# Homework: Test Levels and Test Types

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

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| **Test Case #1** | Check the battery size (height + diameter). Does it comply with the “AA” size standard? |
| **Test Case #2** | Check the physical condition of the battery: are there any damages? |
| **Test Case #3** | Check the labels on the battery. Are they accurate? |
| **Test Case #4** | Check the battery voltage: measure the voltage using a digital multimeter. |
| **Test Case #5** | Use external electric device and check if it works with the battery. |

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

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| --- | --- |
| **Test #1** | Check the glass: : are there any damages? |
| **Test #2** | Check the metal part (base): are there any damages? |
| **Test #3** | Check the internal lighting mechanism – does it look OK? |
| **Test #4** | Check if the circuit can be closed with a digital multimeter. |
| **Test #5** | Put the light bulb in a E10 socket and check if it fits as expected. |
| **Test #6** | Use external electric device as a test framework and check if it works with the light bulb. |
| **Test #7** | Keep the light bulb on for 24 hours – check temperature and performance. |
| **Test #8** | Switch the light bulb multiple times on and off and monitor performance. |
| **Test #9** | Use a lux meter to measure the light intensity (luminance). |

## Unit Testing in the Software World: Age Checker

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| --- | --- |
| **Test #1** | Test with -5. Expected result: “error” |
| **Test #2** | Test with 0. Expected result: “child” |
| **Test #3** | Test with 5. Expected result: “child” |
| **Test #4** | Test with 13. Expected result: “teenager” |
| **Test #5** | Test with 19.5. Expected result: “teenager” |
| **Test #6** | Test with 20. Expected result: “adult” |
| **Test #7** | Test with 65. Expected result: “elder” |
| **Test #8** | Test with 70.5. Expected result: “elder” |
| **Test #9** | Test with 150. Expected result: “error” |
| **Test #10** | Test with 1000. Expected result: “error” |
| **Test #11** | Test with “ten”. Expected result: “error” |
| **Test #12** | Test with “10e1”. Expected result: “error” > Fail: result = elder |
| **Test #13** | Test with “1e1”. Expected result: “error” > Fail: result = child |

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## Unit Testing in the Software World: Income Checker

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| **Test #1** | Test with -5. Expected result: “error” |
| **Test #2** | Test with 0. Expected result: “low” |
| **Test #3** | Test with 1,000. Expected result: “mid” |
| **Test #4** | Test with 2,300.70. Expected result: “mid” |
| **Test #5** | Test with 2,999. Expected result: “mid” |
| **Test #6** | Test with 3,000. Expected result: “high” |
| **Test #7** | Test with 70,000. Expected result: “high” |
| **Test #8** | Test with 1,000,000. Expected result: “high” |
| **Test #9** | Test with “thousand”. Expected result: “error” |
| **Test #10** | Test with “10e3”. Expected result: “error”. Fail: result = high. |

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

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| **Test #1** | Connect the battery directly to the lightbulb with 1 wire only (one way). Check if it is working. |
| **Test #2** | Connect the battery directly to the lightbulb with 1 wire only (the other way). Check if it is not working. |
| **Test #3** | Connect the battery to the lightbulb with 2 wires (one way). Check if it is working. |
| **Test #4** | Connect the battery to the lightbulb with 2 wires (the other way). Check if it is not working. |
| **Test #5** | Connect the battery to the lightbulb with 3 wires and a switch button with the switch ON. Check if it is working. |
| **Test #6** | Connect the battery to the lightbulb with 3 wires and a switch button with the switch OFF. Check if it is not working. |

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

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| --- | --- |
| **Test #1** | Visit the homepage, browse ads in Cars category. No log in is required. |
| **Test #2** | Visit the homepage, browse ads in Plovdiv category. No log in is required. |
| **Test #3** | Visit the homepage, browse ads in Sofia category, go to page 5 in the results. No log in is required. |
| **Test #4** | Visit the homepage, click the “Register” button. The user should be redirected to the Registration form. |
| **Test #5** | Visit the homepage, click the “Login” button. The user should be redirected to the Login form. |
| **Test #6** | On the Login form, enter correct details and click the Login button. The user should be successfully logged in and redirected to the User Home Page. |
| **Test #7** | On the Login form, enter incorrect details and click the Login button. Error message should appear and the user should be redirected to the Login form again. |
| **Test #8** | On the Login form, click button “Register here”. The user should be redirected to the Registration form. |
| **Test #9** | On the Login form page the user clicks “Register” button (on the left panel) and should be redirected to the Registration form. |
| **Test #10** | On the Login form page the user clicks “Home” button and should be redirected back to the main Home page. |
| **Test #11** | After being logged in, go to “Publish New Ad” and publish your ad. The user should remain logged in. |
| **Test #12** | After successfully publishing an ad, the user should be able to see it in the “My Ads” section. |
| **Test #13** | After being logged in, click the “Logout” button. The user should be redirected to the main Home page (MyAds menu should not be visible). |

