

# 4TC00 Midterm assignment report

Group 114

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### Manual Mode Plant Model:

- **Step 1: Filling Buffer:** Place a product in the buffer.
- **Step 2: Activate pusher:** Use `a_pusher1` to move the product onto the slider.
- **Step 3: Arm movement:** Activate `a_x2distributing` to position the arm at the buffer. Use `a_zdown` to lower the arm.
- **Step 4: Pick-up:** Activate `a_gripperclose` to secure the product, and then use `a_zdown` to raise the arm.
- **Step 5: Transport:** Move the product to the testing area using `a_x2testing`, then lower the arm using `a_zdown`, release the product, and lift the arm.
- **Step 6: Drop-off:** Use the vacuum lever and `a_transfer2pickpos` to move the lever to the pickup position `a_vacuum` to pick the item up, and `a_transfer2droppos` to move the lever with the product to drop off. Release with `a_ejectpulse` after turning off vacuum with `a_vacuum`.

### Plant and Controller Simulation:

The system can start by placing at least one product in the buffer. Press the **green dstart** button to begin the operation. The pusher, arm, and product manipulation will automatically engage. The simulation can be stopped using the **red dstop** button at any time. Below is the sequence to interact with the system:

- Fill the buffer with products.
- Press **green dstart** button to begin.
- Use **red dstop** button to stop the system when needed.

### Real-time Control Digital Twin:

The system behavior mirrors that of the manual mode plant model, but with a focus on managing the digital twin. Here, instead of filling the buffer, the action is to **fill the stacks**. The **green dstart** button is pressed to begin, and the **red dstop** button is used to stop the system at any time. The following are the essential steps for this mode:

- Fill stacks with products.
- Press **green dstart** button to begin operations.
- Press **red dstop** button to halt operations.
- Once the hand reaches the drop-off position, press the **red dstop** button to stop further hand movement.

All sections include simple button sequences to operate the system manually. Detailed descriptions of button functions (**dstart**, **dstop**) ensure that the operator can manage the plant, simulator, and real-time control efficiently. Make sure to follow the outlined steps carefully to avoid misplacement of products during operation.