**5.2 Test Cases**

A test case, is a set of conditions or variables under which a tester will determine whether an [application](http://en.wikipedia.org/wiki/Software_application), [software system](http://en.wikipedia.org/wiki/Software_system) or one of its features is working as it was originally established for it to do. In this project, there are various test cases as listed below:

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| --- | --- |
| **Table 5.2.1: Test Case - Audio Record** | |
| **VCMS\_TESTCASE\_01** | **AUDIO RECORD** |
| **Purpose:** | Recording audio signal for both states i.e. Recording sample state & Operating State |
| **Prereq:** | Microphone, Soundcard |
| **Test Data:** | startRec = {Time Span: 3 Sec, Naudio Recording, fileName} |
| **Steps:** | **For Recording Sample:** |
|  | 1. Start VCMS |
|  | 2. Click + Sign (Menu) |
|  | 3. Click Record Sample Button |
|  | 4. Select the Command |
|  | 5. Click Start Button |
|  | 6. Click Record Button |
|  | 7. Speak |
|  | 8. Verify recording & check the location where respective files are saved. |
|  |  |
|  | **For Operating Purpose:** |
|  | 1. Start VCMS |
|  | 2. Click on Mic Button |
| **Expected result:** | Recording audio in 16-Bit PCM, Mono Channel |
| **Actual Result:** | Audio Recorded with 16-Bit PCM, Mono Channel |
| **Status:** | Passed |
| **Comments:** | Tested for both states recording state as well as operating state |
| **Table 5.2.2: Test Case - Silence Remove** | |
| **VCMS\_TESTCASE\_01** | **SILENCE REMOVE** |
| **Purpose:** | Detecting voice signal by removing silence. |
| **Prereq:** | Audio Signal |
| **Test Data:** | trimWavFile = {.wav audio signal} |
| **Steps:** | 1. Start VCMS |
|  | 2. Click on Developer Option |
|  | 3. Click on Trim Audio Button |
|  | 4. Verify trimmed audio signal |
| **Expected result:** | Get trimmed audio signal |
| **Actual Result:** | Silence removed |
| **Status:** | Passed |
| **Comments** | Length of trimmed audio signal is less than that of recorded audio signal |
|  |  |
| **Table 5.2.3: Test Case - Waveform Generation & Play Back** | |
| **VCMS\_TESTCASE\_01** | **WAVEFORM GENERATION AND PLAY BACK** |
| **Purpose:** | Generating waveform of audio signal & play back for verifying what the user want to spoke |
| **Prereq:** | Audio Signal |
| **Test Data:** | genWaveform = {Audio Signal} |
|  | replay = {Audio Signal} |
| **Steps:** | 1. Start VCMS |
|  | 2. Click on Developer Option |
|  | 3. Click on Generate Waveform Button |
|  | 4. Click on Play Button |
|  | 4. Verify waveform of audio signal & sound from that audio |
| **Expected result:** | Get trimmed audio signal |
| **Actual Result:** | Silence removed |
| **Status:** | Passed |
| **Notes & Questions:** | Are waveform of various samples of command similar? |
|  |  |
| **Table 5.2.4: Test Case - MFCC Computation** | |
| **VCMS\_TESTCASE\_01** | **MFCC COMPUTATION** |
| **Purpose:** | Compute MFCC of partially overlapped spectrum of trimed audio |
| **Prereq:** | 1/2 Overlapped Spectrum |
| **Test Data:** | calcMFCC = {Spectrum Data} |
| **Steps:** | 1. Start VCMS |
|  | 2. Click on Developer Option |
|  | 3. Click on Calc MFCC Button |
|  | 4. Verify MFC Coefficients |
| **Expected result:** | Get 273 MFC Coefficients |
| **Actual Result:** | MFCC Computed & got 273 MFCCs |
| **Status:** | Passed |
| **Comments** | There are 273 MFCCs per sample |
|  |  |
| **Table 5.2.5: Test Case - Euclidian Distance & Correlation Computation** | |
| **VCMS\_TESTCASE\_01** | **EUCLIDIAN DISTANCE AND CORRELATION COMPUTATION** |
| **Purpose:** | Finding Euclidian distance & correlation for matching purpose |
| **Prereq:** | Reference Feature Vector, Current Feature vector |
| **Test Data:** | CORREL = {Current MFCCs, Reference MFCCs} |
|  | EUD = {Current MFCCs, Reference MFCCs} |
| **Steps:** | 1. Start VCMS |
|  | 2. Click on Developer Option |
|  | 3. Click on Compute EudDist & CORREL Button |
|  | 4. Verify Euclidean Distance & Correlation |
| **Expected result:** | Get Euclidean Distance & Correlation between two feature vector |
| **Actual Result:** | Correlation & Euclidean distance computed |
| **Status:** | Passed |
| **Comments** | Respective command invoked if correlation is greater than 0.85 with minimum Euclidian distance |