**SEG3103 – Assignment 2**

**VCR Gray Box Testing**

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**Presented to:**

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# Question 1 – Round Trip Path Tree

This round trip path tree diagram is fairly sizable. For this reason, I truncated it into many parts. The first figure below (figure 1) represents the root of the tree diagram. Each of the leafs on the last level in figure 1 has a corresponding diagram (figures 2 to 8). These 7 figures are all on the same depth in the tree, but have been segmented to make it fit in this document. (i.e. The “Play” state that follows “Idle” then goes to the states indicated in figure 2)



**Figure 1**: Root of Round Trip Path Tree for the VCR model

 

**Figure 2:** Subtree for Play node.  **Figure 3**: Subtree for Rewind node.

 **Figure 4**: Subtree for FWD node.  **Figure 5**: Subtree for Reverse node.



**Figure 6**: Subtree for Cue node.



**Figure 7**: Subtree for Record node. **Figure 8**: Subtree for Pause node.

# Question 2 – Conformance Test Suite

Below is the conformance test suite for the VCR. Each test represents a branch from the above round trip path tree diagram. They are organized in the same order as the figures are above (tests for figure 2, then figure 3, etc…)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Init State** | **Event** | **Condition** | **New State** |
| 1.1 | Contructor |  |  | Off |
| 1.2 | Off | power | !tapeInVCR | Empty |
| 1.3 | Empty | inject |  | Idle |
| 1.4 | Idle | play |  | Play |
| 1.5 | Play | play |  | Play |
| 2.1 | Contructor |  |  | Off |
| 2.2 | Off | power | !tapeInVCR | Empty |
| 2.3 | Empty | inject |  | Idle |
| 2.4 | Idle | play |  | Play |
| 2.5 | Play | stop |  | Idle |
| 3.1 | Contructor |  |  | Off |
| 3.2 | Off | power | !tapeInVCR | Empty |
| 3.3 | Empty | inject |  | Idle |
| 3.4 | Idle | play |  | Play |
| 3.5 | Play | rewind |  | Rewind |
| 4.1 | Contructor |  |  | Off |
| 4.2 | Off | power | !tapeInVCR | Empty |
| 4.3 | Empty | inject |  | Idle |
| 4.4 | Idle | play |  | Play |
| 4.5 | Play | fwd |  | FWD |
| 5.1 | Contructor |  |  | Off |
| 5.2 | Off | power | !tapeInVCR | Empty |
| 5.3 | Empty | inject |  | Idle |
| 5.4 | Idle | play |  | Play |
| 5.5 | Play | reverse |  | Reverse |
| 6.1 | Contructor |  |  | Off |
| 6.2 | Off | power | !tapeInVCR | Empty |
| 6.3 | Empty | inject |  | Idle |
| 6.4 | Idle | play |  | Play |
| 6.5 | Play | cue |  | Cue |
| 7.1 | Contructor |  |  | Off |
| 7.2 | Off | power | !tapeInVCR | Empty |
| 7.3 | Empty | inject |  | Idle |
| 7.4 | Idle | play |  | Play |
| 7.5 | Play | pause |  | Pause |
| 8.1 | Contructor |  |  | Off |
| 8.2 | Off | power | !tapeInVCR | Empty |
| 8.3 | Empty | inject |  | Idle |
| 8.4 | Idle | play |  | Play |
| 8.5 | Play | record |  | Record |
| 9.1 | Contructor |  |  | Off |
| 9.2 | Off | power | !tapeInVCR | Empty |
| 9.3 | Empty | inject |  | Idle |
| 9.4 | Idle | play |  | Play |
| 9.5 | Play | end of tape |  | Rewind |
| 10.1 | Contructor |  |  | Off |
| 10.2 | Off | power | !tapeInVCR | Empty |
| 10.3 | Empty | inject |  | Idle |
| 10.4 | Idle | play |  | Play |
