MRs of subject programs used in MuMT

ATM

Details of MRs of ATM program can be found in Table 1. The *amount* represents the transfer amount, and the *balanceDeltaTo* represents the balance change of the transferee after the transfer.

Table 1 MRs of ATM program

NUM	R	R_f
MR1	amount_=amount+1, (100<=amount<=4999)	balanceDeltaTo_=balanceDeltaTo+1
MR2	amount_=amount-1, (101<=amount<=5000)	balanceDeltaTo_=balanceDeltaTo-1
MR3	amount_=2*amount, (100<=amount<=2500)	balanceDeltaTo_=2*balanceDeltaTo
MR4	amount_=0.5*amount, (200<=amount<=5000)	balanceDeltaTo_=0.5*balanceDeltaTo
MR5	amount_=2*(amount+1), (100<=amount<=2499)	balanceDeltaTo_=2*balanceDeltaTo+2
MR6	amount_=2*amount+1, (100<=amount<=2499)	balanceDeltaTo_=2*balanceDeltaTo+1
MR7	amount_=0.5*(amount-1), (201<=amount<=5000)	balanceDeltaTo_=0.5*balanceDeltaTo-0.5
MR8	amount_=0.5*amount-1, (202<=amount<=5000)	balanceDeltaTo_=0.5*balanceDeltaTo-1
MR9	amount_=2*(amount-1), (201<=amount<=2501)	balanceDeltaTo_=2*balanceDeltaTo-2
MR10	amount_=2*amount-1, (201<=amount<=2500)	balanceDeltaTo_=2*balanceDeltaTo-1
MR11	amount_=0.5*(amount+1), (201<=amount<=5000)	balanceDeltaTo_=0.5*balanceDeltaTo+0.5
MR12	amount_=0.5*amount+1, (201<=amount<=5000)	balanceDeltaTo_=0.5*balanceDeltaTo+1

Among them, “X” represents the source test case variable, and “X_” represents the corresponding follow-up test case variable.

BillCal

Details of MRs of BillCal program can be found in Table 2, The *planType* represents the package type; the *planFee* represents the basic monthly fee of the package; the *talkTime* represents the user's talk time; the *flow* represents the user's data traffic; and the *bill* represents that the call fee needs to be paid.

Table 2 MRs of BillCal program

NUM	R	R_f

1. planType=A, planFee=46, 50<=talkTime<=8000 & flow<=150		
MR1	talkTime_=talkTime+1,(50<=talkTime<=7999)	bill_=bill+0.25
MR2	talkTime_=talkTime-1, (51<=talkTime<=8000)	bill_=bill-0.25
MR3	talkTime_=2*talkTime, (50<=talkTime<=4000)	bill_=bill+0.25*talkTime
MR4	talkTime_=0.5*talkTime, (100<=talkTime<=8000)	bill_=bill-0.25*0.5*talkTime
MR5	talkTime_=2*(talkTime+1), (50<=talkTime<=3999)	bill_=bill+0.5+0.25*talkTime
MR6	talkTime_=2*talkTime+1, (50<=talkTime<=3999)	bill_=bill+0.25+0.25*talkTime
MR7	talkTime_=0.5*(talkTime-1), (101<=talkTime<=8000)	bill_=bill-0.25*0.5*talkTime-0.5*0.25
MR8	talkTime_=0.5*talkTime-1, (102<=talkTime<=8000)	bill_=bill-0.25*0.5*talkTime-0.25
MR9	talkTime_=2*(talkTime-1), (51<=talkTime<=4001)	bill_=bill-0.5+0.25*talkTime
MR10	talkTime_=2*talkTime-1, (50<=talkTime<=4000)	bill_=bill-0.25+0.25*talkTime
MR11	talkTime_=0.5*(talkTime+1), (100<=talkTime<=8000)	bill_=bill-0.25*0.5*talkTime+0.5*0.25
MR12	talkTime_=0.5*talkTime+1, (100<=talkTime<=8000)	bill_=bill-0.25*0.5*talkTime+0.25
2. planType=A, planFee=96, 96<=talkTime<=8000 & flow<=240		
MR13	talkTime_=talkTime+1,(96<=talkTime<=7999)	bill_=bill+0.15
MR14	talkTime_=talkTime-1, (97<=talkTime<=8000)	bill_=bill-0.15
MR15	talkTime_=2*talkTime, (96<=talkTime<=4000)	bill_=bill+0.15*talkTime
MR16	talkTime_=0.5*talkTime, (96*2<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime
MR17	talkTime_=2(*talkTime+1), (96<=talkTime<=3999)	bill_=bill+0.3+0.15*talkTime
MR18	talkTime_=2*talkTime+1, (96<=talkTime<=3999)	bill_=bill+0.15+0.15*talkTime
MR19	talkTime_=0.5*(talkTime-1), (193<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime-0.5*0.15
MR20	talkTime_=0.5*talkTime-1, (194<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime-0.15
MR21	talkTime_=2*(talkTime-1), (97<=talkTime<=4001)	bill_=bill-0.3+0.15*talkTime
MR22	talkTime_=2*talkTime-1, (96<=talkTime<=4000)	bill_=bill-0.15+0.15*talkTime
MR23	talkTime_=0.5*(talkTime+1), (192<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime+0.5*0.15
MR24	talkTime_=0.5*talkTime+1, (192<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime+0.15
3. planType=A, planFee=286, 286<=talkTime<=8000 & flow<=900		
MR25	talkTime_=talkTime+1,(286<=talkTime<=7999)	bill_=bill+0.15
MR26	talkTime_=talkTime-1, (287<=talkTime<=8000)	bill_=bill-0.15
MR27	talkTime_=2*talkTime, (286<=talkTime<=4000)	bill_=bill+0.15* talkTime
MR28	talkTime_=0.5*talkTime, (286*2<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime
MR29	talkTime_=2*(talkTime+1), 286<=talkTime<=3999)	bill_=bill+0.3+0.15*talkTime
MR30	talkTime_=2*talkTime+1, (286<=talkTime<=3999)	bill_=bill+0.15+0.15*talkTime
MR31	talkTime_=0.5*(talkTime-1), (573<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime-0.5*0.15
MR32	talkTime_=0.5*talkTime-1, (574<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime-0.15
MR33	talkTime_=2*(talkTime-1), (287<=talkTime<=4001)	bill_=bill-0.3+0.15*talkTime
MR34	talkTime_=2*talkTime-1, (286<=talkTime<=4000)	bill_=bill-0.15+0.15*talkTime
MR35	talkTime_=0.5*(talkTime+1), (572<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime+0.5*0.15
MR36	talkTime_=0.5*talkTime+1, (257<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime+0.15

