|  |  |  |  |
| --- | --- | --- | --- |
| Symbol | Meaning | Type | Active Logic |
| DRIV | Driver is in seat | Input |  |
| PASS | Passenger in seat | Input |  |
| BELTD̅ | Driver seat unfastened | Input |  |
| BELTP̅ | Passenger seat unfastened | Input |  |
| IGN | Ignition ON | Input |  |
| ALARM | Alarm Signal | Output |  |

**Step 3. Algorithm (Plain English)**

1. **Start the program.**
2. **Get the inputs:**

* Ignition status (IGN)
* Driver present (DRIV)
* Passenger present (PASS)
* Driver belt status (BELTD̅)
* Passenger belt status (BELTP̅)

1. **If the ignition is OFF (IGN = 0), turn the alarm OFF.**
2. **If the ignition is ON (IGN = 1):**

* Check if the driver is seated and the driver’s belt is unfastened.
* Check if the passenger is seated and the passenger’s belt is unfastened.

1. **If either the driver or passenger is seated without a fastened belt, turn the alarm ON.**
2. **If both belts are fastened (when seats are occupied), turn the alarm OFF.**
3. **Display the alarm status (ON or OFF).**
4. **End the program.**

**Step 3.2 Truth Table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DRIV** | **PASS** | **BELTD̅^** | **BELTP̅^** | **IGN** | **ALARM^** |
| **0** | **0** | **0** | **0** | **1** | **1** |
| **0** | **0** | **0** | **1** | **1** | **1** |
| **0** | **0** | **1** | **0** | **1** | **1** |
| **0** | **0** | **1** | **1** | **1** | **1** |
| **0** | **1** | **0** | **0** | **1** | **1** |
| **0** | **1** | **0** | **1** | **1** | **1** |
| **0** | **1** | **1** | **0** | **1** | **1** |
| **0** | **1** | **1** | **1** | **1** | **1** |
| **1** | **0** | **0** | **0** | **1** | **0** |
| **1** | **0** | **0** | **1** | **1** | **0** |
| **1** | **0** | **1** | **0** | **1** | **1** |
| **1** | **0** | **1** | **1** | **1** | **1** |
| **1** | **1** | **0** | **0** | **1** | **0** |
| **1** | **1** | **0** | **1** | **1** | **0** |
| **1** | **1** | **1** | **0** | **1** | **0** |
| **1** | **1** | **1** | **1** | **1** | **1** |