# Siemens S7-1200

CPU 1212C AC/DC/Relay

## Box Sorting Application

### Objective

Sorting of bigger boxes via pusher

### Commands to practice:

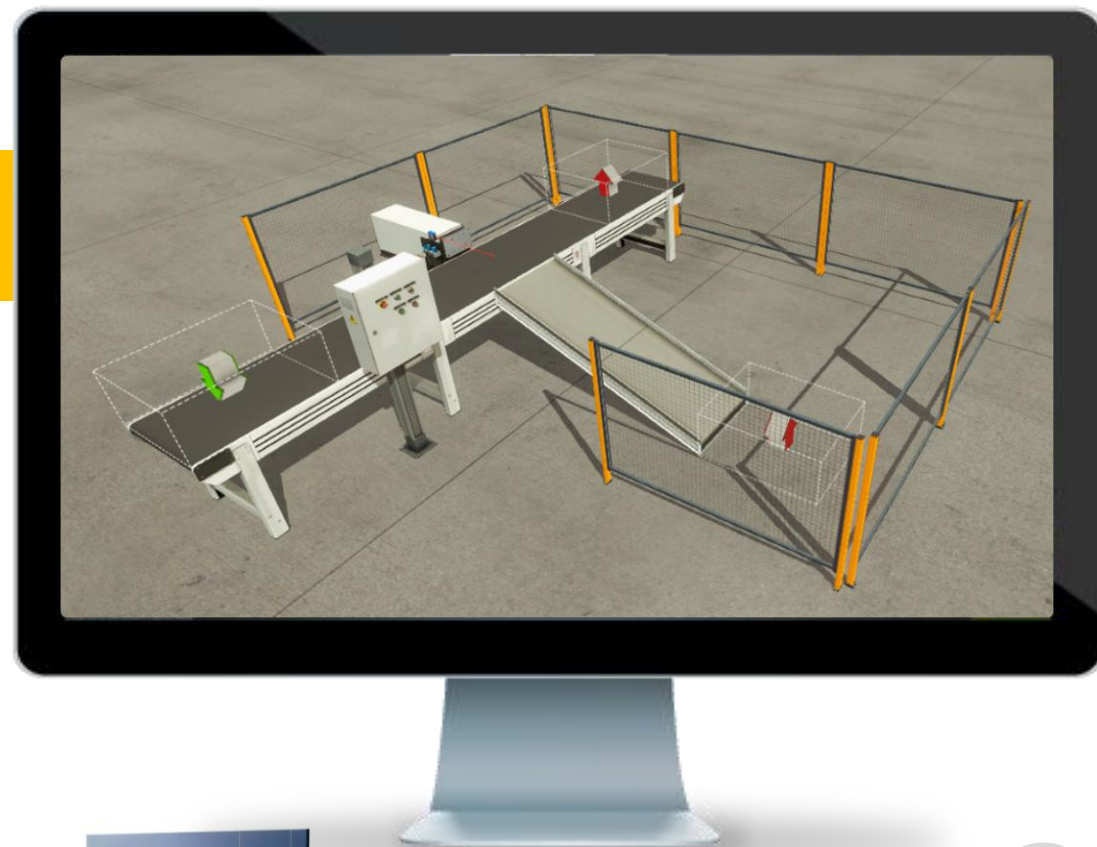- NO- Normally Open
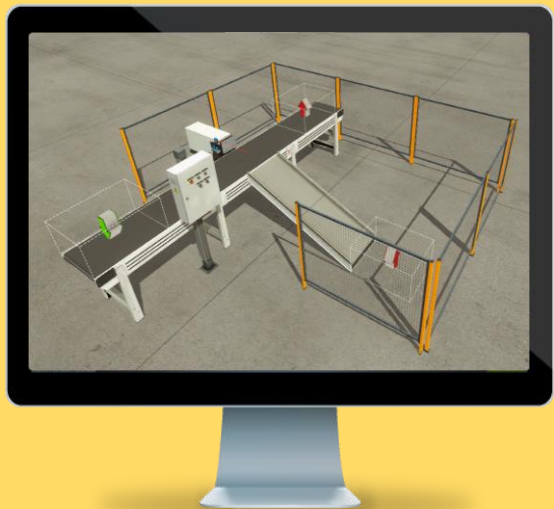- NC- Normally Close
- Rising Edge
- Falling Edge



