

Using the technique of equivalence classes, what tests need to be written to cover the conditions 100%?

The employee wellness program is combined with health insurance coverage and has the following rules:  
1) Employees who consume 17 units or less of alcohol per week will receive \$25 off their payment.  
2) For employees who complete a Health Risk Assessment, the payment is reduced by \$25.  
3) Employees who participate in annual company health screenings will receive a \$50 discount for having a body mass index (BMI) of 25.5 or less, and \$19 discount if BMI is higher than 25. Non smokers receive an additional \$40 rebate. Smokers who join a smoking cessation course receive a \$24 rebate. Smokers who do not join a smoking cessation course pay an additional \$75.

Conditions	Result	Test case 1	Test case 2	Test case 3	Test case 4	Test case 5	Test case 6	Test case 7	Test case 8	Test case 9	Test case 10	Test case 11	Test case 12	Test case 13	Test case 14	Test case 15	Test case 16	Test case 17	Test case 18	Test case 19	Test case 20	Test case 21	Test case 22	Test case 23	Test case 24	Test case 25	Test case 26	Test case 27	Test case 28	Test case 29	Test case 30	Test case 31	Test case 32	Test case 33	Test case 34	Test case 35	Test case 36
Alcohol use = 17 units per week	Yes/No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Completion of the Health Risk Assessment questionnaire	Yes/No	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Smoker	Yes/No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BMI = 25.5	Yes/No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25.5 < BMI < 30	Yes/No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Smoking cessation course	Yes/No	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
Actions		X	X	X	X		X			X		X					X	X		X	X														X	X	
Discount \$25									X	X		X							X	X																	
Discount \$49					X		X		X	X	X	X	X						X	X	X	X															
Discount \$24		X	X																X	X																	
Discount \$19		X	X	X	X	X	X		X	X		X		X		X		X	X	X	X						X	X	X	X	X	X	X	X	X	X	X
Extra payment \$75									X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X
Discount \$23		X							X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X
Discount \$29		X	X													X	X	X	X	X	X	X															
Total		144	116	65	116	65	40	121	143	93	74	106	116	97	94	25	24	47	5	45	138	88	88	43	24	75	71	52	47	6	28	88	28	52	17	22	

Test data	Expected Result	Test data	Expected Result
Test case 1 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 145	Test case 19 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 436
Test case 2 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 1165	Test case 20 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 1085
Test case 3 1. 21 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 935	Test case 21 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 986
Test case 4 1. 21 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 1165	Test case 22 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 936
Test case 5 1. 21 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee gets a discount: 655	Test case 23 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee gets a discount: 436
Test case 6 1. 21 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 465	Test case 24 1. 21 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 246
Test case 7 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 1715	Test case 25 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee must pay extra: 755
Test case 8 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 1435	Test case 26 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee gets a discount: 719
Test case 9 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee gets a discount: 915	Test case 27 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 525
Test case 10 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 745	Test case 28 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee must pay extra: 475
Test case 11 1. 11 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 1665	Test case 29 1. 21 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee must pay extra: 65
Test case 12 1. 11 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee gets a discount: 1165	Test case 30 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee must pay extra: 285
Test case 13 1. 11 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 975	Test case 31 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee gets a discount: 986
Test case 14 1. 11 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee gets a discount: 945	Test case 32 1. 21 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee must pay extra: 585
Test case 15 1. 11 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 755	Test case 33 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee must pay extra: 525
Test case 16 1. 11 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee must pay extra: 245	Test case 34 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee must pay extra: 338
Test case 17 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 475	Test case 35 1. 21 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 175
Test case 18 1. 11 units of alcohol per week 2. Questionnaire completed 3. Smoker 4. BMI = 27.3 5. Not a course participant	Employee must pay extra: 95	Test case 36 1. 11 units of alcohol per week 2. Questionnaire incomplete 3. Smoker 4. BMI = 22.3 5. Not a course participant	Employee gets a discount: 225