #6** | Navigation **from Homepage to Register form**. The [Register] button should navigate to Register form page. |
| **Test #7** | **Successful Login**   1. Home page 🡪 Login 2. Provide correct username and password 3. Navigate to User Home Page   The user can publish a new add, to view own published ads and to edit own profile. |
| **Test #8** | **Successful Logout** – after successful login.  Click [Logout] button 🡪 Home Page (proper behavior – unlogged, without options for publish a new add) |
| **Test #9** | **Unsuccessful Login 🡪 need registration**   1. Home page 🡪 Login 2. Provide incorrect username and password 3. Navigate to Registration form.   The user should register to use the app. |

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

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| --- | --- | --- | --- | --- | --- |
| Test | CreditRisk(age: 5, income: 700) 🡪 100%  CreditRisk(age: 6, income: 2000) 🡪 100%  CreditRisk(age: 7, income: 6000) 🡪 100%  CreditRisk(age: 15, income: 700) 🡪 80%  CreditRisk(age: 16, income: 2000) 🡪 72%  CreditRisk(age: 17, income: 6000) 🡪 64%  CreditRisk(age: 21, income: 700) 🡪 55%  CreditRisk(age: 32, income: 2000) 🡪 37%  CreditRisk(age: 43, income: 6000) 🡪 19%  CreditRisk(age: 67, income: 700) 🡪 60%  CreditRisk(age: 78, income: 2000) 🡪 44%  CreditRisk(age: 89, income: 6000) 🡪 28%  Regression test:  CreditRisk(age: 17, income: 0) 🡪 80%  CreditRisk(age: 0, income: 1000) 🡪 1000% | | | | |
|  | child | teenager | adult | elder | negative |
| low | 100% | 80% | 55% | 60% | Error |
| mid | 100% | 72% | 37% | 44% | Error |
| high | 100% | 64% | 19% | 28% | Error |
| negative | Error | Error | Error | Error | Error |

## 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 light 🡪 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 |
| **Test #7** | Operation under high / low temperature |
| **Test #8** | Water resistant |
| **Test #9** |  |
| **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

|  |  |
| --- | --- |
| **Test #1** | Calc(5 + 3) 🡪 8  Test Passed |
|  | Calc(5+ -3) 🡪 2  Test Passed |
|  | Calc(5 - -3) 🡪 8  Test Passed |
|  | Calc(5 - 3) 🡪 2  Test Passed |
|  | Calc(4 / 2) 🡪 2  Test Passed |
|  | Calc(4 \* 2) 🡪 8  Test Passed |
| **Test #2** | Calc(5 + 0) 🡪 5  Test Passed |
|  | Calc(5 - 0) 🡪 5  Test Passed |
|  | Calc(5 \* 0) 🡪 0  Test Passed |
|  | Calc(5 / 0) 🡪 infinity  Test Passed |
| **Test #3** | Calc(Infinity + 1) 🡪 Infinity  Test Passed |
| **Test #4** | Calc(-Infinity + 1) 🡪 -Infinity  Test Passed |
| **Test #5** | Calc(-Infinity + “Pesho”) 🡪 Error  Test Passed |
|  | Calc(+ + +) 🡪 Error  Test Passed |
| **Test #6** | 1e10 |
|  | 10text1 + 3 🡪 13  Test Failed |
|  | Razlika . ,  12,3  12.5 |
|  | Без да слагаме знак |
| **Test #7** | Calc(10000000000000000000000 + 5) 🡪 10000000  Test Failed.  Bug found! |
| **Test #8** | Infinity, pesho, vsqka edna operaciq, golemi chisla – zakraglqne, 70/5.5 |
|  | UX/UI |

## Acceptance Testing in the Real Life: Flashlight

|  |  |
| --- | --- |
| **Test #1** | The customer takes the flashlight, **switch on / off** the light, and assure it works. |
| **Test #2** | The customer checks the flash **illumination**. |
| **Test #3** | The customer checks how easy it is to **replace the batteries**. |
| **Test #4** |  |
| **Test #5** |  |
| **Test #6** |  |

## 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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|  |  |
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