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**Software Platform by:**

realgames

# Objective: Sorting of Boxes

**Objective**:
Box sorting based on height using Pusher
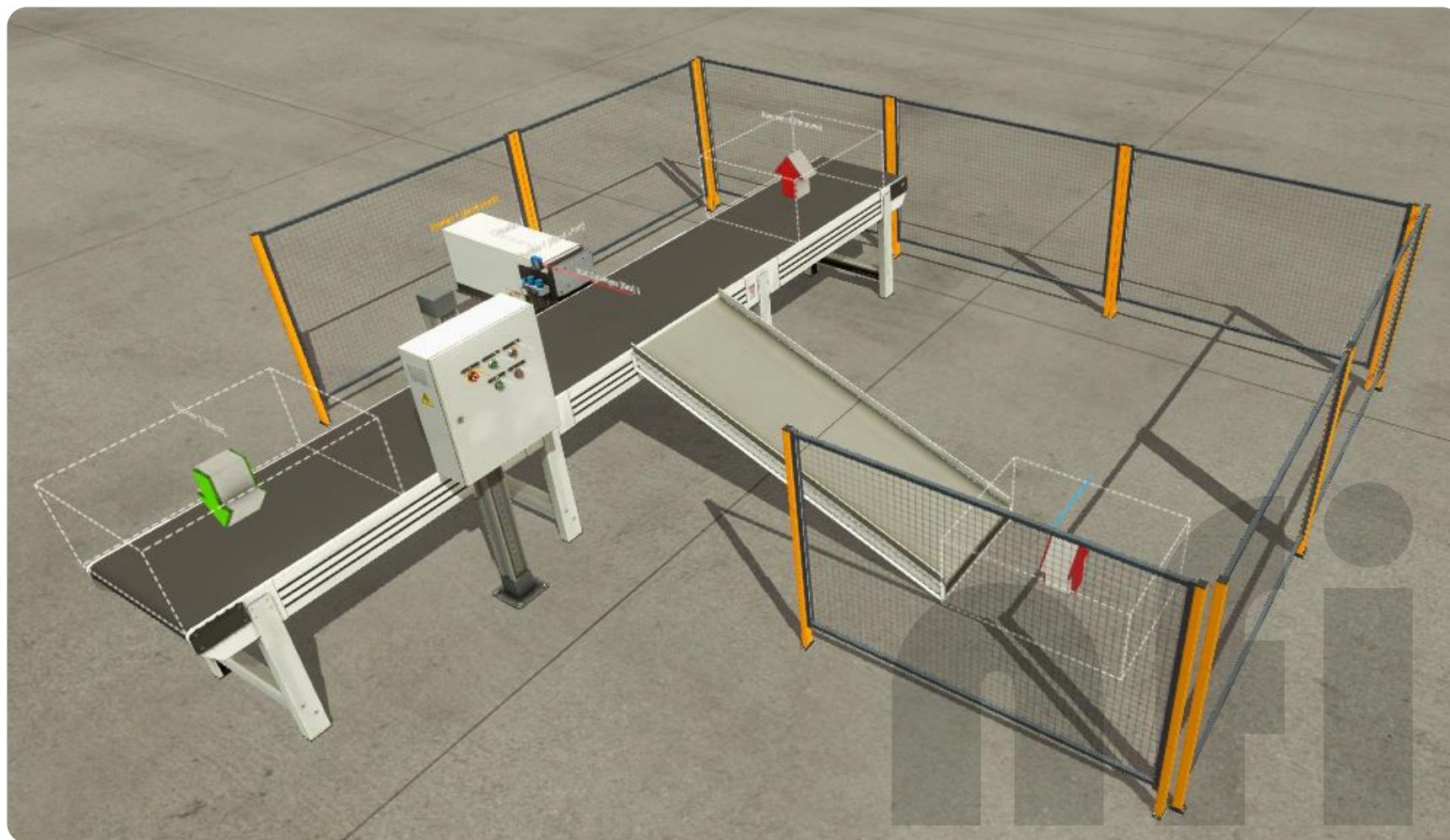


PLC used
**S7-1200**

Programming Software
**Siemens TIA**

3D Software Platform
**FACTORY I/O**

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# Objective: Sorting of Boxes