| 10.5 | Play | start of tape |  | Idle |
| 11.1 | Contructor |  |  | Off |
| 11.2 | Off | power | !tapeInVCR | Empty |
| 11.3 | Empty | inject |  | Idle |
| 11.4 | Idle | play |  | Play |
| 11.5 | Play | eject |  | Empty |
| 12.1 | Contructor |  |  | Off |
| 12.2 | Off | power | !tapeInVCR | Empty |
| 12.3 | Empty | inject |  | Idle |
| 12.4 | Idle | play |  | Play |
| 12.5 | Play | power |  | Off |
| 13.1 | Contructor |  |  | Off |
| 13.2 | Off | power | !tapeInVCR | Empty |
| 13.3 | Empty | inject |  | Idle |
| 13.4 | Idle | stop |  | Idle |
| 14.1 | Contructor |  |  | Off |
| 14.2 | Off | power | !tapeInVCR | Empty |
| 14.3 | Empty | inject |  | Idle |
| 14.4 | Idle | rewind |  | Rewind |
| 14.5 | Rewind | rewind |  | Rewind |
| 15.1 | Contructor |  |  | Off |
| 15.2 | Off | power | !tapeInVCR | Empty |
| 15.3 | Empty | inject |  | Idle |
| 15.4 | Idle | rewind |  | Rewind |
| 15.5 | Rewind | stop |  | Idle |
| 16.1 | Contructor |  |  | Off |
| 16.2 | Off | power | !tapeInVCR | Empty |
| 16.3 | Empty | inject |  | Idle |
| 16.4 | Idle | rewind |  | Rewind |
| 16.5 | Rewind | play |  | Play |
| 17.1 | Contructor |  |  | Off |
| 17.2 | Off | power | !tapeInVCR | Empty |
| 17.3 | Empty | inject |  | Idle |
| 17.4 | Idle | rewind |  | Rewind |
| 17.5 | Rewind | fwd |  | FWD |
| 18.1 | Contructor |  |  | Off |
| 18.2 | Off | power | !tapeInVCR | Empty |
| 18.3 | Empty | inject |  | Idle |
| 18.4 | Idle | rewind |  | Rewind |
| 18.5 | Rewind | reverse |  | Rewind |
| 19.1 | Contructor |  |  | Off |
| 19.2 | Off | power | !tapeInVCR | Empty |
| 19.3 | Empty | inject |  | Idle |
| 19.4 | Idle | rewind |  | Rewind |
| 19.5 | Rewind | cue |  | Rewind |
| 20.1 | Contructor |  |  | Off |
| 20.2 | Off | power | !tapeInVCR | Empty |
| 20.3 | Empty | inject |  | Idle |
| 20.4 | Idle | rewind |  | Rewind |
| 20.5 | Rewind | pause |  | Rewind |
| 21.1 | Contructor |  |  | Off |
| 21.2 | Off | power | !tapeInVCR | Empty |
| 21.3 | Empty | inject |  | Idle |
| 21.4 | Idle | rewind |  | Rewind |
| 21.5 | Rewind | record |  | Rewind |
| 22.1 | Contructor |  |  | Off |
| 22.2 | Off | power | !tapeInVCR | Empty |
| 22.3 | Empty | inject |  | Idle |
| 22.4 | Idle | rewind |  | Rewind |
| 22.5 | Rewind | end of tape |  | Rewind |
| 23.1 | Contructor |  |  | Off |
| 23.2 | Off | power | !tapeInVCR | Empty |
| 23.3 | Empty | inject |  | Idle |
| 23.4 | Idle | rewind |  | Rewind |
| 23.5 | Rewind | start of tape |  | Idle |
| 24.1 | Contructor |  |  | Off |
| 24.2 | Off | power | !tapeInVCR | Empty |
| 24.3 | Empty | inject |  | Idle |
| 24.4 | Idle | rewind |  | Rewind |
| 24.5 | Rewind | eject |  | Empty |
| 25.1 | Contructor |  |  | Off |
| 25.2 | Off | power | !tapeInVCR | Empty |
| 25.3 | Empty | inject |  | Idle |
| 25.4 | Idle | rewind |  | Rewind |
| 25.5 | Rewind | power |  | Off |
| 26.1 | Contructor |  |  | Off |
| 26.2 | Off | power | !tapeInVCR | Empty |
| 26.3 | Empty | inject |  | Idle |
| 26.4 | Idle | FWD |  | FWD |
| 26.5 | FWD | play |  | Play |
| 27.1 | Contructor |  |  | Off |
| 27.2 | Off | power | !tapeInVCR | Empty |
| 27.3 | Empty | inject |  | Idle |
| 27.4 | Idle | FWD |  | FWD |
| 27.5 | FWD | stop |  | Idle |