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

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| --- | --- | --- | --- | --- | --- |
|  | 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 |

|  |  |
| --- | --- |
| **Test #1** | AgeChecker(14) 🡪 teenager 🡪 **ageRisk = 60%**  IncomeChecker(700) 🡪 low 🡪 **incomeRisk = 50%**  Credit risk = **80%** |
| **Test #2** | AgeChecker(85) 🡪 elder 🡪 ageRisk = 20%  IncomeChecker(1600) 🡪 mid 🡪 incomeRisk = 30%  Credit risk = 44% |
| **Test #3** | AgeChecker(30) 🡪 adult 🡪 **ageRisk = 10%**  IncomeChecker(3500) 🡪 high 🡪 **incomeRisk = 10%**  Credit risk = **19%** |
| **Test #4** | AgeChecker(20) 🡪 adult 🡪 **ageRisk = 10%**  IncomeChecker(-50) 🡪 error 🡪 **incomeRisk = error**  Credit risk = error |
| **Test #5** | AgeChecker(-5) 🡪 error 🡪 **ageRisk = error**  IncomeChecker(-50) 🡪 error 🡪 **incomeRisk = error**  Credit risk = error |
| **Test #6** | AgeChecker(-5) 🡪 error 🡪 **ageRisk = error**  IncomeChecker(900) 🡪 low 🡪 **incomeRisk = 50%**  Credit risk = error |
| **Test #7** | AgeChecker(-5) 🡪 error 🡪 **ageRisk = error**  IncomeChecker(1900) 🡪 mid 🡪 **incomeRisk = 30%**  Credit risk = error |
| **Test #8** | AgeChecker(-5) 🡪 error 🡪 **ageRisk = error**  IncomeChecker(6000) 🡪 high 🡪 **incomeRisk = 10%**  Credit risk = error |
| **Test #9** | AgeChecker(85) 🡪 elder 🡪 **ageRisk = 20%**  IncomeChecker(-50) 🡪 error 🡪 **incomeRisk = error**  Credit risk = error |
| **Test #10** | AgeChecker(85) 🡪 elder 🡪 **ageRisk = 20%**  IncomeChecker(50) 🡪 error 🡪 **incomeRisk = 50%**  Credit risk = **60%** |
| **Test #11** | AgeChecker(85) 🡪 elder 🡪 ageRisk = 20%  IncomeChecker(6000) 🡪 mid 🡪 incomeRisk = 10%  Credit risk = 28% |
| **Test #12** | AgeChecker(30) 🡪 adult 🡪 **ageRisk = 10%**  IncomeChecker(1200) 🡪 mid 🡪 **incomeRisk = 30%**  Credit risk = **37%** |
| **Test #13** | AgeChecker(30) 🡪 adult 🡪 **ageRisk = 10%**  IncomeChecker(900) 🡪 low 🡪 **incomeRisk = 50%**  Credit risk = **55%** |
| **Test #14** | AgeChecker(14) 🡪 teenager 🡪 **ageRisk = 60%**  IncomeChecker(1700) 🡪 mid 🡪 **incomeRisk = 30%**  Credit risk = 72**%** |
| **Test #15** | AgeChecker(14) 🡪 teenager 🡪 **ageRisk = 60%**  IncomeChecker(6000) 🡪 high 🡪 **incomeRisk = 10%**  Credit risk = 64**%** |
| **Test #16** | AgeChecker(14) 🡪 teenager 🡪 **ageRisk = 60%**  IncomeChecker(-50) 🡪 error 🡪 **incomeRisk = error**  Credit risk = error |
| **Test #17** | AgeChecker(2) 🡪 child 🡪 **ageRisk = 100%**  IncomeChecker(-50) 🡪 error 🡪 **incomeRisk = error**  Credit risk = error |
| **Test #18** | AgeChecker(2) 🡪 child 🡪 **ageRisk = 100%**  IncomeChecker(50) 🡪 low 🡪 **incomeRisk = 50%**  Credit risk = 100% |
| **Test #19** | AgeChecker(2) 🡪 child 🡪 **ageRisk = 100%**  IncomeChecker(2500) 🡪 mid 🡪 **incomeRisk = 30%**  Credit risk = 100% |
| **Test #20** | AgeChecker(2) 🡪 child 🡪 **ageRisk = 100%**  IncomeChecker(6000) 🡪 high 🡪 **incomeRisk = 10%**  Credit risk = 100% |