4. planType=A, planFee=886, 3000<=talkTime<=8000 & flow<=3000		
MR37	talkTime_=talkTime+1,(3000<=talkTime<=7999)	bill_=bill+0.15
MR38	talkTime_=talkTime-1, (3001<=talkTime<=8000)	bill_=bill-0.15
MR39	talkTime_=2*talkTime, (3000<=talkTime<=4000)	bill_=bill+0.15* talkTime
MR40	talkTime_=0.5*talkTime, (3000*2<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime
MR41	talkTime_=2*(talkTime+1),(3000<=talkTime<=3999)	bill_=bill+0.3+0.15*talkTime
MR42	talkTime_=2*talkTime+1, (3000<=talkTime<=3999)	bill_=bill+0.15+0.15*talkTime
MR43	talkTime_=0.5*(talkTime-1), (6001<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime-0.5*0.15
MR44	talkTime_=0.5*talkTime-1, (6002<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime-0.15
MR45	talkTime_=2*(talkTime-1), (3001<=talkTime<=4001)	bill_=bill-0.3+0.15*talkTime
MR46	talkTime_=2*talkTime-1, (3000<=talkTime<=4000)	bill_=bill-0.15+0.15*talkTime
MR47	talkTime_=0.5*(talkTime+1), (6000<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime+0.5*0.15
MR48	talkTime_=0.5*talkTime+1, (6000<=talkTime<=8000)	bill_=bill-0.15*0.5*talkTime+0.15
5. planType=B, planFee=46, talkTime<=120 & 40<=flow<=1000		
MR49	flow_=flow+1,(40<=flow<=1000)	bill_=bill+0.3
MR50	flow_=flow-1, (41<=flow<=1000)	bill_=bill-0.3
MR51	flow_=2*flow, (40<=flow<=500)	bill_=bill+0.3*flow
MR52	flow_=0.5*flow, (40*2<=flow<=1000)	bill_=bill-0.3*0.5*flow
MR53	flow_=2*flow+1, (40<=talkTime<=499)	bill_=bill+0.3+0.3*flow
MR54	flow_=2*(flow+1), (40<=talkTime<=499)	bill_=bill+0.6+0.3*flow
MR55	flow_=0.5*flow-1, (81<=flow <=1000)	bill_=bill-0.3*0.5*flow-0.5*0.3
MR56	flow_=0.5*flow-1, (82<=flow <=1000)	bill_=bill-0.3*0.5*flow-0.3
MR57	flow_=2*(flow-1), (41<= flow <=501)	bill_=bill-0.6+0.3*flow
MR58	flow_=2*flow-1, (40<= flow <=500)	bill_=bill-0.3+0.3*flow
MR59	flow_=0.5*(flow+1), (80<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.5*0.3
MR60	flow_=0.5*flow+1, (80<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.3
6. planType=B, planFee=96, talkTime<=450 & 80<=flow<=1000		
MR61	flow_=flow+1,(80<=flow<=1000)	bill_=bill+0.3
MR62	flow_=flow-1, (81<=flow<=1000)	bill_=bill-0.3
MR63	flow_=2*flow, (80<=flow<=500)	bill_=bill+0.3*flow
MR64	flow_=0.5*flow, (80*2<=flow<=1000)	bill_=bill-0.3*0.5*flow
MR65	flow_=2*(flow+1), (80<=talkTime<=499)	bill_=bill+0.6+0.3*flow
MR66	flow_=2*flow+1, (80<=talkTime<=499)	bill_=bill+0.3+0.3*flow
MR67	flow_=0.5*flow-1, (161<=flow <=1000)	bill_=bill-0.3*flow /2-0.5*0.3
MR68	flow_=0.5*flow-1, (162<=flow <=1000)	bill_=bill-0.3*0.5*flow-0.3
MR69	flow_=2*(flow-1), (81<= flow <=501)	bill_=bill-0.6+0.3*flow
MR70	flow_=2*flow-1, (80<= flow <=500)	bill_=bill-0.3+0.3*flow
MR71	flow_=0.5*(flow+1), (160<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.5*0.3
MR72	flow_=0.5*flow+1, (160<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.3

7. planType=B, planFee=126, talkTime<=680 & 100<=flow<=1000		
MR73	flow_=flow+1,(100<=flow<=1000)	bill_=bill+0.3
MR74	flow_=flow-1, (101<=flow<=1000)	bill_=bill-0.3
MR75	flow_=2*flow, (100<=flow<=500)	bill_=bill+0.3*flow
MR76	flow_=0.5*flow, (100*2<=flow<=1000)	bill_=bill-0.3*0.5*flow
MR77	flow_=2*(flow+1), (100<=talkTime<=499)	bill_=bill+0.6+0.3*flow
MR78	flow_=2*flow+1, (100<=talkTime<=499)	bill_=bill+0.3+0.3*flow
MR79	flow_=0.5*flow-1, (201<=flow <=1000)	bill_=bill-0.3*flow /2-0.5*0.3
MR80	flow_=0.5*flow-1, (202<=flow <=1000)	bill_=bill-0.3*0.5*flow-0.3
MR81	flow_=2*(flow-1), (101<= flow <=501)	bill_=bill-0.6+0.3*flow
MR82	flow_=2*flow-1, (100<= flow <=500)	bill_=bill-0.3+0.3*flow
MR83	flow_=0.5*(flow+1), (200<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.5*0.3
MR84	flow_=0.5*flow+1, (200<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.3
8. planType=B, planFee=186, talkTime<=1180 & 150<=flow<=1000		
MR85	flow_=flow+1,(150<=flow<=1000)	bill_=bill+0.3
MR86	flow_=flow-1, (151<=flow<=1000)	bill_=bill-0.3
MR87	flow_=2*flow, (150<=flow<=500)	bill_=bill+0.3*flow
MR88	flow_=0.5*flow, (150*2<=flow<=1000)	bill_=bill-0.3*0.5*flow
MR89	flow_=2*(flow+1), (150<=talkTime<=499)	bill_=bill+0.6+0.3*flow
MR90	flow_=2*flow+1, (150<=talkTime<=499)	bill_=bill+0.3+0.3*flow
MR91	flow_=0.5*(flow-1), (301<=flow <=1000)	bill_=bill-0.3*flow /2-0.5*0.3
MR92	flow_=0.5*flow-1, (302<=flow <=1000)	bill_=bill-0.3*0.5*flow-0.3
MR93	flow_=2*(flow-1), (151<= flow <=501)	bill_=bill-0.6+0.3*flow
MR94	flow_=2*flow-1, (150<= flow <=500)	bill_=bill-0.3+0.3*flow
MR95	flow_=0.5*(flow+1), (160<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.5*0.3
MR96	flow_=0.5*flow+1, (160<=flow <=1000)	bill_=bill-0.3*0.5*flow+0.3

Among them, “X” represents the source test case variable, and “X_” represents the corresponding follow-up test case variable.

BaggBill

Details of MRs of BaggBill program can be found in Table 3. The *airClass* represents the cabin class of the passenger; the *area* represents the flight type; the *isStudent* represents whether it is a student ticket; the *economicfee* represents the air fare purchased by the user; and the *luggagefee* represents the fee to be paid.

Table 3 MRs of BaggBill program

NUM	R	R_f
1. airClass=0, isStudent=F/T, area=0~1, economicfee=1000		
MR1	luggage_=luggage+1, (40<=luggage<=199)	luggagefee_=luggagefee+15
MR2	luggage_=luggage-1, (41<=luggage<=200)	luggagefee_=luggagefee-15
MR3	luggage_=2*luggage, (40<=luggage<=100)	luggagefee_=luggagefee+15*luggage
MR4	luggage_=0.5*luggage, (80<=luggage<=200)	luggagefee_=luggagefee-7.5*luggage
MR5	luggage_=2*(luggage+1), (40<=luggage<=99)	luggagefee_=luggagefee+15*luggage+30
MR6	luggage_=2*luggage+1, (40<=luggage<=99)	luggagefee_=luggagefee+15*luggage+15
MR7	luggage_=0.5*(luggage-1), (81<=luggage<=200)	luggagefee_=luggagefee-15*luggage-7.5
MR8	luggage_=0.5*luggage-1, (81<=luggage<=200)	luggagefee_=luggagefee-15*luggage-15
MR9	luggage_=2*(luggage-1), (40<=luggage<=100)	luggagefee_=luggagefee+15*luggage-30
MR10	luggage_=2*luggage-1, (40<=luggage<=100)	luggagefee_=luggagefee+15*luggage-15
MR11	luggage_=0.5*(luggage+1), (80<=luggage<=200)	luggagefee_=luggagefee-15*luggage+7.5
MR12	luggage_=0.5*luggage+1, (78<=luggage<=200)	luggagefee_=luggagefee-15*luggage+15
2. airClass=1, isStudent=F/T, area=0~1, economicfee=1000		
MR13	luggage_=luggage+1, (30<=luggage<=199)	luggagefee_=luggagefee+15
MR14	luggage_=luggage-1, (31<=luggage<=200)	luggagefee_=luggagefee-15
MR15	luggage_=2*luggage, (30<=luggage<=100)	luggagefee_=luggagefee+15*luggage
MR16	luggage_=0.5*luggage, (60<=luggage<=200)	luggagefee_=luggagefee-7.5*luggage
MR17	luggage_=2*(luggage+1), (30<=luggage<=99)	luggagefee_=luggagefee+15*luggage+30
MR18	luggage_=2*luggage+1, (30<=luggage<=99)	luggagefee_=luggagefee+15*luggage+15
MR19	luggage_=0.5*(luggage-1), (61<=luggage<=200)	luggagefee_=luggagefee-15*luggage-7.5
MR20	luggage_=0.5*luggage-1, (61<=luggage<=200)	luggagefee_=luggagefee-15*luggage-15
MR21	luggage_=2*(luggage-1), (30<=luggage<=100)	luggagefee_=luggagefee+15*luggage-30
MR22	luggage_=2*luggage-1, (30<=luggage<=100)	luggagefee_=luggagefee+15*luggage-15
MR23	luggage_=0.5*(luggage+1), (60<=luggage<=200)	luggagefee_=luggagefee-15*luggage+7.5
MR24	luggage_=0.5*luggage+1, (58<=luggage<=200)	luggagefee_=luggagefee-15*luggage+15
3. airClass=2, isStudent=F/T, area=0~1, economicfee=1000,		
MR25	luggage_=luggage+1, (20<=luggage<200)	luggagefee_=luggagefee+15

