# Homework: Software Quality Assurance Introduction

## Think Testing: Gas Station

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| **Problem #1** | There is a problem with battery |
| **Problem #2** | There is a problem with the car key |
| **Problem #3** | The fuel is mistaken |
| **Problem #4** | Maybe is the wrong car |
| **Problem #5** | Immobilizer problem |

## Think Testing: Tooth Brushing

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| **Step #1** | Take the brush |
| **Step #2** | Put water on the tooth brush |
| **Step #3** | Take the lead off |
| **Step #4** | Put the small amount of toothpaste on the tooth brush and water the toothbrush |
| **Step #5** | Start the brushing  - brush from the left to the right  - brush from top to bottom  Brush for at least 2 minutes |
| **Step #6** | Clean the mouth with water  Clean the tooth brush with water |

## Think Testing: 5 Kg Bag

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| **Test #1** | **Look at the bag**  **Steps:** Check if the bag  -is from paper;  -has handles  -has a bottom |
| **Test #2** | **Put some groceries**  **Steps:** Take the bag and fill in with some groceries  **Controls:** Lift off the bag. Check if the |
| **Test #3** | **Check with 5 kg groceries**  **Steps:** Take the bag and fill in with 5 kg groceries  **Controls:**  -Lift off the bag and check if the handlers are fine |
| **Test #4** | **Stress test with 8 kg of groceries**  **Steps:** Take the bag and fill in with 5 kg groceries  **Controls:**  -Lift off the bag and check if the handlers are fine |
| **Test #4** | **Test for unpleasant smell**  **Steps:** Open the bag and smell it inside  **Controls: The bag should not have unpleasant smell** |
| **Test #5** | **Test for strength after drop out**  **Steps:** Take the bag. Fill it with a few kilograms of vegetables and lift it up to one meter. Drop the bag on a flat surface and check it.  Controls: The bag should be intact and the the vegetables should be not broken. |

## Login Form UX Problems

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| **Problem #1** | The places of username and password fields should be switched |
| **Problem #2** | The URL address is not correct: http/your-wonderful-shop.com should be and http/wonderful-shop.com and /add-to-basket should be /log-in |
| **Problem #3** | The Log out field should be taken out |
| **Problem #4** | The Lost your password? field is nor correct |
| **Problem #5** | There is no title for the form. On the top it should have title Log-in or something else |
| **Problem #6** | There is not Register field |

## Weather Forecast Bug

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| **Mistake** | The developer made the following mistake: There is a lack of conversion of temperatures and they are displayed in Fahrenheit instead of Celsius and he/she did not consider the fact that the temperature come in °F and should be converted in Celsius  **Example:**  min temperature 70 degrees; max temperature 95 degrees;  **Should be:**  min temperature 21.1 degrees; max temperature 35 degrees; |
| **Bug (location)** | The bug in the code should be in the code/ function, responsible for the conversion of temperature from degrees in Fahrenheit to degrees in Celsius. The temperature should be displayed in Celsius degrees - °C |
| **Failure (symptoms)** | When the buggy code goes in production, it fails as follows: The temperature is displayed in Fahrenheit - °F degrees instead of Celsius degrees - °C. |

## Age Checking Machine

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| There is a problem with the logic in respect to the fact that the machine logic will fail when the person age is 18 years. It will display “invalid age. Please try again”.  The problem could be fix as follows:  If **age>=18**, then print “Welcome to our bar. Enjoy!”  Another problem is related to the fact that the machine could have a problem reading the card. So, there should be the following logic:  If **card/age cannot be read,** then print “Card/age cannot be read”. The door stays closed. |