| 28.1 | Contructor |  |  | Off |
| 28.2 | Off | power | !tapeInVCR | Empty |
| 28.3 | Empty | inject |  | Idle |
| 28.4 | Idle | FWD |  | FWD |
| 28.5 | FWD | rewind |  | Rewind |
| 29.1 | Contructor |  |  | Off |
| 29.2 | Off | power | !tapeInVCR | Empty |
| 29.3 | Empty | inject |  | Idle |
| 29.4 | Idle | FWD |  | FWD |
| 29.5 | FWD | fwd |  | FWD |
| 30.1 | Contructor |  |  | Off |
| 30.2 | Off | power | !tapeInVCR | Empty |
| 30.3 | Empty | inject |  | Idle |
| 30.4 | Idle | FWD |  | FWD |
| 30.5 | FWD | reverse |  | Reverse |
| 31.1 | Contructor |  |  | Off |
| 31.2 | Off | power | !tapeInVCR | Empty |
| 31.3 | Empty | inject |  | Idle |
| 31.4 | Idle | FWD |  | FWD |
| 31.5 | FWD | cue |  | FWD |
| 32.1 | Contructor |  |  | Off |
| 32.2 | Off | power | !tapeInVCR | Empty |
| 32.3 | Empty | inject |  | Idle |
| 32.4 | Idle | FWD |  | FWD |
| 32.5 | FWD | pause |  | FWD |
| 33.1 | Contructor |  |  | Off |
| 33.2 | Off | power | !tapeInVCR | Empty |
| 33.3 | Empty | inject |  | Idle |
| 33.4 | Idle | FWD |  | FWD |
| 33.5 | FWD | record |  | FWD |
| 34.1 | Contructor |  |  | Off |
| 34.2 | Off | power | !tapeInVCR | Empty |
| 34.3 | Empty | inject |  | Idle |
| 34.4 | Idle | FWD |  | FWD |
| 34.5 | FWD | end of tape |  | Rewind |
| 35.1 | Contructor |  |  | Off |
| 35.2 | Off | power | !tapeInVCR | Empty |
| 35.3 | Empty | inject |  | Idle |
| 35.4 | Idle | FWD |  | FWD |
| 35.5 | FWD | start of tape |  | Idle |
| 36.1 | Contructor |  |  | Off |
| 36.2 | Off | power | !tapeInVCR | Empty |
| 36.3 | Empty | inject |  | Idle |
| 36.4 | Idle | FWD |  | FWD |
| 36.5 | FWD | eject |  | Empty |
| 37.1 | Contructor |  |  | Off |
| 37.2 | Off | power | !tapeInVCR | Empty |
| 37.3 | Empty | inject |  | Idle |
| 37.4 | Idle | FWD |  | FWD |
| 37.5 | FWD | power |  | Off |
| 38.1 | Contructor |  |  | Off |
| 38.2 | Off | power | !tapeInVCR | Empty |
| 38.3 | Empty | inject |  | Idle |
| 38.4 | Idle | Reverse |  | Reverse |
| 38.5 | Reverse | play |  | Play |
| 39.1 | Contructor |  |  | Off |
| 39.2 | Off | power | !tapeInVCR | Empty |
| 39.3 | Empty | inject |  | Idle |
| 39.4 | Idle | Reverse |  | Reverse |
| 39.5 | Reverse | stop |  | Idle |
| 40.1 | Contructor |  |  | Off |
| 40.2 | Off | power | !tapeInVCR | Empty |
| 40.3 | Empty | inject |  | Idle |
| 40.4 | Idle | Reverse |  | Reverse |
| 40.5 | Reverse | rewind |  | Rewind |
| 41.1 | Contructor |  |  | Off |
| 41.2 | Off | power | !tapeInVCR | Empty |
| 41.3 | Empty | inject |  | Idle |
| 41.4 | Idle | Reverse |  | Reverse |
| 41.5 | Reverse | fwd |  | FWD |
| 42.1 | Contructor |  |  | Off |
| 42.2 | Off | power | !tapeInVCR | Empty |
| 42.3 | Empty | inject |  | Idle |
| 42.4 | Idle | Reverse |  | Reverse |
| 42.5 | Reverse | reverse |  | Reverse |
| 43.1 | Contructor |  |  | Off |
| 43.2 | Off | power | !tapeInVCR | Empty |
| 43.3 | Empty | inject |  | Idle |
| 43.4 | Idle | Reverse |  | Reverse |
| 43.5 | Reverse | cue |  | Cue |
| 44.1 | Contructor |  |  | Off |
| 44.2 | Off | power | !tapeInVCR | Empty |
| 44.3 | Empty | inject |  | Idle |
| 44.4 | Idle | Reverse |  | Reverse |
| 44.5 | Reverse | pause |  | Pause |
| 45.1 | Contructor |  |  | Off |