MR26	luggage_=luggage-1, (21<=luggage<200)	luggagefee_=luggagefee-15
MR27	luggage_=2*luggage, (20<=luggage<100)	luggagefee_=luggagefee+15*luggage
MR28	luggage_=0.5*luggage, (40<=luggage<200)	luggagefee_=luggagefee-7.5*luggage
MR29	luggage_=2*(luggage+1), (20<=luggage<=99)	luggagefee_=luggagefee+15*luggage+30
MR30	luggage_=2*luggage+1, (20<=luggage<=99)	luggagefee_=luggagefee+15*luggage+15
MR31	luggage_=0.5*(luggage-1), (41<=luggage<=200)	luggagefee_=luggagefee-15*luggage-7.5
MR32	luggage_=0.5*luggage-1, (41<=luggage<=200)	luggagefee_=luggagefee-15*luggage-15
MR33	luggage_=2*(luggage-1), (20<=luggage<=100)	luggagefee_=luggagefee+15*luggage-30
MR34	luggage_=2*luggage-1, (20<=luggage<=100)	luggagefee_=luggagefee+15*luggage-15
MR35	luggage_=0.5*(luggage+1), (40<=luggage<=200)	luggagefee_=luggagefee-15*luggage+7.5
MR36	luggage_=0.5*luggage+1, (38<=luggage<=200)	luggagefee_=luggagefee-15*luggage+15
4. airClass=3, isStudent=F/T, area=0~1, economicfee=1000		
MR37	luggage_=luggage+1, (0<=luggage<200)	luggagefee_=luggagefee+15
MR38	luggage_=luggage-1, (1<=luggage<200)	luggagefee_=luggagefee-15
MR39	luggage_=2*luggage, (1<=luggage<100)	luggagefee_=luggagefee+15*luggage
MR40	luggage_=0.5*luggage, (2<=luggage<200)	luggagefee_=luggagefee-7.5*luggage
MR41	luggage_=2*(luggage+1), (0<=luggage<=99)	luggagefee_=luggagefee+15*luggage+30
MR42	luggage_=2*luggage+1, (0<=luggage<=99)	luggagefee_=luggagefee+15*luggage+15
MR43	luggage_=0.5*(luggage-1), (3<=luggage<=200)	luggagefee_=luggagefee-15*luggage-7.5
MR44	luggage_=0.5*luggage-1, (2<=luggage<=200)	luggagefee_=luggagefee-15*luggage-15
MR45	luggage_=2*(luggage-1), (1<=luggage<=100)	luggagefee_=luggagefee+15*luggage-30
MR46	luggage_=2*luggage-1, (1<=luggage<=100)	luggagefee_=luggagefee+15*luggage-15
MR47	luggage_=0.5*(luggage+1), (2<=luggage<=200)	luggagefee_=luggagefee-15*luggage+7.5
MR48	luggage_=0.5*luggage+1, (4<=luggage<=200)	luggagefee_=luggagefee-15*luggage+15
5. airClass=0~3, isStudent=T, area=1, economicfee=1000		
MR49	luggage_=luggage+1, (30<=luggage<200)	luggagefee_=luggagefee+15
MR50	luggage_=luggage-1, (31<=luggage<200)	luggagefee_=luggagefee-15
MR51	luggage_=2*luggage, (30<=luggage<100)	luggagefee_=luggagefee+15*luggage
MR52	luggage_=0.5*luggage, (60<=luggage<200)	luggagefee_=luggagefee-7.5*luggage
MR53	luggage_=2*(luggage+1), (30<=luggage<=99)	luggagefee_=luggagefee+15*luggage+30
MR54	luggage_=2*luggage+1, (30<=luggage<=99)	luggagefee_=luggagefee+15*luggage+15
MR55	luggage_=0.5*(luggage-1), (61<=luggage<=200)	luggagefee_=luggagefee-15*luggage-7.5
MR56	luggage_=0.5*luggage-1, (61<=luggage<=200)	luggagefee_=luggagefee-15*luggage-15
MR57	luggage_=2*(luggage-1), (30<=luggage<=100)	luggagefee_=luggagefee+15*luggage-30
MR58	luggage_=2*luggage-1, (30<=luggage<=100)	luggagefee_=luggagefee+15*luggage-15
MR59	luggage_=0.5*(luggage+1), (60<=luggage<=200)	luggagefee_=luggagefee-15*luggage+7.5
MR60	luggage_=0.5*luggage+1, (58<=luggage<=200)	luggagefee_=luggagefee-15*luggage+15

Among them, “X” represents the source test case variable, and “X_” represents the

corresponding follow-up test case variable.

ParkingFee

Details of MRs of ParkingFee program can be found in Table 4. The *apd* represents the actual parking time; the *estimation* represents the estimated parking time; and the *fee* represents parking fee.

