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Honor pledge

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Summary :

Overall, all output possibilities are equivalent to the number of combinations after simplification.

In part1, the person can get \$ 96515 salary after retiring.

In part2, a full test required 63 test cases.

Part 1:

"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?"

[illegible]

multiplier of 1.6% on their salary			x		x				
multiplier of 1.6% on their salary up to, and including, \$90,000, and 1.5% on compensation in excess of \$90,000.		x		x					
multiplier of 1.55% on their salary							x		
multiplier of 1.55% on their salary up to, and including, \$90,000 and 1.5% on compensation in excess of \$90,000							x		
No eligible to retire								x	x
Checksum		1	1	2	2	1	1	1	2

I reduce the model from 8 combinations to 5 combinations.

INPUTS	VALUES	1	2	3	4	5	6	7	8
age>=63	Y,N	Y	Y	Y	Y	N	N	N	N
<i>80 total years of age plus years of teaching</i>	Y,N	-	-	-	-	Y	Y	N	N
salary over 90000	Y,N	Y	N	Y	N	Y	N	-	-
OUTPUTS									
multiplier of 1.6% on their salary			x		x				
multiplier of 1.6% on their salary up to, and including, \$90,000, and 1.5% on compensation in excess of \$90,000.		x		x					
multiplier of 1.55% on their salary							x		
multiplier of 1.55% on their salary up to, and including, \$90,000 and 1.5% on compensation in excess of \$90,000						x			
No eligible to retire								x	x
Checksum		1	1	2	2	1	1	1	2

simplify the table

INPUTS	VALUES	1	2	5	6	7
age>=63	Y,N	Y	Y	N	N	N
<i>80 total years of age plus years of</i>	Y,N	-	-	Y	Y	N

teaching						
salary over 90000	Y,N	Y	N	Y	N	-
OUTPUTS						
multiplier of 1.6% on their salary			x			
multiplier of 1.6% on their salary up to, and including, \$90,000, and 1.5% on compensation in excess of \$90,000.		x				
multiplier of 1.55% on their salary					x	
multiplier of 1.55% on their salary up to, and including, \$90,000 and 1.5% on compensation in excess of \$90,000				x		
No eligible to retire						x
Checksum		2	2	1	1	2

The result is calculated by simplifying the table calculation.

What are the compensation multipliers for a person who is currently 64 with 20 years of teaching whose salary is \$95,000?"

The person who is currently 64 over 63, and salary over \$95,000. So the person compensation multipliers is $90000 \times 1.016 + 5000 \times 1.015$, so the person can get \$ 96515 salary after retiring.

PART2

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?

Fully test required $7 \times 9 = 63$ test cases

	Full power: set power =600	Half power: set power =300	Timer: get number	Door open: display waiting	Door closed: display ready	Number	Start: operate oven	Cancel: display time	Timeout: display time
Waiting	Full power	Half power							

Full power		Half power	set time						
Half power	Full power		set time						
Set time				Disable	Enabled	set time			
Disabled					Enabled				
Enabled							Operation		
Operation				Disable				Waiting	waiting

Test cases ID	Current state	Command	Action	next state
T-1	Waiting	Full power	set power =600	Full power
T-2	Waiting	Half power	set power =300	Half power
T-3	Waiting	Timer	nothing	waiting
T-4	Waiting	Door open	nothing	waiting
T-5	Waiting	Door closed	nothing	waiting
T-6	Waiting	Number	nothing	waiting
T-7	Waiting	Start	nothing	waiting
T-8	Waiting	Cancel	nothing	waiting
T-9	Waiting	Timeout	nothing	waiting
T-10	Full power	Full power	nothing	Full power
T-11	Full power	Half power	set power =300	Half power
T-12	Full power	Timer	get number	set time
T-13	Full power	Door open	nothing	Full power
T-14	Full power	Door closed	nothing	Full power
T-15	Full power	Number	nothing	Full power
T-16	Full power	Start	nothing	Full power
T-17	Full power	Cancel	nothing	Full power
T-18	Full power	Timeout	nothing	Full power
T-19	Half power	Full power	set power =600	Full power
T-20	Half power	Half power	nothing	Half power
T-21	Half power	Timer	get number	set time
T-22	Half power	Door open	nothing	Half power
T-23	Half power	Door closed	nothing	Half power

T-24	Half power	Number	nothing	Half power
T-25	Half power	Start	nothing	Half power
T-26	Half power	Cancel	nothing	Half power
T-27	Half power	Timeout	nothing	Half power
T-28	Set time	Full power	nothing	Set time
T-29	Set time	Half power	nothing	Set time
T-30	Set time	Timer	nothing	Set time
T-31	Set time	Door open	dispalay waiting	Disable
T-32	Set time	Door closed	display ready	Enabled
T-33	Set time	Number	get number	set time
T-34	Set time	Start	nothing	Set time
T-35	Set time	Cancel	nothing	Set time
T-36	Set time	Timeout	nothing	Set time
T-37	Disabled	Full power	nothing	Disabled
T-38	Disabled	Half power	nothing	Disabled
T-39	Disabled	Timer	nothing	Disabled
T-40	Disabled	Door open	nothing	Disabled
T-41	Disabled	Door closed	display ready	Enabled
T-42	Disabled	Number	nothing	Disabled
T-43	Disabled	Start	nothing	Disabled
T-44	Disabled	Cancel:	nothing	Disabled
T-45	Disabled	Timeout	nothing	Disabled
T-46	Enabled	Full power	nothing	Enabled
T-47	Enabled	Half power	nothing	Enabled
T-48	Enabled	Timer	nothing	Enabled
T-49	Enabled	Door open	nothing	Enabled
T-50	Enabled	Door closed	nothing	Enabled
T-51	Enabled	Number	nothing	Enabled
T-52	Enabled	Start	operate oven	Operation
T-53	Enabled	Cancel	nothing	Enabled
T-54	Enabled	Timeout	nothing	Enabled
T-55	Operation	Full power	nothing	Operation
T-56	Operation	Half power	nothing	Operation
T-57	Operation	Timer	nothing	Operation

T-58	Operation	Door open	display waiting	Disable
T-59	Operation	Door closed	nothing	Operation
T-60	Operation	Number	nothing	Operation
T-61	Operation	Start	nothing	Operation
T-62	Operation	Cancel:	display time	Waiting
T-63	Operation	Timeout	display time	Waiting