| 45.2 | Off | power | !tapeInVCR | Empty |
| 45.3 | Empty | inject |  | Idle |
| 45.4 | Idle | Reverse |  | Reverse |
| 45.5 | Reverse | record |  | Reverse |
| 46.1 | Contructor |  |  | Off |
| 46.2 | Off | power | !tapeInVCR | Empty |
| 46.3 | Empty | inject |  | Idle |
| 46.4 | Idle | Reverse |  | Reverse |
| 46.5 | Reverse | end of tape |  | Rewind |
| 47.1 | Contructor |  |  | Off |
| 47.2 | Off | power | !tapeInVCR | Empty |
| 47.3 | Empty | inject |  | Idle |
| 47.4 | Idle | Reverse |  | Reverse |
| 47.5 | Reverse | start of tape |  | Idle |
| 48.1 | Contructor |  |  | Off |
| 48.2 | Off | power | !tapeInVCR | Empty |
| 48.3 | Empty | inject |  | Idle |
| 48.4 | Idle | Reverse |  | Reverse |
| 48.5 | Reverse | eject |  | Empty |
| 49.1 | Contructor |  |  | Off |
| 49.2 | Off | power | !tapeInVCR | Empty |
| 49.3 | Empty | inject |  | Idle |
| 49.4 | Idle | Reverse |  | Reverse |
| 49.5 | Reverse | power |  | Off |
| 50.1 | Contructor |  |  | Off |
| 50.2 | Off | power | !tapeInVCR | Empty |
| 50.3 | Empty | inject |  | Idle |
| 50.4 | Idle | Cue |  | Cue |
| 50.5 | Cue | play |  | Play |
| 51.1 | Contructor |  |  | Off |
| 51.2 | Off | power | !tapeInVCR | Empty |
| 51.3 | Empty | inject |  | Idle |
| 51.4 | Idle | Cue |  | Cue |
| 51.5 | Cue | stop |  | Idle |
| 52.1 | Contructor |  |  | Off |
| 52.2 | Off | power | !tapeInVCR | Empty |
| 52.3 | Empty | inject |  | Idle |
| 52.4 | Idle | Cue |  | Cue |
| 52.5 | Cue | rewind |  | Rewind |
| 53.1 | Contructor |  |  | Off |
| 53.2 | Off | power | !tapeInVCR | Empty |
| 53.3 | Empty | inject |  | Idle |
| 53.4 | Idle | Cue |  | Cue |
| 53.5 | Cue | fwd |  | FWD |
| 54.1 | Contructor |  |  | Off |
| 54.2 | Off | power | !tapeInVCR | Empty |
| 54.3 | Empty | inject |  | Idle |
| 54.4 | Idle | Cue |  | Cue |
| 54.5 | Cue | reverse |  | Reverse |
| 55.1 | Contructor |  |  | Off |
| 55.2 | Off | power | !tapeInVCR | Empty |
| 55.3 | Empty | inject |  | Idle |
| 55.4 | Idle | Cue |  | Cue |
| 55.5 | Cue | cue |  | Cue |
| 56.1 | Contructor |  |  | Off |
| 56.2 | Off | power | !tapeInVCR | Empty |
| 56.3 | Empty | inject |  | Idle |
| 56.4 | Idle | Cue |  | Cue |
| 56.5 | Cue | pause |  | Pause |
| 57.1 | Contructor |  |  | Off |
| 57.2 | Off | power | !tapeInVCR | Empty |
| 57.3 | Empty | inject |  | Idle |
| 57.4 | Idle | Cue |  | Cue |
| 57.5 | Cue | record |  | Cue |
| 58.1 | Contructor |  |  | Off |
| 58.2 | Off | power | !tapeInVCR | Empty |
| 58.3 | Empty | inject |  | Idle |
| 58.4 | Idle | Cue |  | Cue |
| 58.5 | Cue | end of tape |  | Rewind |
| 59.1 | Contructor |  |  | Off |
| 59.2 | Off | power | !tapeInVCR | Empty |
| 59.3 | Empty | inject |  | Idle |
| 59.4 | Idle | Cue |  | Cue |
| 59.5 | Cue | start of tape |  | Idle |
| 60.1 | Contructor |  |  | Off |
| 60.2 | Off | power | !tapeInVCR | Empty |
| 60.3 | Empty | inject |  | Idle |
| 60.4 | Idle | Cue |  | Cue |
| 60.5 | Cue | eject |  | Empty |
| 61.1 | Contructor |  |  | Off |
| 61.2 | Off | power | !tapeInVCR | Empty |
| 61.3 | Empty | inject |  | Idle |
| 61.4 | Idle | Cue |  | Cue |
| 61.5 | Cue | power |  | Off |
| 62.1 | Contructor |  |  | Off |
| 62.2 | Off | power | !tapeInVCR | Empty |