## Assigned Inputs & Outputs:



Host: 192.168.0.1

| Inputs | | | | Outputs |
|--------|------|------|------|---------|
| Start | I0.0 | Q0.0 | Belt Conveyor (6m) 1 |
| Stop | I0.1 | Q0.1 | Conveyor ON |
| Emergency Stop | I0.2 | Q0.2 | Conveyor OFF |
| Diffuse Sensor | I0.3 | Q0.3 | Pusher 1 |
| Pusher 1 (Front Limit) | I0.4 | Q0.4 | |
| Pusher 1 (Back Limit) | I0.5 | Q0.5 | |
| | I0.6 | Q0.6 | |
| | I0.7 | Q0.7 | |

## Steps to follow:

1. Latching & Unlatching of conveyor **Q0.0** from Start **I0.0** and Stop **I0.1**
2. Sense bigger box via Diffuse sensor **I0.3**
3. Drag bigger boxes using Pusher **Q0.3**
4. Sense and control Pusher **Q0.3** using Pusher front **I0.4** and back limit **I0.5**
5. Indicate the Start & Stop operation of Conveyor via Indicators **Q0.1** and **Q0.2**
6. Use Emergency **I0.2** to stop the conveyor **Q0.0**
7. **Download the Logic and Test !**

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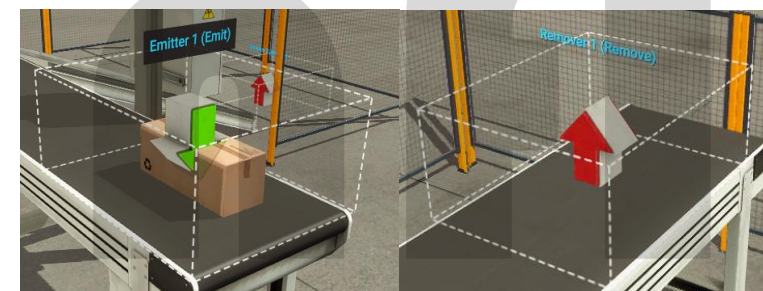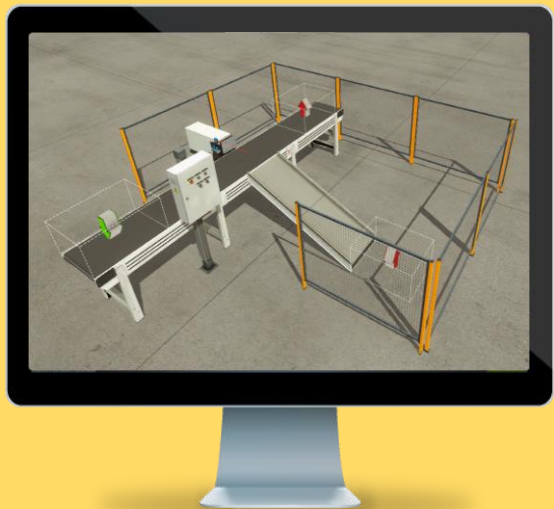www.nfiautomation.org

## Necessary Steps:

1. Define tags in Siemens TIA

**PLC tags**

|  |  | Name | Tag table | Data type | Address |
|---|---|---|---|---|---|
| 1 |  | Start | Default tag table | Bool | %I0.0 |
| 2 |  | Stop | Default tag table | Bool | %I0.1 |
| 3 |  | Emergency Stop | Default tag table | Bool | %I0.2 |
| 4 |  | Diffuse Sensor | Default tag table | Bool | %I0.3 |
| 5 |  | Pusher (Front) | Default tag table | Bool | %I0.4 |
| 6 |  | Pusher (Back) | Default tag table | Bool | %I0.5 |
| 7 |  | Belt Conveyor | Default tag table | Bool | %Q0.0 |
| 8 |  | Conveyor ON | Default tag table | Bool | %Q0.1 |
| 9 |  | Conveyor OFF | Default tag table | Bool | %Q0.2 |
| 10 |  | Pusher 1 | Default tag table | Bool | %Q0.3 |
| 11 |  | <Add new> |  |  |  |