Table 4 MRs of ParkingFee program

NUM	R	R_f
1. estimation=(0.0,2.0], 0<=apd<=2		
MR1	apd_=apd+0.1, (0<apd<=1.9)	fee_=fee || fee_=fee+calculation*0.4
MR2	apd_=apd-0.1, (0.1<apd<=2)	fee_=fee || fee_=fee-calculation*0.4
MR3	apd_=apd*2, (0<apd<=1)	fee_=fee || fee_=fee+calculation*0.4
MR4	apd_=0.5*apd, (0<apd<=2)	fee_=fee || fee_=fee-calculation*0.4
MR5	apd_=(apd+0.1)*2, (0<apd<=0.9)	fee_=fee || fee_=fee+calculation*0.4
MR6	apd_=apd*2+0.1, (0<apd<=0.95)	fee_=fee || fee_=fee+calculation*0.4
MR7	apd_=0.5*(apd-0.1), (0.1<apd<=2)	fee_=fee || fee_=fee-calculation*0.4
MR8	apd_=0.5*apd-0.1, (0.2<apd<=2)	fee_=fee || fee_=fee-calculation*0.4
MR9	apd_=(apd-0.1)*2, (0.1<apd<=1.1)	fee_=fee || fee_=fee+calculation*0.4
MR10	apd_=apd*2-0.1, (0.2<apd<=1.05)	fee_=fee || fee_=fee+calculation*0.4
MR11	apd_=0.5*(apd+0.1), (0<apd<=2)	fee_=fee || fee_=fee-calculation*0.4
MR12	apd_=0.5*apd+0.1, (0<apd<=2)	fee_=fee || fee_=fee-calculation*0.4
2. estimation=(2.0,4.0], 2<apd<=4		
MR13	apd_=apd+0.1, (2<apd<=3.9)	fee_=fee || fee_=fee+calculation*0.4
MR14	apd_=apd-0.1, (2.1<apd<=4)	fee_=fee || fee_=fee-calculation*0.4
3. estimation=(4.0,24.0],4<apd<=24		
MR15	apd_=apd+0.1, (4<apd<=23.9)	fee_=fee || fee_=fee+calculation*0.4
MR16	apd_=apd-0.1, (4.1<apd<=24)	fee_=fee || fee_=fee-calculation*0.4
MR17	apd_=apd*2, (4<apd<=12)	fee_=fee+apd*calculation*0.4
MR18	apd_=0.5*apd, (8<apd<=24)	fee_=fee-apd*calculation*0.4
MR19	apd_=(apd+0.1)*2, (4<apd<=11.9)	fee_=fee+apd*calculation*0.4+ calculation*0.4|| fee_=fee+apd*calculation*0.4
MR20	apd_=apd*2+0.1, (4<apd<=11.95)	fee_=fee+apd*calculation*0.4+ calculation*0.4|| fee_=fee+apd*calculation*0.4
MR21	apd_=0.5*(apd-0.1), (8.1<apd<=24)	fee_=fee-apd*calculation*0.4-calculation*0.4|| fee_=fee-apd*calculation*0.4
MR22	apd_=0.5*apd-0.1, (8.2<apd<=24)	fee_=fee-apd*calculation*0.4-calculation*0.4|| fee_=fee-apd*calculation*0.4
MR23	apd_=(apd-0.1)*2, (4.1<apd<=12.1)	fee_=fee+apd*calculation*0.4-calculation*0.4 || fee_=fee+apd*calculation*0.4
MR24	apd_=apd*2-0.1, (4<apd<=12.05)	fee_=fee+apd*calculation*0.4- calculation*0.4|| fee_=fee+apd*calculation*0.4

MR25	apd_=0.5*(apd+0.1), (8<= apd <=24)	fee_=fee-apd*calculation*0.4+calculation*0.4|| fee_=fee-apd*calculation*0.4
MR26	apd_=0.5*apd+0.1, (8<= apd <=24)	fee_=fee-apd*calculation*0.4+calculation*0.4|| fee_=fee-apd*calculation*0.4
4. estimation=(0.0,2.0], 2<apd<=4		
MR27	apd_=apd+0.1, (2<apd<=3.9)	fee_=fee || fee_=fee+calculation*1.2
MR28	apd_=apd-0.1, (2.1<apd<=4)	fee_=fee || fee_=fee-calculation*1.2
5. estimation=(0.0,2.0], 4<apd<=24		
MR29	apd_=apd+0.1, (4<apd<=23.9)	fee_=fee || fee_=fee+calculation*1.2
MR30	apd_=apd-0.1, (4.1<apd<=24)	fee_=fee || fee_=fee-calculation*1.2
MR31	apd_=apd*2, (4<apd<=12)	fee_=fee+apd*calculation*1.2
MR32	apd_=0.5*apd, (8<apd<=24)	fee_=fee-apd*calculation*1.2
MR33	apd_=(apd+0.1)*2, (4<apd<=11.9)	fee_=fee+apd*calculation*1.2+ calculation*1.2 || fee_=fee+apd*calculation*1.2
MR34	apd_=apd*2+0.1, (4<apd<=11.95)	fee_=fee+apd*calculation*1.2+ calculation*1.2 || fee_=fee+apd*calculation*1.2
MR35	apd_=0.5*(apd-0.1), (8.1<apd<=24)	fee_=fee-apd*calculation*1.2-calculation*1.2|| fee_=fee-apd*calculation*1.2
MR36	apd_=0.5*apd-0.1, (8.2<apd<=24)	fee_=fee-apd*calculation*1.2-calculation*1.2|| fee_=fee-apd*calculation*1.2
MR37	apd_=(apd-0.1)*2, (4.1<apd<=12.1)	fee_=fee+apd*calculation*1.2-calculation*1.2|| fee_=fee+apd*calculation*1.2
MR38	apd_=apd*2-0.1, (4<apd<=12.05)	fee_=fee+apd*calculation*1.2- calculation*1.2|| fee_=fee+apd*calculation*1.2
MR39	apd_=0.5*(apd+0.1), (8<= apd <=24)	fee_=fee-apd*calculation*1.2+calculation*1.2|| fee_=fee-apd*calculation*1.2
MR40	apd_=0.5*apd+0.1, (8<= apd <=24)	fee_=fee-apd*calculation*1.2+calculation*1.2|| fee_=fee-apd*calculation*1.2
6. estimation=(2.0,4.0], 4<apd<=24		
MR41	apd_=apd+0.1, (4<apd<=23.9)	fee_=fee || fee_=fee+calculation*1.2
MR42	apd_=apd-0.1, (4.1<apd<=24)	fee_=fee || fee_=fee-calculation*1.2
MR43	apd_=apd*2, (4<apd<=12)	fee_=fee+apd*calculation*1.2
MR44	apd_=0.5*apd, (8<apd<=24)	fee_=fee-apd*calculation*1.2
MR45	apd_=(apd+0.1)*2, (4<apd<=11.9)	fee_=fee+apd*calculation*1.2+ calculation*1.2|| fee_=fee+apd*calculation*1.2
MR46	apd_=apd*2+0.1, (4<apd<=11.95)	fee_=fee+apd*calculation*1.2+ calculation*1.2|| fee_=fee+apd*calculation*1.2
MR47	apd_=0.5*(apd-0.1), (8.1<apd<=24)	fee_=fee-apd*calculation*1.2-calculation*1.2|| fee_=fee-apd*calculation*1.2
MR48	apd_=0.5*apd-0.1, (8.2<apd<=24)	fee_=fee-apd*calculation*1.2-calculation*1.2|| fee_=fee-apd*calculation*1.2
MR49	apd_=(apd-0.1)*2, (4.1<apd<=12.1)	fee_=fee+apd*calculation*1.2-calculation*1.2 || fee_=fee+apd*calculation*1.2
MR50	apd_=apd*2-0.1, (4<apd<=12.05)	fee_=fee+apd*calculation*1.2- calculation*1.2|| fee_=fee+apd*calculation*1.2
MR51	apd_=0.5*(apd+0.1), (8<= apd <=24)	fee_=fee-apd*calculation*0.4+calculation*0.4|| fee_=fee-apd*calculation*0.4
MR52	apd_=0.5*apd+0.1, (8<= apd <=24)	fee_=fee-apd*calculation*0.4+calculation*0.4|| fee_=fee-apd*calculation*0.4

Among them, “X” represents the source test case variable, and “X_” represents the

corresponding follow-up test case variable.

NumberUtil

Details of MRs of NumberUtil program can be found in Table 5. The *str* represents the input string of numbers; the *initials* represents the type of the initial character; the *typeQualifier* represents the type qualifier, the *number* represents number be printed.