## System Testing in the Real Life: Flashlight

|  |  |
| --- | --- |
| **Test #1** | With turned off flashlight, press the button and the flashlight turns on. |
| **Test #2** | With turned on flashlight, press the button and the flashlight turns off. |
| **Test #3** | Open the flashlight, change the batteries, close the flashlight and turn it on. |
| **Test #4** | Turn the flashlight on. Leave it on for a week. Check if it will turn off. |
| **Test #5** | Open the flashlight, change the lightbulb, close the flashlight and turn it on. |
| **Test #6** | Test the illumination distance. |
| **Test #7** | Perform shock resistance test and check if the flashlight still works properly. |
| **Test #8** | Use the flashlight in hot temperature and monitor performance. |
| **Test #9** | Use the flashlight in cold temperature and monitor performance. |

## System Testing in the Real Life: Digital Scale

|  |  |
| --- | --- |
| **Test #1** | With turned off scale display, press the button/switch on area/ and scale turns on. |
| **Test #2** | With turned on scale display, press the button/switch on area/ and scale turns off. |
| **Test #3** | Open the scale, change the batteries, close the scale and turn it on. |
| **Test #4** | Turn the scale on. Leave it on for a week. Check if it will turn off. |
| **Test #5** | Turn the scale on and weigh yourself. See the result. |
| **Test #6** | Set the results in lb. instead of kg. Weigh yourself and verify if the converted result is correct. |
| **Test #7** | While the scale is still on, weigh yourself few more times one after another and check the consistency of the result. |

## System Testing in the Software World: Number Calculator

|  |  |
| --- | --- |
| **Test #1** | Test 0/10 |
| **Test #2** | Test 10/0 |
| **Test #3** | Test 0/0 |
| **Test #4** | Test 5/3 |
| **Test #5** | Test 5.5/ 1.1 |
| **Test #6** | Test 5/… |
| **Test #7** | Test …/5 |
| **Test #8** | Test …/… |
| **Test #9** | Test 5 + 3 |
| **Test #10** | Test -5 + 3 |
| **Test #11** | Test -5 - 3 |
| **Test #12** | Test 5 - 3 |
| **Test #13** | Test 5 \* 3 |
| **Test #14** | Test 5 \* -3 |
| **Test #15** | Test 5 \* 3.14 |
| **Test #16** | Test 5 \* 3,14. Result: Fail (only the full num (int) is multiplied). |
| **Test #17** | Test 5 + 3.4 |
| **Test #18** | Test 1000000 / 10000000000000000000000000000000000000000000000. Result = 1e-40 |
| **Test #19** | Test “5+5” + 20 |

## Acceptance Testing in the Real Life: Flashlight

|  |  |
| --- | --- |
| **Test #1** | With turned off flashlight, press the button 3 times consecutively. The flashlight should turn on. |
| **Test #2** | Open the battery holder, check the type of batteries without taking them out. |
| **Test #3** | Turn the flashlight on, drop it and check if it remains on. |

## Acceptance Testing in the Real Life: Digital Scale

|  |  |
| --- | --- |
| **Test #1** | Turn the scale on and weigh yourself. See the result. |
| **Test #2** | Set the results in lb. instead of kg. Weigh yourself and verify if the converted result is correct. |
| **Test #3** | While the scale is still on, weigh yourself few more times one after another and check the consistency of the result. |
| **Test #4** | Put the scale on an uneven surface and try to turn it on and use it for measuring. |

## Acceptance Testing in the Software World: Number Calculator

|  |  |
| --- | --- |
| **Test #1** | Test 5 \* -3 |
| **Test #2** | Test 5 \* 3.14 |
| **Test #3** | Test 5 \* 3,14. Result: Fail (only the full num (int) is multiplied). |
| **Test #4** | Test 5 + 3.4 |
| **Test #5** | Test 5 + … |
| **Test #6** | Test 0 / 0 |
| **Test #7** | Test 5 + 5 |
| **Test #8** | Test 1000000 / 10000000000000000000000000000000000000000000000. Result = 1e-40 |
| **Test #9** | Test five + two |
| **Test #10** | Test 5 … 2 |
| **Test #11** | Test \_5 + 2 |
| **Test #12** | Test “5\*5” + 2 |

## Functional and Non-Functional Tests: Flashlight

System testing:

|  |  |
| --- | --- |
| **Functional Tests** | **Non-Functional Tests** |
| With turned off flashlight, press the button and the flashlight turns on. | Test the illumination distance. |
| With turned on flashlight, press the button and the flashlight turns off. | Perform shock resistance test and check if the flashlight still works properly. |
| Open the flashlight, change the batteries, close the flashlight and turn it on. | Use the flashlight in hot temperature and monitor performance. |
| Turn the flashlight on. Leave it on for a week. Check if it will turn off. | Use the flashlight in cold temperature and monitor performance. |
| Open the flashlight, change the lightbulb, close the flashlight and turn it on. |  |

Acceptance testing:

|  |  |
| --- | --- |
| **Functional Tests** | **Non-Functional Tests** |
| With turned off flashlight, press the button 3 times consecutively. The flashlight should turn on. | Turn the flashlight on, drop it and check if it remains on. |
| Open the battery holder, check the type of batteries without taking them out. |  |