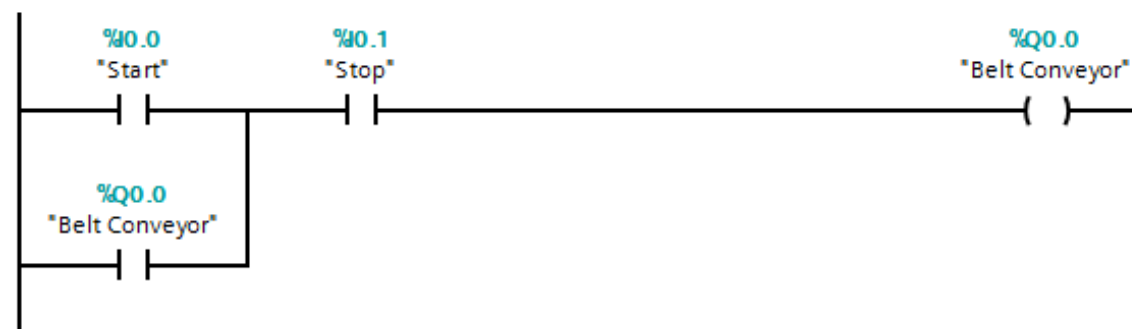2. Forced the Box Emitter and Remover

# Objective: Sorting of Boxes

## Steps to follow:

1. Latching & Unlatching of conveyor **Q0.0** from Start **I0.0** and Stop **I0.1**

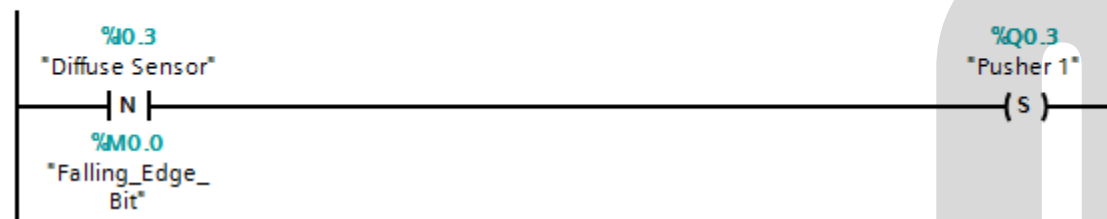Network 1:   Latching & Unlatching of conveyor Q0.0 from Start I0.0 and Stop I0.1

Comment

```
    %I0.0              %I0.1                                                    %Q0.0
   "Start"            "Stop"                                                "Belt Conveyor"
    ┤ ├                ┤ ├                                                      ( )

    %Q0.0
  "Belt Conveyor"
    ┤ ├
```
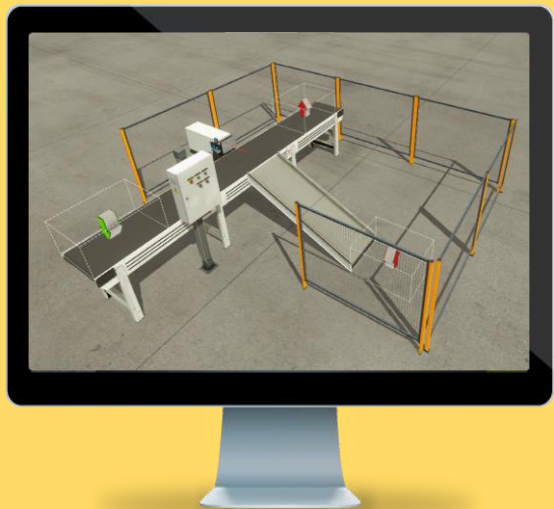
2. Sense bigger box via Diffuse sensor **I0.3**
3. Drag bigger boxes using Pusher **Q0.3**

Network 2:   Sense bigger box via Diffuse sensor I0.3 and Drag bigger boxes using Pusher Q0.3

Comment

```
    %I0.3                                                                       %Q0.3
"Diffuse Sensor"                                                              "Pusher 1"
    ┤N├                                                                          (S)

    %M0.0
"Falling_Edge_
    Bit"
```