Table 5 MRs of NumberUtil program

NUM	*R*	*Rf*
1. initials=0x\0X\#, typeQualifier=0, 0<=str<=2147483647		
MR1	str_=str+1,(0<=str<=2147483646)	number_=number+1
MR2	str_=str-1,(1<=str<=2147483647)	number_=number-1
MR3	str_=2*str, (1<=str<=1073741823)	number_=number*2
MR4	str_=0.5*str, (2<=str<=2147483647)	number_=0.5*number
MR5	str_=2*(str+1), (0<=str<=1073741822)	number_=number*2+2
MR6	str_=2*str+1, (0<=str<=1073741823)	number_=number*2+1
MR7	str_=0.5*(str-1), (3<=str<=2147483647)	number_=0.5*number-0.5
MR8	str_=0.5*str-1, (4<=str<=2147483647)	number_=0.5*number-1
MR9	str_=2*(str-1), (2<=str<=1073741824)	number_=number*2-2
MR10	str_=2*str-1, (1<=str<=1073741824)	number_=number*2-1
MR11	str_=0.5*(str+1), (1<=str<=2147483647)	number_=0.5*number+0.5
MR12	str_=0.5*str+1, (2<=str<=2147483647)	number_=0.5*number+1
2. initials=0x\0X\ #, typeQualifier=0, 2147483648<=str<=9223372036854775807		
MR13	str_=str+1,(2147483648<=str<=9223372036854775806)	number_=number+1
MR14	str_=str-1,(2147483649<=str<=9223372036854775807)	number_=number-1
MR15	str_=2*str, (2147483648<=str<=4611686018427387903)	number_=number*2
MR16	str_=0.5*str, (4294967296<=str<=9223372036854775807)	number_=0.5*number
MR17	str_=2*(str+1), (2147483648<=str<=4611686018427387902)	number_=number*2+2
MR18	str_=2*str+1, (2147483648<=str<=4611686018427387903)	number_=number*2+1
MR19	str_=0.5*(str-1), (4294967296<=str<=9223372036854775807)	number_=0.5*number-0.5
MR20	str_=0.5*str-1, (4294967298<=str<=9223372036854775807)	number_=0.5*number-1
MR21	str_=2*(str-1), (2147483648<=str<=4611686018427387904)	number_=number*2-2
MR22	str_=2*str-1, (2147483648<=str<=4611686018427387904)	number_=number*2-1
MR23	str_=0.5*(str+1), (4294967295<=str<=9223372036854775807)	number_=0.5*number+0.5
MR24	str_=0.5*str+1, (4294967294<=str<=9223372036854775807)	number_=0.5*number+1

3. initials=0x\0X\ #, typeQualifier=0, 9223372036854775808<=str		
MR25	str_=str+1,(9223372036854775808<=str)	number_=number+1
MR26	str_=str-1,(9223372036854775809<=str)	number_=number-1
MR27	str_=2*str, (9223372036854775808<=str)	number_=number*2
MR28	str_=0.5*str, (18446744073709551616<=str)	number_=0.5*number
MR29	str_=2*(str+1), (9223372036854775808<=str)	number_=number*2+2
MR30	str_=2*str+1, (9223372036854775808<=str)	number_=number*2+1
MR31	str_=0.5*(str-1), (18446744073709551617<=str)	number_=0.5*number-0.5
MR32	str_=0.5*str-1, (18446744073709551618<=str)	number_=0.5*number-1
MR33	str_=2*(str-1), (9223372036854775808<=str)	number_=number*2-2
MR34	str_=2*str-1, (9223372036854775808<=str)	number_=number*2-1
MR35	str_=0.5*(str+1), (18446744073709551615<=str<)	number_=0.5*number+0.5
MR36	str_=0.5*str+1, (18446744073709551615<=str)	number_=0.5*number+1
4. initials=0, typeQualifier=0, 0<=str<=2147483647		
MR37	str_=str+1,(0<=str<=2147483646)	number_=number+1
MR38	str_=str-1,(1<=str<=2147483647)	number_=number-1
MR39	str_=2*str, (1<=str<=1073741823)	number_=number*2
MR40	str_=0.5*str, (2<=str<=2147483647)	number_=0.5*number
MR41	str_=2*(str+1), (0<=str<=1073741822)	number_=number*2+2
MR42	str_=2*str+1, (0<=str<=1073741823)	number_=number*2+1
MR43	str_=0.5*(str-1), (3<=str<=2147483647)	number_=0.5*number-0.5
MR44	str_=0.5*str-1, (4<=str<=2147483647)	number_=0.5*number-1
MR45	str_=2*(str-1), (2<=str<=1073741824)	number_=number*2-2
MR46	str_=2*str-1, (1<=str<=1073741824)	number_=number*2-1
MR47	str_=0.5*(str+1), (1<=str<=2147483647)	number_=0.5*number+0.5
MR48	str_=0.5*str+1, (2<=str<=2147483647)	number_=0.5*number+1
5. initials=0, typeQualifier=0, 2147483648<=str<=9223372036854775807		
MR49	str_=str+1,(2147483648<=str<=9223372036854775806)	number_=number+1
MR50	str_=str-1,(2147483649<=str<=9223372036854775807)	number_=number-1
MR51	str_=2*str, (2147483648<=str<=4611686018427387903)	number_=number*2
MR52	str_=0.5*str, (4294967296<=str<=9223372036854775807)	number_=0.5*number
MR53	str_=2*(str+1), (2147483648<=str<=4611686018427387902)	number_=number*2+2
MR54	str_=2*str+1, (2147483648<=str<=4611686018427387903)	number_=number*2+1
MR55	str_=0.5*(str-1), (4294967296<=str<=9223372036854775807)	number_=0.5*number-0.5
MR56	str_=0.5*str-1, (4294967298<=str<=9223372036854775807)	number_=0.5*number-1
MR57	str_=2*(str-1), (2147483648<=str<=4611686018427387904)	number_=number*2-2
MR58	str_=2*str-1, (2147483648<=str<=4611686018427387904)	number_=number*2-1
MR59	str_=0.5*(str+1), (4294967295<=str<=9223372036854775807)	number_=0.5*number+0.5

MR60	str_=0.5*str+1, (4294967294<=str<=9223372036854775807)	number_=0.5*number+1
6. initials=0, typeQualifier=0, 922337203685477580 8<=str		
MR61	str_=str+1,(922337203685477580 8<=str)	number_=number+1
MR62	str_=str-1,(9223372036854775809<=str)	number_=number-1
MR63	str_=2*str, (922337203685477580 8<=str)	number_=number*2
MR64	str_=0.5*str, (1844674407370955161 6<=str)	number_=0.5*number
MR65	str_=2*(str+1), (922337203685477580 8<=str)	number_=number*2+2
MR66	str_=2*str+1, (922337203685477580 8<=str)	number_=number*2+1
MR67	str_=0.5*(str-1), (1844674407370955161 7<=str)	number_=0.5*number-0.5
MR68	str_=0.5*str-1, (1844674407370955161 8<=str)	number_=0.5*number-1
MR69	str_=2*(str-1), (922337203685477580 8<=str)	number_=number*2-2
MR70	str_=2*str-1, (922337203685477580 8<=str)	number_=number*2-1
MR71	str_=0.5*(str+1), (1844674407370955161 5<=str<)	number_=0.5*number+0.5
MR72	str_=0.5*str+1, (1844674407370955161 5<=str)	number_=0.5*number+1
7. initials=0, typeQualifier=L/l, 0<=str<=9223372036854775807		
MR73	str_=str+1,(0<=str<=9223372036854775806)	number_=number+1
MR74	str_=str-1,(1<=str<=9223372036854775807)	number_=number-1
MR75	str_=2*str, (1<=str<=4611686018427387903)	number_=number*2
MR76	str_=0.5*str, (2<=str<=9223372036854775807)	number_=0.5*number
MR77	str_=2*(str+1), (0<=str<=4611686018427387902)	number_=number*2+2
MR78	str_=2*str+1, (0<=str<=4611686018427387903)	number_=number*2+1
MR79	str_=0.5*(str-1), (3<=str<=9223372036854775807)	number_=0.5*number-0.5
MR80	str_=0.5*str-1, (2<=str<=9223372036854775807)	number_=0.5*number-1
MR81	str_=2*(str-1), (2<=str<=4611686018427387904)	number_=number*2-2
MR82	str_=2*str-1, (1<=str<=4611686018427387904)	number_=number*2-1
MR83	str_=0.5*(str+1), (1<=str<=9223372036854775807)	number_=0.5*number+0.5
MR84	str_=0.5*str+1, (2<=str<=9223372036854775807)	number_=0.5*number+1
8. initials=0, typeQualifier=L/l, 922337203685477580 8<=str		
MR85	str_=str+1,(922337203685477580 8<=str)	number_=number+1
MR86	str_=str-1,(9223372036854775809<=str)	number_=number-1
MR87	str_=2*str, (922337203685477580 8<=str)	number_=number*2
MR88	str_=0.5*str, (1844674407370955161 6<=str)	number_=0.5*number
MR89	str_=2*(str+1), (922337203685477580 8<=str)	number_=number*2+2
MR90	str_=2*str+1, (922337203685477580 8<=str)	number_=number*2+1
MR91	str_=0.5*(str-1), (1844674407370955161 7<=str)	number_=0.5*number-0.5
MR92	str_=0.5*str-1, (1844674407370955161 8<=str)	number_=0.5*number-1
MR93	str_=2*(str-1), (922337203685477580 8<=str)	number_=number*2-2
MR94	str_=2*str-1, (922337203685477580 8<=str)	number_=number*2-1
MR95	str_=0.5*(str+1), (1844674407370955161 5<=str<)	number_=0.5*number+0.5

