**Use cases for RMOS and RCM Project**

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**Use cases for RMOS:**

1. Log in the RMOS system.
2. Add and activate an RCM.
3. Remove a machine from the group.
4. Keep track of the status of each individual RCM.
5. Update the capabilities of the RCMs.
6. Get the location of recycling station and ID of the machine that was used the most (in the last n days)
7. Display number of times the RCM was emptied in a specific duration.
8. Display other usage statistical information for each RCM in the RCM group.

**Use case 1:**

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| **Use-Case: (Goal):** Log in the RMOS system.  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants to log in the RMOS system with his user name.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Administrator enters the user name, and clicks on “Login” button. | **2.** User name OK. Displays a dropdown list of RCMs, and a list of operations. |
| **Alternative Courses:** | |
| **Line 2:** Display “User name is not correct. Please enter again.” | |

**Use case 2:**

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| **Use-Case: (Goal):** Add and activate an RCM.  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants to add and activate a recycling station to the group to be monitored.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to “Login” use case. Selects the option “Active a new machine”. | **2.** Prompts for machine ID and machine location. |
| **3.** Enters the machine ID and machine location, and clicks on the “Activate” button. | **4.** Displays “A new machine was activated successfully”. |
| **Alternative Courses:** | |
| **Line 2:** If the total number of RCM reaches the limit of what a RMOS can monitor, displays an error message “Exceeding the limit of number of machine that can be monitored by RMOS. Please add to other RMOS”.  **Line 4:** If the entered ID and location matches the info of one of existing RCMs in the system, displays an error message “The ID and location has already existed in the system”. | |

**Use case 3:**

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| **Use-Case: (Goal):** Remove the machine from the group.  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants to remove the machine from the RMOS.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to “Login” use case. Selects a RCM and an option “Remove a machine”. | **2.** Displays “A machine was removed successfully”. |
| **Alternative Courses:** | |
| **Line 2:** If there are no machines in the system, displays an error message “There are no machines in the system”. | |

**Use case 4:**

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| **Use-Case: (Goal):** Keep track of the status of each individual RCM.  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants to check the operational status of each machine, current weight of recycled items, amount of money, number of items or time last emptied.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to “Login” use case. Selects one RCM or “All RCMs”, and then selects an option:   * “Check the operational status” or * “Check current weight” or * “Check amount of money” or * “Show number of items in a month” or * “Check time last emptied” | **2.** Displays:   * The operational status of each machine or * Current (and available) weight of an RCM or * Amount of money in this RCM or * Number of items in the RCM(s) * Time last emptied. |
| **Alternative Courses:** | |
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**Use case 5:**

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| **Use-Case: (Goal):** Update the capabilities of the RCMs.  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants to change/add new types of recyclable items or changes the price of an item.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to “Login” use case. Selects the option “Update the capabilities of the RCMs”. | **2.** Displays the list of item types (beside each type, there is an option: “Change” ). At the bottom of types, there is an option “Add a new type”. |
| **3.** Selects “Change” or “Add a new type”. | **4.** Prompts for item type and price paid for it by weight. |
| **5.** Enters item type and (or) price paid for it by weight, and clicks on “Update” button. | **6.** Displays “Update successfully”. |
| **Alternative Courses:** | |
| **Line 6:**   * If the entered item type matches one of the existing item types in the system, displays an error message “The item type already exists in the system”. * If the entered price is not number, or null, displays an error message “The amount entered is invalid. Please enter again”. | |

**Use case 6:**

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| **Use-Case: (Goal):** Get the location of recycling station and ID of the machine that was used the most (in the last n days)  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants to get the location of recycling station and ID of the machine that was used the most (in the last n days)  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to “Login” use case. Selects the option “Show the RCM used most frequently in the last n days”. | **2.** Prompted for a specific n (days). |
| **3.** Enters a specific n, then clicks on “Show” button. | **4.** Displays the location of recycling station and ID of the machine that was used the most in the last n days. |
| **Alternative Courses:** | |
| **Line 4:** If entered n is not an integer, displays “Invalid input. Please enter only integer.” | |

