Inputs:

Photo transistors 2x  
buttons  
push sensor  
timer

Outputs:

Lens lamp 2x   
engine conveyer   
engine feeder   
engine sorter   
display for counting (Optional: we might use it if we have enough time to implement it)

# Dependency

## Lens lamp of the black white detector

The lens lamp of the black white detector will go on when the disc is expected at the sensor. We can calculate when we expect a disc according to the speed of the conveyer belt and the input of the photo transistor of the position sensor. The lens lamp goes on when the timer hits calculates time of arrival.

## Lens lamp of the position sensor

The lens lamp of the position sensor reacts only to the “START/STOP” button and the “ABORT” button. The lens lamp will be on after the “START/STOP” button is pressed and the machine is in its resting state. If at any other point in time the “ABORT” button is pressed it will go off. When the “START/STOP” button is pressed and the machine is running then the lens lamp also goes off.

Engine of the conveyer belt  
The engine of on the conveyer belt only reacts to the input of the “START/STOP” button and the “ABORT” button. The engine will start when the machine is in its resting state and the “START/STOP” button is pressed. If however the “START/STOP” button is pressed and the machine is not in its resting state then the machine will stop after it completed its current cycle. Whenever the “ABORT” button is pressed the engine stops within 50ms.

Engine of the feeder  
The engine for the feeder also only reacts to the input of the “START/STOP” button and the “ABORT” button. This engine also starts when the machine is in its resting state and the “START/STOP” button is pressed. If however the machine is running then the engine will stop. When the “ABORT” button is pressed the engine stops within 50ms.

## Engine for the sorter

When the machine is running the engine of the sorter reacts to inputs of the colour detector, the push sensor and the timer. When a signal is received from the colour detector the engine pulls the sorter down, the engine then waits until the timer gives a signal to go up again as to let disks through, it knows when it is in the correct “up” position from the push sensor . If the “START/STOP” button is pressed when the machine is in its resting state, then the sorter will wait for a signal from the timer that marks the end of the current cycle. If at any time the ““ABORT”” button is pressed, the sorting mechanism is to stop within 50ms.

## Display for counting

The display output depends on how many times the colour detector detects a white disc and how many times a disc passes the position sensor without the colour detector detecting it.

In the initial state the counters get reset.