## Testing an Electric Water Kettle

### Test Scenario #1: Boil Water

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| Test case #1 | **Boil one liter of water 🡪 success** |
| Description | Pour 1 liter of water, start the kettle and wait until the water gets hot. |
| Steps | 1. Fill 1 liter of cold water in the kettle and close the boiler lid. 2. Plug the power base in the electrical network. 3. Plug the boiler into the power base. 4. Switch on the kettle. 5. Wait until the water gets hot and the kettle automatically switches off (2-3 minutes). If the boiling is not complete in four minutes, switch the boiler off and report failure test. |
| Expected results | The boiling process should complete in less than 4 minutes.  The water should get hot.  The kettle should automatically power off when the water gets too hot.  The kettle lid should stay closed. |
| Test case #2 | **Boil an empty kettle 🡪 fail** |
| Description | Try to boil an empty kettle (no water inside) and make sure the boiling stops (automatically switches off) almost immediately after starting. |
| Steps | 1. Take on empty kettle (pour out any water in) and close the boiler lid. 2. Plug the power base into the electrical network. 3. Plug the boiler into the power base. 4. Switch on the kettle. 5. Wait and see if the kettle automatically switches off after 0.5-2 seconds. If the kettle did not switch off automatically off report failure test. |
| Expected results | The process should complete in less than 2 seconds.  The kettle should automatically switch off almost immediately after the start.  The kettle lid should stay closed.  The kettle should be not hot. |
| Test case #3 | **Boil a kettle with 150 ml of water🡪 fail** |
| Description | Try to boil a kettle filled with 150 ml of water and make sure the boiling stops (automatically switches off) almost immediately after starting. |
| Steps | 1.Take on empty kettle, fill in 150 ml of water and close the boiler lid.  2. Plug the power base into the electrical network.  3. Plug the boiler into the power base.  4.Switch on the kettle.  5.Wait and see if the kettle automatically switches off after 0.5-2 seconds. If the kettle did not switch off automatically off report failure test. |
| Expected results | The process should complete in less than 2 seconds.  The kettle should automatically switch off almost immediately after the start.  The kettle lid should stay closed.  The kettle should be not hot. |

### Test Scenario #2: Feel and Check/See

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| Test case #1 | **Check for the kettle and base to match** |
| Description | Check if the kettle can be correctly connected to the base |
| Steps | 1. Fill 1 liter of cold water in the kettle and close the boiler lid.  2. Plug the power base in the electrical network.  3. Try to connect the boiler into the power base. |
| Expected results | The boiler should be correctly connected to the power base.  The boiling should start immediately after connection. |

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| Test case #1 | **Check for the capacity of the kettle** |
| Description | Check if the kettle capacity is 1 litter |
| Steps | 1. Measure exactly 1 liter of cold water in the specialized form/can/device.  2. Pour the water into the boiler.  3. Check and see if there is any water spill outside the boiler. |
| Expected results | The boiler be fill in correctly into the top.  There should be no any water spill outside the boiler |

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| Test case #2 | **Check for the power consumption of the kettle** |
| Description | **Check if the kettle power consumption is around 1 500 Watts** |
| Steps | 1. Use any smart plug in devices or wattmeter to measure the consumption 2. Plug the kettle into the smart plug in or wattmeter; 3. Start the kettle; 4. Measure the consumption; 5. Measure the consumption when the kettle is off. |
| Expected results | The results should be:   * 0 watts if the kettle is off; * Between 1 400 – 1 600 watts if the kettle is on |

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| Test case #1 | **Check if the water temperature is 100 degrees Celsius** |
| Description | Check if temperature of the boiling water is 100 degrees |
| Steps | 1.Fill 1 liter of cold water in the kettle and close the boiler lid.  2.Plug the power base in the electrical network.  3.Plug the boiler into the power base.  4.Switch on the kettle.  5.Wait until the water gets hot and the kettle automatically switches off (2-3 minutes).  6. Measure the temperature of the water. |
| Expected results | The temperature of the water should be close to 100 degrees Celsius. If is less report the failure test. |

### Test Scenario #3: Safety Tests

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| Test case #1 | **Check for electrical power/electricity on the outside surface of the boiler** |
| Description | Check if there is any electricity on the boiler |
| Steps | 1. Fill the boiler with cold water. 2. Plug the power base in the electrical network. 3. Plug the kettle into the power base. 4. Switch on the kettle. 5. Wait and check with an appropriate device if there is any electrical power on the surface of the boiler. |
| Expected results | The water should get hot.  There should be no any electrical power on the surface |

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| Test case #2 | **Check if the handler and the switch button are not hot after boiling** |
| Description | Check if the kettle handler or the button are not getting hot after boiling |
| Steps | 1. Fill the kettle with one liter of cold water and close the lid  2. Plug the kettle into the power base.  3. Plug the power base into the electrical network.  4. Switch on the kettle.  5. Wait and check if the kettle handler or the switch on/off button are not getting hotter |
| Expected results | The boiling process should complete according to the standard procedure and finish after 2-3 minutes.  The kettle handler and the power button should be not getting hotter. |

### Test Scenario #4: Lid Test

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| Test case | **Open the lid** | |
| Description | | Check if the lid can be open correctly |
| Steps | | 1. Close the lid on the kettle mechanically with hand.  2.Push the open button to open the lid.  3. Check to see if the lid is open. |
| Expected results | | The kettle lid should be open after push in the mechanical button. |