MR96	str_=0.5*str+1, (1844674407370955161 5<=str)	number_=0.5*number+1
9. initials=1~9, typeQualifier=0, 0<=str<=2147483647		
MR97	str_=str+1,(0<=str<=2147483646)	number_=number+1
MR98	str_=str-1,(1<=str<=2147483647)	number_=number-1
MR99	str_=2*str, (1<=str<=1073741823)	number_=number*2
MR100	str_=0.5*str, (2<=str<=2147483647)	number_=0.5*number
MR101	str_=2*(str+1), (0<=str<=1073741822)	number_=number*2+2
MR102	str_=2*str+1, (0<=str<=1073741823)	number_=number*2+1
MR103	str_=0.5*(str-1), (3<=str<=2147483647)	number_=0.5*number-0.5
MR104	str_=0.5*str-1, (4<=str<=2147483647)	number_=0.5*number-1
MR105	str_=2*(str-1), (2<=str<=1073741824)	number_=number*2-2
MR106	str_=2*str-1, (1<=str<=1073741824)	number_=number*2-1
MR107	str_=0.5*(str+1), (1<=str<=2147483647)	number_=0.5*number+0.5
MR108	str_=0.5*str+1, (2<=str<=2147483647)	number_=0.5*number+1
10. initials=1~9, typeQualifier=0, 2147483648<=str<=9223372036854775807		
MR109	str_=str+1,(2147483648<=str<=9223372036854775806)	number_=number+1
MR110	str_=str-1,(2147483649<=str<=9223372036854775807)	number_=number-1
MR111	str_=2*str, (2147483648<=str<=4611686018427387903)	number_=number*2
MR112	str_=0.5*str, (4294967296<=str<=9223372036854775807)	number_=0.5*number
MR113	str_=2*(str+1), (2147483648<=str<=4611686018427387902)	number_=number*2+2
MR114	str_=2*str+1, (2147483648<=str<=4611686018427387903)	number_=number*2+1
MR115	str_=0.5*(str-1), (4294967296<=str<=9223372036854775807)	number_=0.5*number-0.5
MR116	str_=0.5*str-1, (4294967298<=str<=9223372036854775807)	number_=0.5*number-1
MR117	str_=2*(str-1), (2147483648<=str<=4611686018427387904)	number_=number*2-2
MR118	str_=2*str-1, (2147483648<=str<=4611686018427387904)	number_=number*2-1
MR119	str_=0.5*(str+1), (4294967295<=str<=9223372036854775807)	number_=0.5*number+0.5
MR120	str_=0.5*str+1, (4294967294<=str<=9223372036854775807)	number_=0.5*number+1
11. initials=1~9, typeQualifier=0, 9223372036854775808<=str		
MR121	str_=str+1,(9223372036854775808<=str)	number_=number+1
MR122	str_=str-1,(9223372036854775809<=str)	number_=number-1
MR123	str_=2*str, (9223372036854775808<=str)	number_=number*2
MR124	str_=0.5*str, (1844674407370955161 6<=str)	number_=0.5*number
MR125	str_=2*(str+1), (9223372036854775808<=str)	number_=number*2+2
MR126	str_=2*str+1, (9223372036854775808<=str)	number_=number*2+1
MR127	str_=0.5*(str-1), (1844674407370955161 7<=str)	number_=0.5*number-0.5
MR128	str_=0.5*str-1, (1844674407370955161 8<=str)	number_=0.5*number-1
MR129	str_=2*(str-1), (9223372036854775808<=str)	number_=number*2-2
MR130	str_=2*str-1, (9223372036854775808<=str)	number_=number*2-1

MR131	str_=0.5*(str+1), (18446744073709551615<=str<)	number_=0.5*number+0.5
MR132	str_=0.5*str+1, (18446744073709551615<=str)	number_=0.5*number+1
12. initials=1~9, typeQualifier=L/l, 0<=str<=9223372036854775807		
MR133	str_=str+1,(0<=str<=9223372036854775806)	number_=number+1
MR134	str_=str-1,(1<=str<=9223372036854775807)	number_=number-1
MR135	str_=2*str, (1<=str<=4611686018427387903)	number_=number*2
MR136	str_=0.5*str, (2<=str<=9223372036854775807)	number_=0.5*number
MR137	str_=2*(str+1), (0<=str<=4611686018427387902)	number_=number*2+2
MR138	str_=2*str+1, (0<=str<=4611686018427387903)	number_=number*2+1
MR139	str_=0.5*(str-1), (3<=str<=9223372036854775807)	number_=0.5*number-0.5
MR140	str_=0.5*str-1, (2<=str<=9223372036854775807)	number_=0.5*number-1
MR141	str_=2*(str-1), (2<=str<=4611686018427387904)	number_=number*2-2
MR142	str_=2*str-1, (1<=str<=4611686018427387904)	number_=number*2-1
MR143	str_=0.5*(str+1), (1<=str<=9223372036854775807)	number_=0.5*number+0.5
MR144	str_=0.5*str+1, (2<=str<=9223372036854775807)	number_=0.5*number+1
13. initials=1~9, typeQualifier=L\l, 9223372036854775808<=str		
MR145	str_=str+1,(9223372036854775808<=str)	number_=number+1
MR146	str_=str-1,(9223372036854775809<=str)	number_=number-1
MR147	str_=2*str, (9223372036854775808<=str)	number_=number*2
MR148	str_=0.5*str, (18446744073709551616<=str)	number_=0.5*number
MR149	str_=2*(str+1), (9223372036854775808<=str)	number_=number*2+2
MR150	str_=2*str+1, (9223372036854775808<=str)	number_=number*2+1
MR151	str_=0.5*(str-1), (18446744073709551617<=str)	number_=0.5*number-0.5
MR152	str_=0.5*str-1, (18446744073709551618<=str)	number_=0.5*number-1
MR153	str_=2*(str-1), (9223372036854775808<=str)	number_=number*2-2
MR154	str_=2*str-1, (9223372036854775808<=str)	number_=number*2-1
MR155	str_=0.5*(str+1), (18446744073709551615<=str<)	number_=0.5*number+0.5
MR156	str_=0.5*str+1, (18446744073709551615<=str)	number_=0.5*number+1

Among them, “X” represents the source test case variable, and “X_” represents the corresponding follow-up test case variable.

TaxBill

Details of MRs of TaxBill program can be found in Table 6. The *name* represents the product name, the *price* represents the price of the product; the *imported* represents whether the product is an imported product; the *quantity* represents the quantity of goods purchased; the *area* represents the region to which the product belongs; the represents the sum of the additional taxes to be paid.