**Use case 7:**

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| **Use-Case: (Goal):** Display the number of times a RCM was emptied in a specific duration.  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants know the number of times a RCM was emptied in a specific duration (in number of hours).  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to “Login” use case. Selects one RCM or “All RCMs”, and then selects the option “Display number of times the RCM was emptied in n hours”. | **2.** Prompted for a specific n (hours). |
| **3.** Enters a specific n, then clicks on “Show” button. | **4.** Displays the number of times a RCM was emptied in n hours. |
| **Alternative Courses:** | |
| **Line 4:** If entered n is not an integer, displays “Invalid input. Please enter only integer.” | |

**Use case 8:**

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| **Use-Case: (Goal):** Display other usage statistical information for each RCM in the RCM group.  **Actors:** Administrator  **Type:** Primary, Essential  **Description:** Administrator wants to know the total weight of recycled items by machine (per day, week…), total value (cash or coupon) issued, or number of items collected by type.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to “Login” use case. Selects one RCM or “All RCMs”, and then selects an option:   * “Show total weight of recycled items (per day, week…)” or * “Show total value issued” or * “Show number of items collected by type”. | **2.** Displays:   * Total weight of recycled items (per day, week…) or * Total value (cash or coupon) issued or * Number of items collected by type |
| **Alternative Courses:** | |
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**Use cases for RCM:**

1. Display the list of recyclable item types and the price.
2. Customer recycles items.

**Use case 1:**

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| **Use-Case: (Goal):** Display the list of recyclable item types and the price.  **Actors:** Customer  **Type:** Primary, Essential  **Description:**  Customer wants to know the list of recyclable item types and the price paid for each of the item types by weight before inserting an item into the RCM.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Customer selects an option “Display the list of recyclable item types and corresponding price”. | **2.** Displays the list of recyclable item types and corresponding price by weight. |
| **Alternative Courses:** | |
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**Use case 2:**

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| **Use-Case: (Goal):** Customer recycles items.  **Actors:** Customer  **Type:** Primary, Essential  **Description:**  Customer wants to recycles items.  **Cross-references:**  **Scenario Details (Typical course of events)** | |
| **Actor Action** | **System Response** |
| **1.** Refers to use case “Display the list of recyclable item types and the price”. Selects the option “Start dropping an item”. | **2.** Displays “Please select an item type”. Displays a dropdown list of item types. |
| **3.**  Customer selects an item type and drops an item. | **4.** Displays two options: “Keep dropping items” and “Finish dropping” |
| **5.** If customer wants to end up dropping, selects the option “Finish dropping” | **6.** Displays item type, weight (in lb) and price due to the customer. Displays three options: “Show weight in Metric units”, “Return money or coupon” and “Return items”. |
| **7.** If customer wants to view the weight in Metric units, select “Show weight in Metric units”. | **8.** Displays weight in Metric beside the weight in lb. Display two options: “Return the money or coupon” and “Return the items”. |
| **9.** If customer wants to get money or coupon, selects “Return money or coupon”. | **10.** If there is enough money in the machine, displays “Please collect your money”. |
| **Alternative Courses:** | |
| **Line 1:**  If customer wants to recycles items directly, rather than recycling items after checking the list of recyclable item types, selects the option “Start dropping an item”.  **Line 3:**   * If the item is not designated as acceptable at the RCM, displays a message “This item is not acceptable”. Displays list of acceptable items” * If the RCM is full, displays a message “RCM is full. Please insert the item in other RCM.   **Line 5:**  If customer wants to recycle more than one item, selects “Keep dropping items”, then go back to step 2 (Line 2).  **Line 10:**  If there is no enough money in the machine, displays “There is not enough money in the machine. Would you like to print a coupon?” Displays two options: “Print a coupon” and “Return the items”.  **Line 11:**  If alternative course Line 10 happens, and then:   * If customer wants get the coupon, selects “Print coupon”. * If customer wants to get the items back, selects “Return the items”.   **Line 12:**   * If customer selects “Print a coupon” in Line 11, displays “Please collect your coupon”. * If customer selects “Return the items” in Line 11, displays “Please collect your items”. | |