PLC used
**S7-1200**

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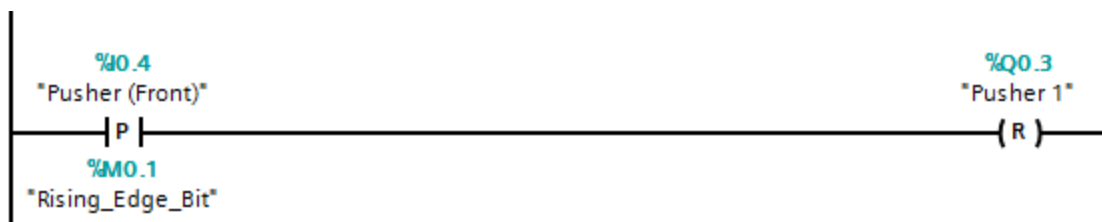
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# Objective: Sorting of Boxes



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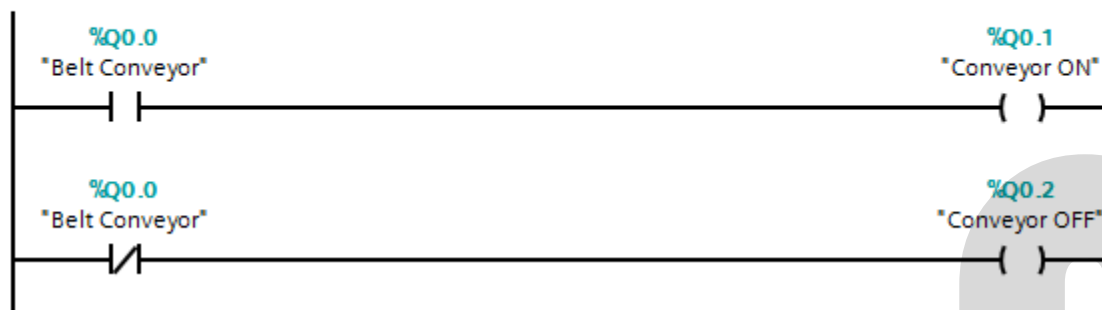www.nfiautomation.org

## Steps to follow:

4. Sense and control Pusher **Q0.3** using Pusher front **I0.4** and back limit **I0.5**



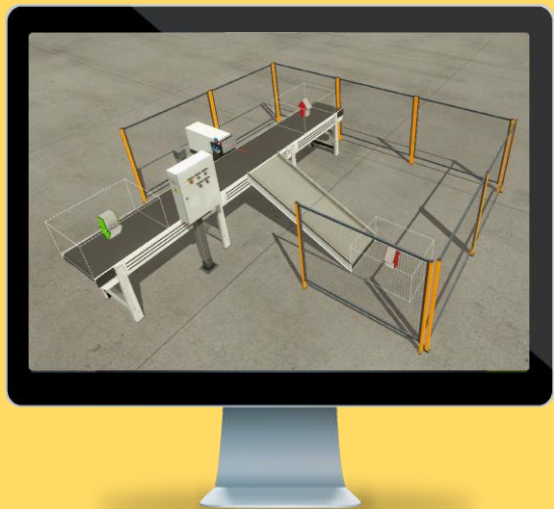5. Indicate the Start & Stop operation of Conveyor via Indicators **Q0.1** and **Q0.2**



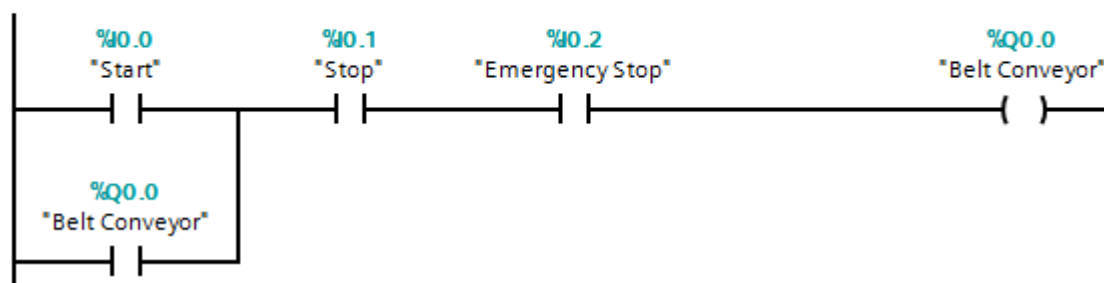6. Use Emergency **I0.2** to stop the conveyor **Q0.0**