Table 5 MRs of TaxBill program

NUM	***R***	***Rf***
1. name=book\medical products\food, import=true, 0<=quantity <=200, area=local\other		
MR1	quantity_=quantity+1,(0<=quantity <=199)	taxcost_=taxcost+price*0.05
MR2	quantity_=quantity-1,(1<=quantity <=200)	taxcost_=taxcost-price*0.05
MR3	quantity_=2*quantity , (1<=quantity <=100)	taxcost_=taxcost*2
MR4	quantity_=quantity/2, (2<=quantity <=200)	taxcost_=0.5*taxcost
MR5	quantity_=2*(quantity+1), (0<=quantity <=99)	taxcost_=taxcost*2+price*0.1
MR6	quantity_=2*quantity+1, (0<=quantity <=99)	taxcost_=taxcost*2+price*0.05
MR7	quantity_=0.5*(quantity-1), (3<=quantity <=199)	taxcost_=0.5*taxcost-price*0.05*0.5
MR8	quantity_=0.5*quantity-1, (4<=quantity <=200)	taxcost_=0.5*taxcost-price*0.05
MR9	quantity_=2*(quantity-1), (2<=quantity <=101)	taxcost_=taxcost*2-price*0.1
MR10	quantity_=2*quantity-1, (1<=quantity <=100)	taxcost_=taxcost*2-price*0.05
MR11	quantity_=0.5*(quantity+1), (1<=quantity <=200)	taxcost_=0.5*taxcost+price*0.05*0.5
MR12	quantity_=0.5*quantity+1, (2<=quantity <=200)	taxcost_=0.5*taxcost+price*0.05
2. name=book\medical products\food, import=false, 0<=quantity <=200, area=local\other		
MR13	quantity_=quantity+1,(0<=quantity <=199)	taxcost_=taxcost
MR14	quantity_=quantity-1,(1<=quantity <=200)	taxcost_=taxcost
MR15	quantity_=2*quantity , (1<=quantity <=100)	taxcost_=taxcost
MR16	quantity_=quantity/2, (2<=quantity <=200)	taxcost_=taxcost
MR17	quantity_=2*(quantity+1), (0<=quantity <=99)	taxcost_=taxcost
MR18	quantity_=2*quantity+1, (0<=quantity <=99)	taxcost_=taxcost
MR19	quantity_=0.5*(quantity-1), (3<=quantity <=199)	taxcost_=taxcost
MR20	quantity_=0.5*quantity-1, (4<=quantity <=200)	taxcost_=taxcost
MR21	quantity_=2*(quantity-1), (2<=quantity <=101)	taxcost_=taxcost
MR22	quantity_=2*quantity-1, (1<=quantity <=100)	taxcost_=taxcost
MR23	quantity_=0.5*(quantity+1), (1<=quantity <=200)	taxcost_=taxcost

MR24	quantity_=0.5*quantity+1, (2<=quantity <=200)	taxcost_=taxcost
3. name=book\medical products\food, import=true, 200< quantity , area=local\other		
MR25	quantity_=quantity+1,(201<=quantity)	taxcost_=taxcost+price*0.1
MR26	quantity_=quantity-1,(202<=quantity)	taxcost_=taxcost-price*0.1
MR27	quantity_=2*quantity , (201<=quantity)	taxcost_=taxcost*2+price*10
MR28	quantity_=quantity/2, (402<=quantity)	taxcost_=0.5*taxcost-price*5
MR29	quantity_=2*(quantity+1), (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.2
MR30	quantity_=2*quantity+1, (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.1
MR31	quantity_=0.5*(quantity-1), (403<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.1*0.5
MR32	quantity_=0.5*quantity-1, (404<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.1
MR33	quantity_=2*(quantity-1), (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.2
MR34	quantity_=2*quantity-1, (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.1
MR35	quantity_=0.5*(quantity+1), (401<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.1*0.5
MR36	quantity_=0.5*quantity+1, (400<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.1
4. name=book\medical products\food, import=false, 200< quantity, area=local\other		
MR37	quantity_=quantity+1,(201<=quantity)	taxcost_=taxcost+price*0.05
MR38	quantity_=quantity-1,(202<=quantity)	taxcost_=taxcost-price*0.05
MR39	quantity_=2*quantity , (201<=quantity)	taxcost_=taxcost*2+price*10
MR40	quantity_=quantity/2, (402<=quantity)	taxcost_=0.5*taxcost-price*5
MR41	quantity_=2*(quantity+1), (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.1
MR42	quantity_=2*quantity+1, (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.05
MR43	quantity_=0.5*(quantity-1), (403<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.05*0.5
MR44	quantity_=0.5*quantity-1, (404<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.05
MR45	quantity_=2*(quantity-1), (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.1
MR46	quantity_=2*quantity-1, (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.05
MR47	quantity_=0.5*(quantity+1), (401<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.05*0.5
MR48	quantity_=0.5*quantity+1, (400<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.05
5. name=other, import=true, 0<=quantity <=200, area=local		
MR49	quantity_=quantity+1,(0<=quantity <=199)	taxcost_=taxcost+price*0.15
MR50	quantity_=quantity-1,(1<=quantity <=200)	taxcost_=taxcost-price*0.15
MR51	quantity_=2*quantity , (1<=quantity <=100)	taxcost_=taxcost*2
MR52	quantity_=quantity/2, (2<=quantity <=200)	taxcost_=taxcost*0.5
MR53	quantity_=2*(quantity+1), (0<=quantity <=99)	taxcost_=taxcost*2+price*0.3
MR54	quantity_=2*quantity+1, (0<=quantity <=99)	taxcost_=taxcost*2+price*0.15
MR55	quantity_=0.5*(quantity-1), (3<=quantity <=199)	taxcost_=0.5*taxcost-price*0.15*0.5
MR56	quantity_=0.5*quantity-1, (4<=quantity <=200)	taxcost_=0.5*taxcost-price*0.15
MR57	quantity_=2*(quantity-1), (2<=quantity <=101)	taxcost_=taxcost*2-price*0.3
MR58	quantity_=2*quantity-1, (1<=quantity <=100)	taxcost_=taxcost*2-price*0.15