| 62.3 | Empty | inject |  | Idle |
| 62.4 | Idle | Record |  | Record |
| 62.5 | Record | play |  | Record |
| 63.1 | Contructor |  |  | Off |
| 63.2 | Off | power | !tapeInVCR | Empty |
| 63.3 | Empty | inject |  | Idle |
| 63.4 | Idle | Record |  | Record |
| 63.5 | Record | stop |  | Idle |
| 64.1 | Contructor |  |  | Off |
| 64.2 | Off | power | !tapeInVCR | Empty |
| 64.3 | Empty | inject |  | Idle |
| 64.4 | Idle | Record |  | Record |
| 64.5 | Record | rewind |  | Record |
| 65.1 | Contructor |  |  | Off |
| 65.2 | Off | power | !tapeInVCR | Empty |
| 65.3 | Empty | inject |  | Idle |
| 65.4 | Idle | Record |  | Record |
| 65.5 | Record | fwd |  | Record |
| 66.1 | Contructor |  |  | Off |
| 66.2 | Off | power | !tapeInVCR | Empty |
| 66.3 | Empty | inject |  | Idle |
| 66.4 | Idle | Record |  | Record |
| 66.5 | Record | reverse |  | Record |
| 67.1 | Contructor |  |  | Off |
| 67.2 | Off | power | !tapeInVCR | Empty |
| 67.3 | Empty | inject |  | Idle |
| 67.4 | Idle | Record |  | Record |
| 67.5 | Record | cue |  | Record |
| 68.1 | Contructor |  |  | Off |
| 68.2 | Off | power | !tapeInVCR | Empty |
| 68.3 | Empty | inject |  | Idle |
| 68.4 | Idle | Record |  | Record |
| 68.5 | Record | pause |  | Pause |
| 69.1 | Contructor |  |  | Off |
| 69.2 | Off | power | !tapeInVCR | Empty |
| 69.3 | Empty | inject |  | Idle |
| 69.4 | Idle | Record |  | Record |
| 69.5 | Record | record |  | Record |
| 70.1 | Contructor |  |  | Off |
| 70.2 | Off | power | !tapeInVCR | Empty |
| 70.3 | Empty | inject |  | Idle |
| 70.4 | Idle | Record |  | Record |
| 70.5 | Record | end of tape |  | Rewind |
| 71.1 | Contructor |  |  | Off |
| 71.2 | Off | power | !tapeInVCR | Empty |
| 71.3 | Empty | inject |  | Idle |
| 71.4 | Idle | Record |  | Record |
| 71.5 | Record | start of tape |  | Idle |
| 72.1 | Contructor |  |  | Off |
| 72.2 | Off | power | !tapeInVCR | Empty |
| 72.3 | Empty | inject |  | Idle |
| 72.4 | Idle | Record |  | Record |
| 72.5 | Record | eject |  | Empty |
| 73.1 | Contructor |  |  | Off |
| 73.2 | Off | power | !tapeInVCR | Empty |
| 73.3 | Empty | inject |  | Idle |
| 73.4 | Idle | Record |  | Record |
| 73.5 | Record | power |  | Off |
| 74.1 | Contructor |  |  | Off |
| 74.2 | Off | power | !tapeInVCR | Empty |
| 74.3 | Empty | inject |  | Idle |
| 74.4 | Idle | end of tape |  | Rewind |
| 74.5 | Rewind | rewind |  | Rewind |
| 75.1 | Contructor |  |  | Off |
| 75.2 | Off | power | !tapeInVCR | Empty |
| 75.3 | Empty | inject |  | Idle |
| 75.4 | Idle | end of tape |  | Rewind |
| 75.5 | Rewind | stop |  | Idle |
| 76.1 | Contructor |  |  | Off |
| 76.2 | Off | power | !tapeInVCR | Empty |
| 76.3 | Empty | inject |  | Idle |
| 76.4 | Idle | end of tape |  | Rewind |
| 76.5 | Rewind | play |  | Play |
| 77.1 | Contructor |  |  | Off |
| 77.2 | Off | power | !tapeInVCR | Empty |
| 77.3 | Empty | inject |  | Idle |
| 77.4 | Idle | end of tape |  | Rewind |
| 77.5 | Rewind | fwd |  | FWD |
| 78.1 | Contructor |  |  | Off |
| 78.2 | Off | power | !tapeInVCR | Empty |
| 78.3 | Empty | inject |  | Idle |
| 78.4 | Idle | end of tape |  | Rewind |
| 78.5 | Rewind | reverse |  | Rewind |
| 79.1 | Contructor |  |  | Off |
