**HOMEWORK 2**

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The following details are implemented in the Homework 2.

* Using the “cg” covergroup the functional coverage is implemented.
* Around 11 directed test scenarios are also written.

The coverpoints are made for the following ports and conditions in the cg covergroup.

**Random values of the following variables are checked in the coverpoint bins**

* cover\_point\_coin **coins**
* cover\_point\_button **button**
* cover\_point\_product **product**
* cover\_point\_status **status**
* cover\_point\_enter\_key **enter\_key**
* cover\_point\_soft\_rst **soft\_rst**
* cover\_point\_valid\_s **valid\_s**
* cover\_point\_count\_s **count\_s**
* cover\_point\_items\_s **items\_s**
* cover\_point\_cost\_s **cost\_s**

**State transitions are checked for the following coverpoints**

* STATE\_TRANSITIONS DUT.state

for consecutive state transitions for which the design is made. The states will transition from IDLE to BUTTON to PRODUCT state is captured in this bin.

* STATE\_TRANSITIONS\_SINGLE DUT.state

For the intended single consecutive transitions the design must go through is captured in this bin.

**IDLE to BUTTON**

**BUTTON to PRODUCT**

**PRODUCT to IDLE**

**BUTTON to IDLE**

The coverage obtained in the design is **90.27%.**

**Directed test scenarios are as follows:**

Test Case :1 : SUPPLIER : When Valid\_s is 1 then supplier should abble to restock the items

Test Case 2: CONSUMER : BUTTON 3 is SELECTED : COIN 5 cent is inserted

Test Case 3: CONSUMER : BUTTON 2 is SELECTED : COIN 5 cent is inserted for 10 cent product value

Test Case 4: CONSUMER : BUTTON 1 and 3 is SELECTED : COIN 5 cent is inserted

Test Case 5: CONSUMER : BUTTON 6 is SELECTED : COIN 25 and 5 cents ahe inserted and use previous balance

Test Case 6: CONSUMER : Pressed button 1 then enter 10 cents but then he wants to change his choice hensce he press soft reset and press button 3

Test Case 7: CONSUMER : BUTTON 2 is Pressed but enter\_key is not Pressed also insufficient Balance and he change his selection and press enter\_key

Test Case 8: CONSUMER : BUTTON 5 is Pressed : COIN 25 cents is inserted

Test Case 9 : CONSUMER : BUTTON 4 is pressed for 16 times : COIN 25 cent is inserted for 20 Cent product Value

Test Case 10 : Hard Reset and Soft Reset pressed at same time

Test Case 11: CONSUMER : BUTTON 5 is SELECTED : COIN 10 cent is inserted continously for 10 cent product value but Supplier did not provide so it will not give any product