# Objective: Sorting of Boxes

## Steps to follow:

6. Use Emergency **I0.2** to stop the conveyor **Q0.0**

**Network 1:** Latching & Unlatching of conveyor Q0.0 from Start I0.0 and Stop I0.1

6. Use Emergency I0.2 to stop the conveyor Q0.0



```
        %I0.0           %I0.1            %I0.2                              %Q0.0
       "Start"          "Stop"       "Emergency Stop"                   "Belt Conveyor"
       ──┤ ├──────────────┤ ├─────────────┤ ├────────────────────────────( )──

        %Q0.0
     "Belt Conveyor"
       ──┤ ├──
```

7. **Download the Logic and Test !**

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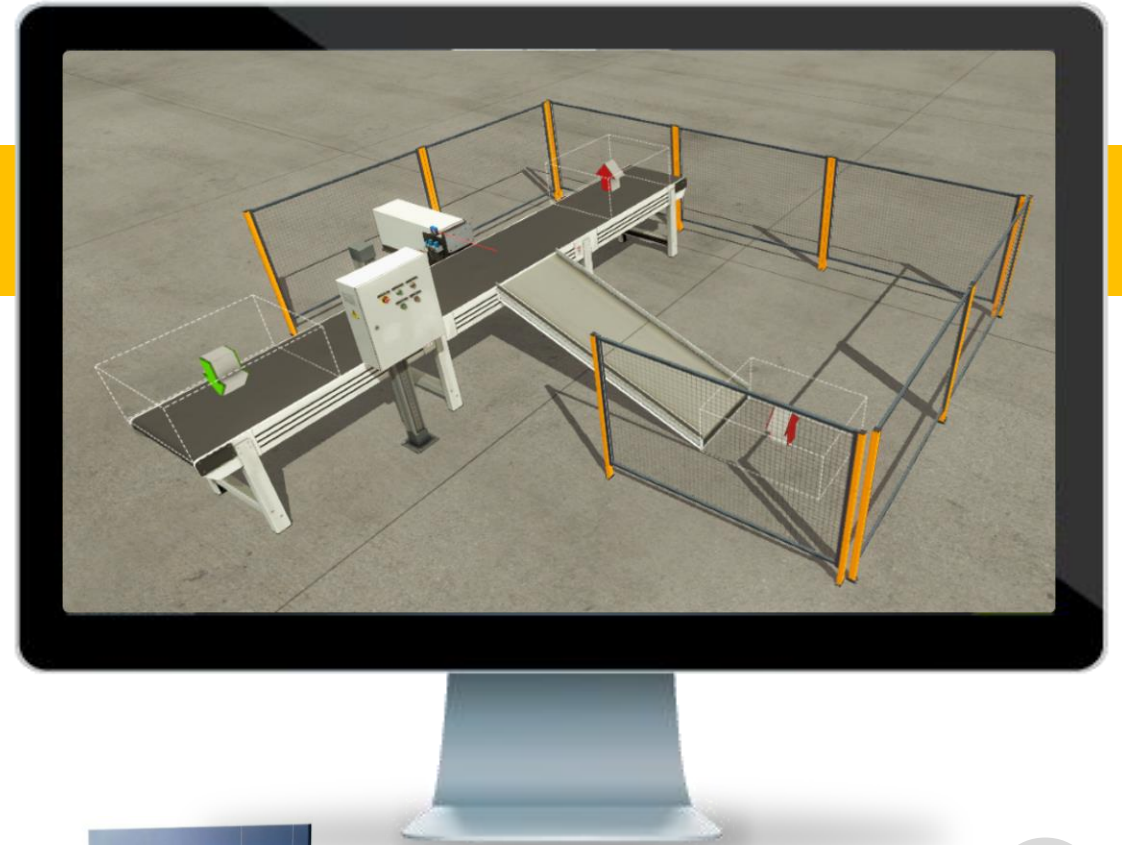Order FACTORY I/O
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# Siemens S7-1200
## CPU 1212C AC/DC/Relay

## Box Sorting Application

## Thank you
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