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| Test case | **Close the lid** |
| Description | Check if the lid can be close correctly |
| Steps | 1. Fill 1 liter of cold water in the kettle.  2. Close the lid mechanically.  3. Plug the power base in the electrical network.  4. Connect the boiler into the power base and wait to see if the lid is open during the boiling |
| Expected results | The boiler should be correctly connected to the power base  The boiling should start immediately after connection |

## Testing a Coffee Machine

### Test Scenario #1: Brew Coffee

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| Test case#1 | **Brew a small coffee 🡪 success** |
| Description | Start the coffee machine, put water, put ground coffee in the outlet, and brew a cup of small coffee. |
| Steps | 1. Power on the machine. 2. Put ground coffee blend in the coffee outlet. 3. Fill the water container to its max level. 4. Wait until the "hot water" indicator lights up. 5. Put an empty coffee cup under the coffee outlet. 6. Press the "brew small coffee" button. 7. Wait until the brew process finishes. |
| Expected results | The brew process should complete in less than 50 seconds.  The coffee cup should hold a hot small coffee (60 ml). If the coffee is more than 70 ml or less than 50 ml, report failure test.  The machine should stay powered on.  The "hot water" indicator light could be on or off (both states are correct).  The machine should have enough water in its water container (it should not beep). |

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| Test case #2 | **Brew a coffee long coffee 🡪 success** |
| Description | Start the coffee machine, put water, put ground coffee in the outlet, and brew a cup of long coffee |
| Steps | 1. Power on the machine. 2. Put ground coffee blend in the coffee outlet. 3. Fill the water container to its max level. 4. Wait until the "hot water" indicator lights up. 5. Put an empty coffee cup under the coffee outlet. 6. Press the "brew small coffee" button. 7. Wait until the brew process finishes. |
| Expected results | The brew process should complete in less than 50 seconds.  The coffee cup should hold a hot long coffee (120 ml). If the coffee is less than 110 ml or more than 130 ml report failure test.  The machine should stay powered on.  The "hot water" indicator light could be on or off (both states are correct). |

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| Test case #3 | **Brew a coffee with no water 🡪 fail** |
| Description | Start the coffee machine, empty the water container, try to brew a cup of coffee, expect the coffee machine to start beeping to indicate that the water is not enough. |
| Steps | 1. Power on the machine. 2. Empty the water container. If there is any water poor it out. 3. Put ground coffee in the coffee outlet. 4. Press the “brew small coffee” button. 5. Wait until the machine starts beeping. |
| Expected results | The brew process should not start.  After pressing of “brew small coffee button” the machine should start beeping indicating that there is not water.  The machine should stay powered on.  The machine should stop beeping when a water is poured into the water container |

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| Test case #4 | **Brew a coffee with not enough water 🡪 fail** |
| Description | Start the coffee machine, put water below the min. mark on water container, try to brew a cup of coffee, expect the coffee machine to start beeping to indicate that the water is not enough. |
| Steps | 1. Power on the machine. 2. Pour some water into the water container. The water should be below the min. water mark. 3. Put ground coffee in the coffee outlet. 4. Press the “brew small coffee” button. 5. Wait until the machine starts beeping. |
| Expected results | The brew process should not start.  After pressing of “brew small coffee button” the machine should start beeping indicating that there is not water.  The machine should stay powered on.  The machine should stop beeping when a water is poured into the water container |
| Test case #5 | **Brew a coffee with pressing any of the “brew” buttons during brew operation 🡪 success** |
| Description | Start the coffee machine, put water, put ground coffee in the outlet, and brew a cup of small coffee. |
| Steps | 1. Power on the machine. 2. Put ground coffee blend in the coffee outlet. 3. Fill the water container to its max level. 4. Wait until the "hot water" indicator lights up. 5. Put an empty coffee cup under the coffee outlet. 6. Press the "brew small coffee" button. 7. Wait a few seconds and press any of the “brew small or large coffee” buttons. 8. The brew process should stop immediately and the coffee is unfinished. |
| Expected results | The brew process should start.  After pressing any of the “brew small or large coffee” buttons the process should stop immediately.  The machine should stay powered on. |

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| Test case #6 | **Brew a coffee and empty the water container 🡪 fail** |
| Description | Start the coffee machine, put ground coffee in the outlet, and brew a cup of large coffee. |
| Steps | 1. Power on the machine. 2. Put ground coffee blend in the coffee outlet. 3. Wait until the "hot water" indicator lights up. 4. Put an empty coffee cup under the coffee outlet. 5. Press the "brew large coffee" button. 6. Wait until the brew process finishes. 7. If the water container is empty the machine starts beeping |
| Expected results | The brew process should start.  The brew process should complete in less than 50 seconds.  The coffee cup should hold a hot long coffee (120 ml).  It the water container is empty the machine should starts beeping.  The machine should stay powered on. |

