Logic Coursework1

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November 10, 2017

$i) \, \forall C \, (reg(C) \wedge \exists D1 \, (dir(D1, C) \wedge \forall D2 \, (dir(D2, C))) \rightarrow (D1 = D2))$

$ii) \, \forall ID, C, D, S \, (reqReg(ID, C, D, S) \wedge (reg(C) \vee disq(D) \vee (S < 5000)) \rightarrow reject(ID)) \wedge \forall ID, C, D, S \, (reqReg(ID, C, D, S) \wedge \neg(reg(C) \vee disq(D) \vee (S < 5000)) \rightarrow accept(ID))$

$iii) \, \forall D(\exists C(dir(D, C) \wedge reg(C) \wedge insolvent(C)) \rightarrow disq(D) \wedge \forall C(dir(D, C) \wedge reg(C) \rightarrow share(C, 0)))$

$iv) \, \forall D, C(\exists P1, P2, D1, D2(dir(D, C) \wedge reg(C) \wedge \neg disq(D) \wedge (acc\_due(C, P1, D1) \wedge \exists F1(acc\_filed(C, P1, F1) \wedge (F1 > D1)) \vee \neg \exists F1(acc\_filed(C, P1, F1))) \wedge$

$(acc\_due(C, P2, D2) \wedge \exists F2(acc\_filed(C, P2, F2) \wedge (F2 > D2)) \vee \neg \exists F2(acc\_filed(C, P1, F2))) \wedge \neg(P1 = P2)) \rightarrow warn(D, C))$

$v) \, \forall D(\exists C, ID, S, V(reqReg(ID, C, D, S) \wedge reg(C) \wedge warn(D, C) \wedge share(C, V) \wedge (V < 0.2S)) \rightarrow disq(D))$