# Validation of “Description of States”

To validate the states we will look at the USE-cases again to see if every USE-case is implemented. To do this we look at the basic flow and trigger of every use case and see what states we use to realize this.

We also validate the states to the relations. For every USE-case we looked at what states would be necessary to achieve it.

## Sort unsorted disks

Trigger: The user provides unsorted disks and presses the “START” button.

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| Basic Flow | State | Explanation |
| Before Trigger | Resting State | The program first initializes and then waits for the user to press that start button. This waiting happens in the Resting State. |
| After Trigger | Running State | Pressing START/STOP is the input to transition to the running state. |
| 1. An unsorted disk is moved to the colour detector | Running State 2 + Running State 3 | When moving to the colour detector it will have to pass the position Sensor which is the input to move to Running State 2, the disk is then still in front of the position sensor so the program moves to running state 3. |
| 1. The machine decides to which of the two containers the disk needs to be moved | Running State 2 + Running State 3  OR  Motor Up  + White-Wait | Depending on whether the disk is white or black the sorter either needs to move down or keep its down position. If it keeps its down position it should just keep checking for an unsorted disk and when it detects one it will move to running state 3.  If it needs to move up the colour detector will detect a white disk and therefore transition to Motor Up. Moving the sorter up will trigger the pushButton, which is the input to transition to White-Wait |
| 1. The machine moves the disk to the designated container | Running State 2 + Running State 3  OR  Motor Down + Running state 2 | If the sorter did not detect a white disk we are still waiting like in basic flow 2.  If it did detect one then while the disk is moving to the designated container the sorttimer will count down making the machine transition to Motor Down. |
| 1. The machine repeats step 2 through 4 until all disks have been sorted | - |  |
| 1. The machine pauses within 4 seconds | Initial State | If there are no discs anymore the machine will stay in running state 2 waiting for the timer interrupt which will come within 4 seconds, making the machine transition to initial state |