MR59	quantity_=0.5*(quantity+1), (1<=quantity <=200)	taxcost_=0.5*taxcost+price*0.15*0.5
MR60	quantity_=0.5*quantity+1, (2<=quantity <=200)	taxcost_=0.5*taxcost+price*0.15
6. name=other, import=false, 0<=quantity <=200, area=local		
MR61	quantity_=quantity+1,(0<=quantity <=199)	taxcost_=taxcost+price*0.1
MR62	quantity_=quantity-1,(1<=quantity <=200)	taxcost_=taxcost-price*0.1
MR63	quantity_=2*quantity , (1<=quantity <=100)	taxcost_=taxcost*2
MR64	quantity_=quantity/2, (2<=quantity <=200)	taxcost_=taxcost*0.5
MR65	quantity_=2*(quantity+1), (0<=quantity <=99)	taxcost_=taxcost*2+price*0.2
MR66	quantity_=2*quantity+1, (0<=quantity <=99)	taxcost_=taxcost*2+price*0.1
MR67	quantity_=0.5*(quantity-1), (3<=quantity <=199)	taxcost_=0.5*taxcost-price*0.1*0.5
MR68	quantity_=0.5*quantity-1, (4<=quantity <=200)	taxcost_=0.5*taxcost-price*0.1
MR69	quantity_=2*(quantity-1), (2<=quantity <=101)	taxcost_=taxcost*2-price*0.2
MR70	quantity_=2*quantity-1, (1<=quantity <=100)	taxcost_=taxcost*2-price*0.1
MR71	quantity_=0.5*(quantity+1), (1<=quantity <=200)	taxcost_=0.5*taxcost+price*0.1*0.5
MR72	quantity_=0.5*quantity+1, (2<=quantity <=200)	taxcost_=0.5*taxcost+price*0.1
7. name=other, import=true, 200< quantity , area=local		
MR73	quantity_=quantity+1,(201<=quantity)	taxcost_=taxcost+price*0.2
MR74	quantity_=quantity-1,(202<=quantity)	taxcost_=taxcost-price*0.2
MR75	quantity_=2*quantity , (201<=quantity)	taxcost_=taxcost*2+price*10
MR76	quantity_=quantity/2, (402<=quantity)	taxcost_=0.5*taxcost-price*5
MR77	quantity_=2*(quantity+1), (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.4
MR78	quantity_=2*quantity+1, (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.2
MR79	quantity_=0.5*(quantity-1), (403<=quantity)	taxcost_=taxcost_=0.5*taxcost-price*5-price*0.1
MR80	quantity_=0.5*quantity-1, (404<=quantity)	taxcost_=taxcost_=0.5*taxcost-price*5-price*0.2
MR81	quantity_=2*(quantity-1), (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.4
MR82	quantity_=2*quantity-1, (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.2
MR83	quantity_=0.5*(quantity+1), (401<=quantity)	taxcost_=taxcost_=0.5*taxcost-price*5+price*0.1
MR84	quantity_=0.5*quantity+1, (400<=quantity)	taxcost_=taxcost_=0.5*taxcost-price*5+price*0.2
8. name=other, import=false, 200< quantity , area=local		
MR85	quantity_=quantity+1,(201<=quantity)	taxcost_=taxcost+price*0.15
MR86	quantity_=quantity-1,(202<=quantity)	taxcost_=taxcost-price*0.15
MR87	quantity_=2*quantity , (201<=quantity)	taxcost_=taxcost*2+price*10
MR88	quantity_=quantity/2, (402<=quantity)	taxcost_=0.5*taxcost-price*5
MR89	quantity_=2*(quantity+1), (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.3
MR90	quantity_=2*quantity+1, (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.15
MR91	quantity_=0.5*(quantity-1), (403<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.15*0.5
MR92	quantity_=0.5*quantity-1, (404<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.15

MR93	quantity_=2*(quantity-1), (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.3
MR94	quantity_=2*quantity-1, (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.15
MR95	quantity_=0.5*(quantity+1), (401<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.15*0.5
MR96	quantity_=0.5*quantity+1, (400<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.15
9. name=other, import=true, 0<=quantity <=200, area=other		
MR97	quantity_=quantity+1,(0<=quantity <=199)	taxcost_=taxcost+price*0.2
MR98	quantity_=quantity-1,(1<=quantity <=200)	taxcost_=taxcost-price*0.2
MR99	quantity_=2*quantity , (1<=quantity <=100)	taxcost_=taxcost*2
MR100	quantity_=quantity/2, (2<=quantity <=200)	taxcost_=taxcost*0.5
MR101	quantity_=2*(quantity+1), (0<=quantity <=99)	taxcost_=taxcost*2+price*0.4
MR102	quantity_=2*quantity+1, (0<=quantity <=99)	taxcost_=taxcost*2+price*0.2
MR103	quantity_=0.5*(quantity-1), (3<=quantity <=199)	taxcost_=0.5*taxcost-price*0.1
MR104	quantity_=0.5*quantity-1, (4<=quantity <=200)	taxcost_=0.5*taxcost-price*0.2
MR105	quantity_=2*(quantity-1), (2<=quantity <=101)	taxcost_=taxcost*2-price*0.4
MR106	quantity_=2*quantity-1, (1<=quantity <=100)	taxcost_=taxcost*2-price*0.2
MR107	quantity_=0.5*(quantity+1), (1<=quantity <=200)	taxcost_=0.5*taxcost+price*0.1
MR108	quantity_=0.5*quantity+1, (2<=quantity <=200)	taxcost_=0.5*taxcost+price*0.2
10. name=other, import=false, 0<=quantity <=200, area=other		
MR109	quantity_=quantity+1,(0<=quantity <=199)	taxcost_=taxcost+price*0.15
MR110	quantity_=quantity-1,(1<=quantity <=200)	taxcost_=taxcost-price*0.15
MR111	quantity_=2*quantity , (1<=quantity <=100)	taxcost_=taxcost*2
MR112	quantity_=quantity/2, (2<=quantity <=200)	taxcost_=taxcost*0.5
MR113	quantity_=2*(quantity+1), (0<=quantity <=99)	taxcost_=taxcost*2+price*0.3
MR114	quantity_=2*quantity+1, (0<=quantity <=99)	taxcost_=taxcost*2+price*0.15
MR115	quantity_=0.5*(quantity-1), (3<=quantity <=199)	taxcost_=0.5*taxcost-price*0.15*0.5
MR116	quantity_=0.5*quantity-1, (4<=quantity <=200)	taxcost_=0.5*taxcost-price*0.15
MR117	quantity_=2*(quantity-1), (2<=quantity <=101)	taxcost_=taxcost*2-price*0.3
MR118	quantity_=2*quantity-1, (1<=quantity <=100)	taxcost_=taxcost*2-price*0.15
MR119	quantity_=0.5*(quantity+1), (1<=quantity <=200)	taxcost_=0.5*taxcost+price*0.15*0.5
MR120	quantity_=0.5*quantity+1, (2<=quantity <=200)	taxcost_=0.5*taxcost+price*0.15
11. name=other, import=true, 200< quantity , area=other		
MR121	quantity_=quantity+1,(201<=quantity)	taxcost_=taxcost+price*0.25
MR122	quantity_=quantity-1,(202<=quantity)	taxcost_=taxcost-price*0.25
MR123	quantity_=2*quantity , (201<=quantity)	taxcost_=taxcost*2+price*10
MR124	quantity_=quantity/2, (402<=quantity)	taxcost_=0.5*taxcost-price*5
MR125	quantity_=2*(quantity+1), (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.5
MR126	quantity_=2*quantity+1, (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.25
MR127	quantity_=0.5*(quantity-1), (403<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.25*0.5
MR128	quantity_=0.5*quantity-1, (404<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.25

MR129	quantity_=2*(quantity-1), (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.5
MR130	quantity_=2*quantity-1, (201<=quantity)	taxcost_=taxcost*2+price*10-price*0.25
MR131	quantity_=0.5*(quantity+1), (401<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.25*0.5
MR132	quantity_=0.5*quantity+1, (400<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.25
12. name=other, import=false, 200< quantity , area=other		
MR133	quantity_=quantity+1,(201<=quantity)	taxcost_=taxcost+price*0.2
MR134	quantity_=quantity-1,(202<=quantity)	taxcost_=taxcost-price*0.2
MR135	quantity_=2*quantity , (201<=quantity)	taxcost_=taxcost*2+price*10
MR136	quantity_=quantity/2, (402<=quantity)	taxcost_=0.5*taxcost-price*5
MR137	quantity_=2*(quantity+1), (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.4
MR138	quantity_=2*quantity+1, (201<=quantity)	taxcost_=taxcost*2+price*10+price*0.2
MR139	quantity_=0.5*(quantity-1), (403<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.1
MR140	quantity_=0.5*quantity-1, (404<=quantity)	taxcost_=0.5*taxcost-price*5-price*0.2
MR141	quantity_=2*(quantity-1), (201<=quantity)	taxcost_=taxcost*2+price*10-price*4
MR142	quantity_=2*quantity-1, (201<=quantity)	taxcost_=taxcost*2+price*10-price*2
MR143	quantity_=0.5*(quantity+1), (401<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.1
MR144	quantity_=0.5*quantity+1, (400<=quantity)	taxcost_=0.5*taxcost-price*5+price*0.2

Among them, “X” represents the source test case variable, and “X_” represents the corresponding follow-up test case variable.