**Restaurant Automation Software**

*Logan Connolly, Abel Briggs, Lizkebe Manjuk*

1. **Introduction**

Our aim is to create a software system that will allow restaurants to better take customer orders, automate taking orders, handle payment automatically, and assist employees on what table each order should go to.

1. **Requirements**

* 1. **Functional Requirements**

IN-FN-02: The system shall take in orders (food and drink).

IN-FN-03: The system shall read in payment via card, Near Field Communication (NFC), and cash.

IN-FN-04: The system shall allow chefs to mark orders as complete.

OUT-FN-10: The system shall display all available food (the menu) to the customer.

OUT-FN-11: The system shall display each order to the chefs.

OUT-FN-13: The system shall display the total price of the order.

OUT-FN-14: The system shall print a receipt when the order is processed.

OUT-FN-16: The system shall display a confirmation message to confirm the order when the customer attempts to check out.

PRO-FN-19: The system shall calculate sales tax.

PRO-FN-20: The system shall add sales tax to the bill.

PRO-FN-21: The system shall calculate the bill based on items ordered.

PRO-FN-22: The system shall keep track of how many orders go through in a day.

PRO-FN-23: The system shall keep track of analytics on how much each item is ordered.

PRO-FN-24: The system shall generate a report of analytics of order statistics.

PRO-FN-25: The system shall generate and maintain order numbers.

* 1. **Non-Functional Requirements**

IN-NF-05: The system must take in input through touch screen devices that are able to run Java Virtual Machine.

IN-NF-06: The system must be able to read both chip and swipe cards.

IN-NF-07: The system must be equipped with NFC chips to be able to read data from NFC payments.

IN-NF-08: The system must be equipped with a cash terminal.

IN-NF-09: The system must respond to user input within 500 ms.

OUT-NF-17: The system must be equipped with a printer to print receipts.

OUT-NF-18: The system must be network equipped to display the order to the chef.

PRO-NF-26: The system shall be implemented using the Java Virtual Machine (JVM).

PRO-NF-27: The system shall run on any OS that is able to run the JVM (Windows, Linux, etc.).

PRO-NF-28: The system must have an administrative control panel.

PRO-NF-29: The system shall not store credit/debit card information.

PRO-NF-30: The system shall display the orders to the chefs by communicating using the local area network (LAN).

1. **Test Design**

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| **Test Case ID** | ***T01*** |
| Purpose | To make sure the order is read in correctly |
| Pre-conditions |  |
| Inputs | Press a menu option |
| Expected Outputs | Pressed menu option appears in the order |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T02*** |
| Purpose | To see if the system recognizes cash payment |
| Pre-conditions | Order is created |
| Inputs | Cash |
| Expected Outputs | System displays message that payment has been accepted, dispenses change if necessary |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T03*** |
| Purpose | To see if the system recognizes NFC payment |
| Pre-conditions | Order is created |
| Inputs | Data from NFC capable device |
| Expected Outputs | System displays message that payment has been accepted |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T04*** |
| Purpose | To see if the system recognizes card (credit or debit) payment |
| Pre-conditions | Order is created |
| Inputs | Card chip or swipe |
| Expected Outputs | System displays message that payment has been accepted |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T05*** |
| Purpose | To see if the orders can be marked as complete |
| Pre-conditions | Order is finished and paid |
| Inputs | Complete order button is pressed |
| Expected Outputs | Order is removed from list of orders |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T06*** |
| Purpose | To display the menu to the customer |
| Pre-conditions |  |
| Inputs |  |
| Expected Outputs | The menu items are visible |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T07*** |
| Purpose | To display all finished and paid for orders to the chef |
| Pre-conditions | Order must be finished and paid for |
| Inputs |  |
| Expected Outputs | List of orders is visible |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T08*** |
| Purpose | To test if the price of the order is being calculated correctly |
| Pre-conditions | Order has one or more items in it |
| Inputs |  |
| Expected Outputs | Total price of order including tax |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T09*** |
| Purpose | To see if a receipt is printed when an order is finished and paid for |
| Pre-conditions | Order is finished and paid for |
| Inputs |  |
| Expected Outputs | Receipt is printed |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T10*** |
| Purpose | To test if the confirmation message appears when a customer attempts to finish and pay |
| Pre-conditions | Order is finished and customer is ready to pay |
| Inputs | Finish and pay button is pressed |
| Expected Outputs | Confirmation box appears asking if the customer is sure their order is complete |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T11*** |
| Purpose | To test if the tax is being calculated correctly |
| Pre-conditions | Order is finished and total without tax is calculated |
| Inputs |  |
| Expected Outputs |  |
| Post-conditions | Tax is calculated for that order based on order subtotal |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T12*** |
| Purpose | To see how many orders are processed in a day |
| Pre-conditions |  |
| Inputs | A number of orders throughout the day |
| Expected Outputs | A count of the number of orders processed in that day |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T13*** |
| Purpose | To check if each item on the menu correctly tracks when it is ordered |
| Pre-conditions |  |
| Inputs | Item is added to an order and is processed with that item |
| Expected Outputs |  |
| Post-conditions | The number associated with that item’s order amount increases |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T14*** |
| Purpose | To check if order numbers are assigned to orders correctly |
| Pre-conditions | Order is created |
| Inputs |  |
| Expected Outputs | Unique order number |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T15*** |
| Purpose | To see if the system takes input from a touchscreen device |
| Pre-conditions | System is loaded onto touchscreen |
| Inputs | Screen is touched |
| Expected Outputs | Appropriate action for the button or area pressed |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T16*** |
| Purpose | To check if the data is being read correctly from the chip part of the card |
| Pre-conditions | Order is finished and ready to be paid for |
| Inputs | Payment option CARD is chosen |
| Expected Outputs |  |
| Post-conditions | Information from card is read and payment is charged |
| Design Technique | *Equivalence class* |