### Test Scenario #2: Feel and Check

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| Test case #1 | **Check the Power ON button of the machine** |
| Description | Check if the Power ON button of the machine is working correctly |
| Steps | 1. Connect the machine into the electrical circuits 2. Press the power button on. 3. The heating of the water should start automatically. 4. Wait and see is the water is heated and the hot water indicator is turned on |
| Expected results | The machine should be powered on.  The water should start to be heated automatically.  The hot water indicator light should be turn on after a few minutes |

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| Test case #2 | **Check the Power OFF button of the machine** |
| Description | Check if the Power off button of the machine is working correctly |
| Steps | 1. Connect the machine into the electrical circuits 2. Press the power button on. 3. The heating of the water should start automatically. 4. Wait and see is the water is heated and the hot water indicator is turned on. 5. Press the Power OFF button of the machine. 6. Wait and see if the water is still hot. |
| Expected results | The machine should be powered on.  The water should start to be heated automatically.  The hot water indicator light should be turn on after a few minutes  After pressing the Power OFF button the machine should stop and the hot water should become cold. |

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| Test case #3 | **Check if the machine is working correctly without coffee** |
| Description | Check if the machine is working correctly without the coffee in the coffee outlet |
| Steps | 1. Power on the machine. 2. Fill the water container to its max level. 3. Wait until the "hot water" indicator lights up. 4. Put an empty coffee cup under the coffee outlet. 5. Press the "brew small coffee" button. 6. Wait until the “brew” process finishes. |
| Expected results | The process should complete in less than 50 seconds.  The machine should work without coffee in the coffee outlet  The "hot water" indicator light could be on or off (both states are correct).  The machine should stay powered on. |

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| Test case #4 | **Check if the machine is working correctly with tea or something else put in the coffee outlet** |
| Description | Check if the machine is working correctly without the coffee in the coffee outlet |
| Steps | 1. Power on the machine. 2. Fill the water container to its max level. 3. Put tea blend or something else in the coffee outlet. 4. Wait until the "hot water" indicator lights up. 5. Put an empty coffee cup under the coffee outlet. 6. Press the "brew small coffee" button. 7. Wait until the “brew” process finishes. |
| Expected results | The process should complete in less than 50 seconds.  The machine should work correctly with tea instead of coffee in the coffee outlet  The "hot water" indicator light could be on or off (both states are correct).  The machine should stay powered on. |

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| Test case #5 | **Check if the coffee outlet can be correctly attached to the coffee machine** |
| Description | Check if the coffee outlet can be correctly attached to the coffee machine |
| Steps | 1. Power on the machine. 2. Fill the water container to its max level. 3. Put coffee blend in the coffee outlet. 4. Wait until the "hot water" indicator lights up. 5. Try to attach the coffee outlet to the coffee machine 6. The outlet should be attached easily without any problem |
| Expected results | If the outlet can not be attached easily and there is a problem when we try to attached, the brew process should not work correctly. |

### Test Scenario #3: Safety Tests

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| Test case #1 | **Check for electrical power/electricity on the outside surface of the coffee machine** |
| Description | Check if there is any electricity on the surface of the coffee machine |
| Steps | 1. Power on the machine. 2. Put ground coffee blend in the coffee outlet. 3. Fill the water container to its max level. 4. Wait until the "hot water" indicator lights up. 5. Put an empty coffee cup under the coffee outlet. 6. Press the "brew small coffee" button. 7. Wait until the brew process finishes and check with an appropriate device if there is any electrical power on the surface of the machine |
| Expected results | The brew process should start.  The brew process should complete in less than 50 seconds.  There should be no any electrical power on the surface of the machine. |

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| Test case #2 | **Check if the machine will work if it is powered with the wrong voltage** |
| Description | Check if the machine will work properly if its powered with the wrong voltage |
| Steps | 1. Power on the machine with a voltage which is +/-10% of 220V. 2. Put ground coffee blend in the coffee outlet. 3. Fill the water container to its max level. 4. Wait until the "hot water" indicator lights up. 5. Put an empty coffee cup under the coffee outlet. 6. Press the "brew small coffee" button. 7. Wait until the brew process finishes and check to see if the coffee machine is working correctly and the produced coffee is fine. |
| Expected results | The brew process should start.  The brew process should complete in less than 50 seconds.  There should be no problems in the brew process. |