Description: Part 1: Do Problem 8 on page 131 of Jorgensen's Software Testing. You must include a decision table as part of your submission. See the syllabus for a link to the online version of this book.

For your reference, I've included the problem here:

"The retirement pension salary of a Michigan public school teacher is a percentage of the average of their last 3 years of teaching Normally, the number of years of teaching service is the percentage multiplier. To encourage senior teachers to retire early, the Michigan legislature enacted the following incentive in May of 2010:

Teachers must apply for the incentive before June 11, 2010. Teachers who are currently eligible to retire (age >= 63 years) shall have a multiplier of 1.6% on their salary up to, and including, $90,000, and 1.5% on compensation in excess of $90,000. Teacher who meet the 80 total years of age plus years of teaching shall have a multiplier of 1.55% on their salary up to, and including, $90,000 and 1.5% on compensation in excess of $90,000.

Make a decision table to describe the retirement pension policy; be sure to consider the retirement eligibility criteria carefully. What are the compensation multiplier for a person who is currently 64 with 20 years of teaching whose salary is $95,000?"

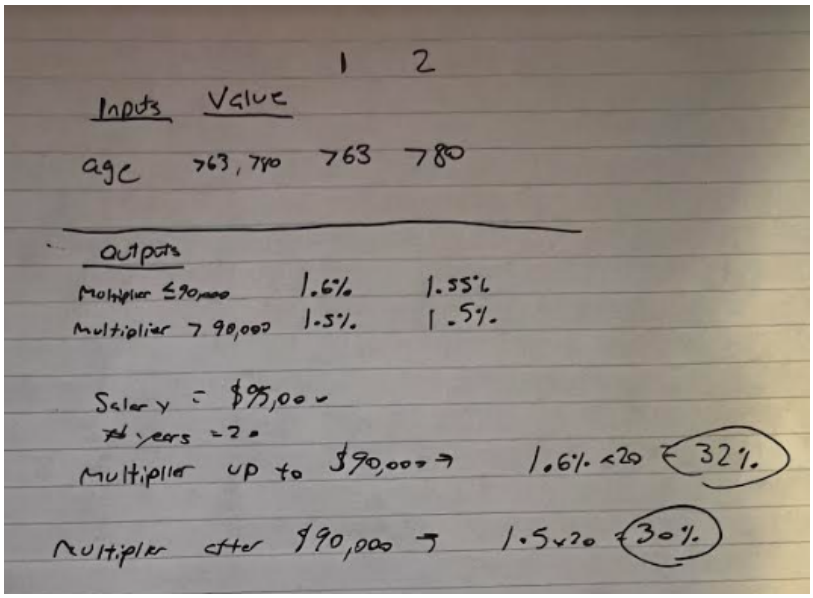
Be sure to include your assumptions and complete decision table plus any reductions that simplify the table to reach your final answer.

Part 2: Create a complete set of test cases for the microwave oven state diagram (follow the link for the diagram). You may assume that the only possible combinations of states and events are included in the state diagram. Be sure to cover all possibilities. Include your state table and test cases in your answer. How many tests are required to fully test the solution?

Author: Matthew Mandelbaum

Summary:

Part 1 Results:



Part 1 was solved by first creating a decision table with the inputs. In this scenario, there arent many inputs. There is only one input with two options. Therefore, this cannot be reduced. There are two possible output values for the two outputs. After that, it's given that the teacher tought for 20 years. So it's just multiplying 20 with the multiplier for the given teacher's age.

Part 2:

State/Event	Waiting	Full Power	Half Power	Set Time	Disabled	Enabled	Operation
Full Power		do: set power = 600	do: set power = 300				
Half Power		do: set power = 600	do: set power = 300				
Timer				do: get number, exit: set time			
Number				do: get number, exit: set time			
Door Open					do: display 'warning'		
Door Close						do: display 'Ready'	
Cancel	do: display time						
Start							do: operate oven
Timeout	do: display time						

Test Case ID	Current State	Event	Output	Next State
T-200	Operation	Cancel	do: display 'time'	Waiting
T-201	Operation	Timout	do: display 'time'	Waiting
T-202	Waiting	Full Power	do: set power = 600	Full Power
T-203	Waiting	Half Power	do: set power = 300	Half Power
T-204	Full Power	Half Power	do: set power = 300	Half Power
T-205	Half Power	Full Power	do: set power = 600	Full Power
T-206	Full Power	Timer	do: get number, exit: set time	Set Time
T-207	Half Power	Timer	do: get number, exit: set time	Set Time
T-208	Set Time	Number	do: get number, exit: set time	Set Time
T-209	Set Time	Door Open	do:display 'warning'	Disabled
T-210	Set Time	Door Closed	do: display 'ready'	Enabled
T-211	Enabled	Start	do: operate oven	Opertion
T-212	Operation	Door Open	do: display 'warning'	Disabled
T-213	Operation	Cancel	do: display 'time'	Waiting

The first stable is a state table for the microwave diagram provided in the assignment. It was created using the states of the microwave and the events that cause it to change states. Each cell contains what occurs when an even happens during a certain state. The empy cells are not reachable as per the diagram. For example, the Full Power event cannot occur during the operation state according to the diagram.

The second table is the test cases necessary to fully test the microwave. This was created using the state table. It tests every possible event for every possible state. It also contains the output and next state that should occur for the respective state and event. Overall, 14 tests cases are needed to fully test everything.

Reflection: Overall, this assignment was tedious. It was tough creating the state table and making sure every possible state and event was covered. I found it easier to create the state table initially on pen and paper and then translate it to Microsoft Excel. While tedious, I see the usefulness of a state table in creating test cases. It visualizes the states of a system and how events should be effecting those states. Making it easy to write tests cases on paper.

Honor Pledge: I pledge my honor that I abided by the Stevens Honor System