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| **Test Case ID** | ***T17*** |
| Purpose | To check if the data is being read correctly from the magnetic strip of a card |
| Pre-conditions | Order is finished and ready to be paid for |
| Inputs | Payment option CARD is chosen |
| Expected Outputs |  |
| Post-conditions | Information from card is read and payment is charged |
| Design Technique | *Equivalence class* |

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| **Test Case ID** | ***T18*** |
| Purpose | To test if the system responds to user input within 500 ms |
| Pre-conditions |  |
| Inputs | Any button is pressed |
| Expected Outputs | Respective output to the button pressed |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T19*** |
| Purpose | To see if the software runs on OS’s that don’t run JVM |
| Pre-conditions | System is attempted to open |
| Inputs |  |
| Expected Outputs | System is unable to open |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T20*** |
| Purpose | To test if the if the administrative control panel opens |
| Pre-conditions |  |
| Inputs | The Administrative Control Panel button is pressed |
| Expected Outputs | Administrative Control Panel opens |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T21*** |
| Purpose | To check that card information is not stored |
| Pre-conditions | Card is read by the system |
| Inputs |  |
| Expected Outputs |  |
| Post-conditions | Card information is removed from the system after it has outlived its use |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T22*** |
| Purpose | To check if the order number exceeds its expected boundary |
| Pre-conditions | Order number has reached boundary limit |
| Inputs | New order is created |
| Expected Outputs |  |
| Post-conditions | Order number is reset to the lower boundary |
| Design Technique | *Boundary analysis* |

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| **Test Case ID** | ***T23*** |
| Purpose | To check if the order number is not reset below the lower boundary |
| Pre-conditions | Order numbers in reset |
| Inputs | New order is created |
| Expected Outputs |  |
| Post-conditions | Order number starts at the lower boundary |
| Design Technique | *Boundary analysis* |

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| **Test Case ID** | ***T24*** |
| Purpose | To check if the food type button brings up a menu containing the appropriate food type |
| Pre-conditions |  |
| Inputs | Food type button is pressed |
| Expected Outputs | Respective food type menu is opened |
| Post-conditions |  |
| Design Technique | *Equivalence class* |

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| **Test Case ID** | ***T25*** |
| Purpose | To test if a report of the menu items analysis is generated upon request |
| Pre-conditions |  |
| Inputs | Button to generate report is pressed |
| Expected Outputs | Report is opened containing the statistics of each menu item |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T26*** |
| Purpose | To test if the orders are given the correct order numbers |
| Pre-conditions | Orders are finished and paid for |
| Inputs |  |
| Expected Outputs | Chef display has the orders assigned with the right order number |
| Post-conditions |  |
| Design Technique | *System requirements* |

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| **Test Case ID** | ***T27*** |
| Purpose | To check if the system calculates the correct amount of change |
| Pre-conditions |  |
| Inputs | Cash payment |
| Expected Outputs |  |
| Post-conditions | Change is calculated based on cash inserted and dispenses correct change |
| Design Technique | *System requirements* |

1. **Traceability**

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| Test Case Number | List of the Requirements tested |
| T01 | IN-FN-02 |
| T02 | IN-FN-03 |
| T03 | IN-FN-03 |
| T04 | IN-FN-03 |
| T05 | IN-FN-04 |
| T06 | OUT-FN-10 |
| T07 | OUT-FN-11 |
| T08 | OUT-FN-13 |
| T09 | OUT-FN-14 |
| T10 | OUT-FN-16 |
| T11 | PRO-FN-19 |
| T12 | PRO-FN-22 |
| T13 | PRO-FN-23 |
| T14 | PRO-FN-25 |
| T15 | IN-NF-05 |
| T16 | IN-NF-06 |
| T17 | IN-NF-06 |
| T18 | IN-NF-09 |
| T19 | PRO-NF-27 |
| T20 | PRO-NF-28 |
| T21 | PRO-NF-29 |
| T22 | PRO-FN-25 |
| T23 | PRO-FN-25 |
| T24 | OUT-FN-10 |
| T25 | PRO-FN-24 |
| T26 | PRO-FN-25 |
| T27 | IN-FN-08 |

1. **Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Action** | **Who Reviewed** | **Comments** |
| 12/4 | Created | LAL |  |
| 12/4 | Reviewed | Logan |  |
| 21/4 | Revised | LAL |  |
| 12/4 | Hand in | LAL |  |

1. **Glossary**

1. **Reference**