| 79.2 | Off | power | !tapeInVCR | Empty |
| 79.3 | Empty | inject |  | Idle |
| 79.4 | Idle | end of tape |  | Rewind |
| 79.5 | Rewind | cue |  | Rewind |
| 80.1 | Contructor |  |  | Off |
| 80.2 | Off | power | !tapeInVCR | Empty |
| 80.3 | Empty | inject |  | Idle |
| 80.4 | Idle | end of tape |  | Rewind |
| 80.5 | Rewind | pause |  | Rewind |
| 81.1 | Contructor |  |  | Off |
| 81.2 | Off | power | !tapeInVCR | Empty |
| 81.3 | Empty | inject |  | Idle |
| 81.4 | Idle | end of tape |  | Rewind |
| 81.5 | Rewind | record |  | Rewind |
| 82.1 | Contructor |  |  | Off |
| 82.2 | Off | power | !tapeInVCR | Empty |
| 82.3 | Empty | inject |  | Idle |
| 82.4 | Idle | end of tape |  | Rewind |
| 82.5 | Rewind | end of tape |  | Rewind |
| 83.1 | Contructor |  |  | Off |
| 83.2 | Off | power | !tapeInVCR | Empty |
| 83.3 | Empty | inject |  | Idle |
| 83.4 | Idle | end of tape |  | Rewind |
| 83.5 | Rewind | start of tape |  | Idle |
| 84.1 | Contructor |  |  | Off |
| 84.2 | Off | power | !tapeInVCR | Empty |
| 84.3 | Empty | inject |  | Idle |
| 84.4 | Idle | end of tape |  | Rewind |
| 84.5 | Rewind | eject |  | Empty |
| 85.1 | Contructor |  |  | Off |
| 85.2 | Off | power | !tapeInVCR | Empty |
| 85.3 | Empty | inject |  | Idle |
| 85.4 | Idle | end of tape |  | Rewind |
| 85.5 | Rewind | power |  | Off |
| 86.1 | Contructor |  |  | Off |
| 86.2 | Off | power | !tapeInVCR | Empty |
| 86.3 | Empty | inject |  | Idle |
| 86.4 | Idle | start of tape |  | Idle |
| 87.1 | Contructor |  |  | Off |
| 87.2 | Off | power | !tapeInVCR | Empty |
| 87.3 | Empty | inject |  | Idle |
| 87.4 | Idle | eject |  | Empty |
| 88.1 | Contructor |  |  | Off |
| 88.2 | Off | power | !tapeInVCR | Empty |
| 88.3 | Empty | inject |  | Idle |
| 88.4 | Idle | power |  | Off |
| 89.1 | Contructor |  |  | Off |
| 89.2 | Off | power | !tapeInVCR | Empty |
| 89.3 | Empty | inject |  | Idle |
| 89.4 | Idle | pause |  | Pause |
| 89.5 | Pause | stop |  | Idle |
| 90.1 | Contructor |  |  | Off |
| 90.2 | Off | power | !tapeInVCR | Empty |
| 90.3 | Empty | inject |  | Idle |
| 90.4 | Idle | pause |  | Pause |
| 90.5 | Pause | play | isRecording | Pause |
| 91.1 | Contructor |  |  | Off |
| 91.2 | Off | power | !tapeInVCR | Empty |
| 91.3 | Empty | inject |  | Idle |
| 91.4 | Idle | pause |  | Pause |
| 91.5 | Pause | play | !isRecording | Play |
| 92.1 | Contructor |  |  | Off |
| 92.2 | Off | power | !tapeInVCR | Empty |
| 92.3 | Empty | inject |  | Idle |
| 92.4 | Idle | pause |  | Pause |
| 92.5 | Pause | rewind | isRecording | Pause |
| 93.1 | Contructor |  |  | Off |
| 93.2 | Off | power | !tapeInVCR | Empty |
| 93.3 | Empty | inject |  | Idle |
| 93.4 | Idle | pause |  | Pause |
| 93.5 | Pause | rewind | !isRecording | Rewind |
| 94.1 | Contructor |  |  | Off |
| 94.2 | Off | power | !tapeInVCR | Empty |
| 94.3 | Empty | inject |  | Idle |
| 94.4 | Idle | pause |  | Pause |
| 94.5 | Pause | fwd | isRecording | Pause |
| 95.1 | Contructor |  |  | Off |
| 95.2 | Off | power | !tapeInVCR | Empty |
| 95.3 | Empty | inject |  | Idle |
| 95.4 | Idle | pause |  | Pause |
| 95.5 | Pause | fwd | !isRecording | FWD |
| 96.1 | Contructor |  |  | Off |
