Non specific fault model

- Tests for conformance to specifications

- Black-box testing → functionality that user sees

1. Help Command
   1. Proper display of help messaged
2. View Command
   1. Proper display of the Turing Machine definition as specified by the Requirements Specification
   2. Should be the same as the example valid .def file in the Requirements Specification
3. List Command output
   1. Prior to any operations being performed
   2. Following insertion of a valid string
   3. Following attempt to insert an invalid string
   4. Following valid deletion of a string
4. Run Command
   1. Attempt to run on a valid string selection
      1. Test for string to be accepted by Turing Machine
      2. Test for string to be rejected by Turing Machine
   2. Use of command when string is already selected, i.e. not enough transitions took place the first call of the run method for a valid string
5. Quit Command
   1. Prior to ever running on a string
   2. When currently running on a string
   3. Following acceptance of a string
   4. Following rejection of a string
6. Exit Command
   1. No string file given at start
   2. Unable to write to location
   3. Able to write to location
7. Valid Def File
   1. Valid string file
      1. No errors, no mention of string file loaded
   2. Invalid string file
      1. No errors on .def loading, mentions strings that are not valid for the Turing Machine
   3. No string file
      1. No errors, no mention of string file loaded
8. Invalid Def File
   1. Valid string file
      1. Errors loading the Turing machine, does not execute program
   2. Invalid string file
      1. Errors loading the Turing machine, does not execute program
   3. No string file
      1. Errors loading the Turing machine, does not execute program

Specific fault model

- Related to implementation of structs/objects

- White-box testing/unit testing

1. Show Command output
   1. Prior to running on a string
   2. During running on a string
   3. After running on a string that is accepted
   4. After running on a string that is rejected
2. List Command
   1. Following invalid attempt to delete a string (user selects 0, -1, length of list + 1, length of list + 2)
3. Insert Command
   1. Attempt to insert a valid string
   2. Attempt to insert an invalid string
   3. Attempt to insert a duplicate string
4. Delete Command
   1. Deletion of a valid string index
   2. Invalid attempt to delete a string (user selects 0, -1, length of list + 1, length of list + 2)
5. Set Command
   1. Valid selection of configuration setting
   2. Attempt to select current setting
   3. Attempt to select an invalid setting (user selects 0, -1, “a”, “abcd”)
6. Truncate Command
   1. Valid selection of configuration setting
   2. Attempt to select current setting
   3. Attempt to select an invalid setting (user selects 0, -1, “a”, “abcd”)
7. Run Command
   1. Attempt to run on an invalid string selection (user selects 0, -1, “a”, “abcd”)
8. Instantaneous Description
   1. Doesn't display any non-tape characters on the tape
   2. Doesn't display any reserved characters in any place besides where they are expected (“<” on the left-most truncation, “[“ to the left of the state name on the tape head, etc.)
   3. Displays the correct number of transitions
   4. Displays the appropriate number of characters to the left and right of the tape head