

Business Process Management

Exercise 6

**Group 04**

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**Exercise 6**

**Task 1**

Design a **GMQL** pattern that represents a joining AND connector that is an entry to a directed loop.

DirectedLoopsContainingElements(

ElementsOfType(V, AND),

ElementsWithNumberOfPredRelations

(

ElementsOfType(V, AND), 2

)

)

**Task 2**

Design a **DMQL** pattern that is equivalent to your pattern from Task 1, i.e., that models a joining AND connector that is an entry to a directed loop.

**V1 e1 V2**

**∧** **∧**

P(V1) : VID = V1, VCAPTION = “V1 ”, VTYPES = {AND}

P(V2) : VID = V2, VCAPTION = “ V2”, VTYPES = {AND}

P(e1) : EID = e1, ECAPTION = “ ”, MINL = 1, MAXL = 4, DIR = org

MINVO = MAXVO = MINEO = MAXEO = 0

Global Rule:

[V1].PREDECESSORS.Count() == 2

[V2].PREDECESSORS.Count() == 2

**Task 3**

Design a DMQL pattern that can detect the 4-eye principle.

Bob v3 e2 Prepare Loan v1 e3 v4 Doc1

Form

Orgunit Function Document

e1

Anna v5 e4 Approve Loan v2 e5 v6 Doc1

Orgunit Function Document

P(v1) : VID = {v1}, VCAPTION = {“Prepare Loan Form”}, VTYPES = {Function}

P(v2) : VID = {v2}, VCAPTION = {“Approve Loan”}, VTYPES = {Function}

P(v3) : VID = {v3}, VCAPTION = {“Bob”}, VTYPES = {Orgunit}

P(v4) : VID = {v4}, VCAPTION = {“Doc1”}, VTYPES = {Document}

P(v5) : VID = {v5}, VCAPTION = {“Anna”}, VTYPES = {Orgunit}

P(v6) : VID = {v6}, VCAPTION = {“Doc1”}, VTYPES = {Document}

P(e1) : EID = e1, ECAPTION = “ ”, MINL = 1, MAXL = 2, DIR = org,

MINVO = MAXVO = MINEO = MAXEO = 0, VTYPESR = {Event},

ETYPESF = VTYPESF = ETYPESR = {}

P(e2) : EID = e2, ECAPTION = “ ”, MINL = 1, MAXL = 1, DIR = none,

MINVO = MAXVO = MINEO = MAXEO = 0, VTYPESR = {Orgunit},

ETYPESF = VTYPESF = ETYPESR = {}

P(e3) : EID = e3, ECAPTION = “ ”, MINL = 1, MAXL = 1, DIR = none,

MINVO = MAXVO = MINEO = MAXEO = 0, VTYPESR = {Document},

ETYPESF = VTYPESF = ETYPESR = {}

P(e4) : EID = e4, ECAPTION = “ ”, MINL = 1, MAXL = 1, DIR = none,

MINVO = MAXVO = MINEO = MAXEO = 0, VTYPESR = {Orgunit},

ETYPESF = VTYPESF = ETYPESR = {}

P(e5) : EID = e5, ECAPTION = “ ”, MINL = 1, MAXL = 1, DIR = none,

MINVO = MAXVO = MINEO = MAXEO = 0, VTYPESR = {Document},

ETYPESF = VTYPESF = ETYPESR = {}

Global rules :

// Organisation units of both functions should be different :

[v3].Caption != [v5].Caption

//Documents should be same

[v4].Caption == [v6].Caption

//Loan application will always go to Anna for approval

[v2].Caption LIKE “Anna”

//Undirected edges should be 2 for both functions

[v1].UNDIRECTED\_EDGES.Count() == 2

[v2].UNDIRECTED\_EDGES.Count() == 2

: If we replace “Andreas” with “Anna” ,the pattern will not work since we have mentioned that caption should be Anna in global rules.