| 96.2 | Off | power | !tapeInVCR | Empty |
| 96.3 | Empty | inject |  | Idle |
| 96.4 | Idle | pause |  | Pause |
| 96.5 | Pause | reverse | isRecording | Pause |
| 97.1 | Contructor |  |  | Off |
| 97.2 | Off | power | !tapeInVCR | Empty |
| 97.3 | Empty | inject |  | Idle |
| 97.4 | Idle | pause |  | Pause |
| 97.5 | Pause | reverse | !isRecording | Reverse |
| 98.1 | Contructor |  |  | Off |
| 98.2 | Off | power | !tapeInVCR | Empty |
| 98.3 | Empty | inject |  | Idle |
| 98.4 | Idle | pause |  | Pause |
| 98.5 | Pause | cue | isRecording | Pause |
| 99.1 | Contructor |  |  | Off |
| 99.2 | Off | power | !tapeInVCR | Empty |
| 99.3 | Empty | inject |  | Idle |
| 99.4 | Idle | pause |  | Pause |
| 99.5 | Pause | cue | !isRecording | Cue |
| 100.1 | Contructor |  |  | Off |
| 100.2 | Off | power | !tapeInVCR | Empty |
| 100.3 | Empty | inject |  | Idle |
| 100.4 | Idle | pause |  | Pause |
| 100.5 | Pause | record | isRecording | Record |
| 101.1 | Contructor |  |  | Off |
| 101.2 | Off | power | !tapeInVCR | Empty |
| 101.3 | Empty | inject |  | Idle |
| 101.4 | Idle | pause |  | Pause |
| 101.5 | Pause | record | !isRecording | Pause |
| 102.1 | Contructor |  |  | Off |
| 102.2 | Off | power | !tapeInVCR | Empty |
| 102.3 | Empty | inject |  | Idle |
| 102.4 | Idle | pause |  | Pause |
| 102.5 | Pause | pause | isRecording | Record |
| 103.1 | Contructor |  |  | Off |
| 103.2 | Off | power | !tapeInVCR | Empty |
| 103.3 | Empty | inject |  | Idle |
| 103.4 | Idle | pause |  | Pause |
| 103.5 | Pause | pause | !isRecording | Play |
| 104.1 | Contructor |  |  | Off |
| 104.2 | Off | power | !tapeInVCR | Empty |
| 104.3 | Empty | inject |  | Idle |
| 104.4 | Idle | pause |  | Pause |
| 104.5 | Pause | end of tape |  | Rewind |
| 105.1 | Contructor |  |  | Off |
| 105.2 | Off | power | !tapeInVCR | Empty |
| 105.3 | Empty | inject |  | Idle |
| 105.4 | Idle | pause |  | Pause |
| 105.5 | Pause | start of tape |  | Idle |
| 106.1 | Contructor |  |  | Off |
| 106.2 | Off | power | !tapeInVCR | Empty |
| 106.3 | Empty | inject |  | Idle |
| 106.4 | Idle | pause |  | Pause |
| 106.5 | Pause | eject |  | Empty |
| 107.1 | Contructor |  |  | Off |
| 107.2 | Off | power | !tapeInVCR | Empty |
| 107.3 | Empty | inject |  | Idle |
| 107.4 | Idle | pause |  | Pause |
| 107.5 | Pause | power |  | Off |
| 108.1 | Constructor |  |  | Off |
| 108.2 | Off | inject |  | Idle |
| 109.1 | Constructor |  |  | Off |
| 109.2 | Off | power | tapeInVCR | Idle |
| 110.1 | Constructor |  |  | Off |
| 110.2 | Off | power | !tapeInVCR | Empty |
| 110.3 | Empty | power |  | Off |

# Question 3 – Sneak Path Tests

The following table lists the sneak path test cases identified for the VCR program. They represent the invalid test cases based on the given state machine diagram and the round trip path tree.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID** | **Init State** | **Event** | **Condition** | **Reaction** | **New State** |
| SP1.1 | Constructor |  |  |  | Off |
| SP1.2 | Off | play |  | do nothing | Off |
| SP2.1 | Constructor |  |  |  | Off |
| SP2.2 | Off | stop |  | do nothing | Off |
| SP3.1 | Constructor |  |  |  | Off |
| SP3.2 | Off | rewind |  | do nothing | Off |
| SP4.1 | Constructor |  |  |  | Off |
| SP4.2 | Off | fwd |  | do nothing | Off |
| SP5.1 | Constructor |  |  |  | Off |
| SP5.2 | Off | reverse |  | do nothing | Off |
| SP6.1 | Constructor |  |  |  | Off |
| SP6.2 | Off | cue |  | do nothing | Off |
| SP7.1 | Constructor |  |  |  | Off |
| SP7.2 | Off | pause |  | do nothing | Off |
| SP8.1 | Constructor |  |  |  | Off |
| SP8.2 | Off | record |  | do nothing | Off |
| SP9.1 | Constructor |  |  |  | Off |
| SP9.2 | Off | end of tape |  | do nothing | Off |
| SP10.1 | Constructor |  |  |  | Off |
| SP10.2 | Off | start of tape | | do nothing | Off |
| SP11.1 | Constructor |  |  |  | Off |
| SP11.2 | Off | eject |  | do nothing | Off |
| SP12.1 | Constructor |  |  |  | Off |
| SP12.2 | Off | power | !tapeInVCR |  | Empty |
| SP12.3 | Empty | play |  | error msg | Empty |
| SP13.1 | Constructor |  |  |  | Off |
| SP13.2 | Off | power | !tapeInVCR |  | Empty |
| SP13.3 | Empty | stop |  | error msg | Empty |
| SP14.1 | Constructor |  |  |  | Off |
| SP14.2 | Off | power | !tapeInVCR |  | Empty |
| SP14.3 | Empty | rewind |  | error msg | Empty |
| SP15.1 | Constructor |  |  |  | Off |
| SP15.2 | Off | power | !tapeInVCR |  | Empty |
| SP15.3 | Empty | fwd |  | error msg | Empty |
| SP16.1 | Constructor |  |  |  | Off |
| SP16.2 | Off | power | !tapeInVCR |  | Empty |
| SP16.3 | Empty | reverse |  | error msg | Empty |
| SP17.1 | Constructor |  |  |  | Off |
| SP17.2 | Off | power | !tapeInVCR |  | Empty |
| SP17.3 | Empty | cue |  | error msg | Empty |
| SP18.1 | Constructor |  |  |  | Off |
| SP18.2 | Off | power | !tapeInVCR |  | Empty |
| SP18.3 | Empty | record |  | error msg | Empty |
| SP19.1 | Constructor |  |  |  | Off |
| SP19.2 | Off | power | !tapeInVCR |  | Empty |
| SP19.3 | Empty | pause |  | error msg | Empty |
| SP20.1 | Constructor |  |  |  | Off |
| SP20.2 | Off | power | !tapeInVCR |  | Empty |
| SP20.3 | Empty | end of tape |  | error msg | Empty |
| SP21.1 | Constructor |  |  |  | Off |
| SP21.2 | Off | power | !tapeInVCR |  | Empty |
| SP21.3 | Empty | start of tape | | error msg | Empty |
| SP22.1 | Constructor |  |  |  | Off |
| SP22.2 | Off | power | !tapeInVCR |  | Empty |
| SP22.3 | Empty | eject |  | error msg | Empty |
| SP23.1 | Conformance Case: 1.1-1.3, 108.1-108.2 or 109.1-109.2 | | | | Idle |
| SP23.2 | Idle | inject |  | error msg | Idle |
| SP24.1 | CC: 1.1-1.4 |  |  |  | Play |
| SP24.2 | Play | inject |  | error msg | Play |
| SP25.1 | CC: 13.1-13.4 | |  |  | Stop |
| SP25.2 | Stop | inject |  | error msg | Stop |
| SP26.1 | CC: 14.1-14.4 | |  |  | Rewind |
| SP26.2 | Rewind | inject |  | error msg | Rewind |
| SP27.1 | CC: 26.1-26.4 | |  |  | FWD |
| SP27.2 | FWD | inject |  | error msg | FWD |
| SP28.1 | CC: 38.1-38.4 | |  |  | Reverse |
| SP28.2 | Reverse | inject |  | error msg | Reverse |
| SP29.1 | CC: 50.1-50.4 | |  |  | Cue |
| SP29.2 | Cue | inject |  | error msg | Cue |
| SP30.1 | CC: 62.1-62.4 | |  |  | Record |
| SP30.2 | Record | inject |  | error msg | Record |
| SP31.1 | CC: 89.1-89.4 | |  |  | Pause |
| SP31.2 | Pause | inject |  | error msg | Pause |