P = 4, Q = 6, R = 8precedes x precedes -> Allen* relations : 1 elts Min = [0, 0, 0, 0]precedes (1 elts) Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ precedes x preceded by \rightarrow Allen* relations : 3649 elts

 Allen* relations : 3649 elts

 precedes (1 elts)
 Min = [0,0,0,0]

 preceded_by (1 elts)
 Min = [16,16,16,16]

 start (6 elts)
 Min = [1,2,5,6]

 started_by (54 elts)
 Min = [1,4,5,8]

 finishes (6 elts)
 Min = [2,3,6,7]

 finished_by (54 elts)
 Min = [0,1,2,5]

 mets (98 elts)
 Min = [0,1,2,5]

 met_by (98 elts)
 Min = [0,2,2,6]

 overlapped_by (98 elts)
 Min = [2,4,6,8]

 during (6 elts)
 Min = [2,2,6,6]

 contains (169 elts)
 Min = [0,4,4,8]

 Max = [0, 0, 0, 0]Max = [0,0,0,0,0] Max = [16,16,16,16] Max = [9,10,13,14] Max = [9,12,13,16] Max = [10, 11, 14, 15]Max = [8, 11, 12, 15]Max = [8, 9, 12, 13]Max = [11, 14, 15, 16]Max = [8,10,12,14] Max = [10,14,14,16] Max = [10,10,14,14] during (6 elts) $\min_{m \neq 1} = \lfloor 2, 2, 6, 6 \rfloor$ $\min_{m \neq 1} = \lfloor 0, 4, 4, 8 \rfloor$ Max = [8, 12, 12, 16]contains (169 elts) Min = [1, 3, 5, 7]subset (6 elts) Max = [9, 11, 13, 15]Allen* Min = precedes [0,0,0,0] , Max = preceded by [16,16,16,16] _____ precedes x start \rightarrow Allen* relations : 41 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0, 0, 0, 0], Max = precedes [0, 0, 0, 0]_____ precedes x started by \rightarrow Allen* relations : 41 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ precedes x finishes -> Allen* relations : 129 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]start (1 elts) Min = [1, 2, 5, 6]Max = [1, 2, 5, 6] [9, 10, 13, 14]Max = [0, 1, 4, 5] [8, 9, 12, 13]meets (3 elts) Min = [0, 1, 2, 5]overlaps (3 elts) Min = [0, 2, 2, 6]Max = [0, 2, 4, 6] [8, 10, 12, 14]Min = [2, 2, 6, 6]during (1 elts) Max = [2, 2, 6, 6] [10, 10, 14, 14]Allen* Min = precedes [0,0,0,0] , Max = during [2,2,6,6] [10,10,14,14] ----precedes x finished by -> Allen* relations : 41 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ precedes x meets -> Allen* relations : 41 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0] , Max = precedes [0,0,0,0] _____ precedes x met by ->Allen* relations : 129 elts Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]precedes (1 elts) start (1 elts) Min = [1, 2, 5, 6]Max = [1, 2, 5, 6] [9, 10, 13, 14]meets (3 elts) Min = [0, 1, 2, 5]Max = [0, 1, 4, 5] [8, 9, 12, 13]Max = [0, 2, 4, 6] [8, 10, 12, 14]Max = [0, 2, 4, 6] [8, 10, 12, 14]

 overlaps (3 elts)
 Min = [0, 2, 2, 6]

 during (1 elts)
 Min = [2, 2, 6, 6]
 Min = [2, 2, 6, 6]during (1 elts) Max = [2, 2, 6, 6] [10, 10, 14, 14]Allen* Min = precedes [0,0,0,0] , Max = during [2,2,6,6] [10,10,14,14] _____ precedes x overlaps -> Allen* relations : 41 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ precedes x overlapped by ->

Allen* relations : 129 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]start (1 elts) Max = [1, 2, 5, 6] [9, 10, 13, 14]Max = [0, 1, 4, 5] [8, 9, 12, 13]Max = [0, 2, 4, 6] [8, 10, 12, 14]Min = [1, 2, 5, 6]Min = [0, 1, 2, 5]Min = [0, 2, 2, 6] meets (3 elts) overlaps (3 elts) Min = [2, 2, 6, 6]during (1 elts) Max = [2, 2, 6, 6] [10, 10, 14, 14]Allen* Min = precedes [0,0,0,0] , Max = during [2,2,6,6] [10,10,14,14] _____ precedes x during -> Allen* relations : 129 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]start (1 elts) Min = [1, 2, 5, 6]Max = [1, 2, 5, 6] [9, 10, 13, 14]Max = [0, 1, 4, 5] [8, 9, 12, 13]meets (3 elts) Min = [0, 1, 2, 5]overlaps (3 elts) Min = [0, 2, 2, 6]Max = [0, 2, 4, 6] [8, 10, 12, 14]during (1 elts) Min = [2, 2, 6, 6]Max = [2, 2, 6, 6] [10, 10, 14, 14]Allen* Min = precedes [0,0,0,0] , Max = during [2,2,6,6] [10,10,14,14] _____ precedes x contains -> Allen* relations : 41 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ precedes x subset -> Allen* relations : 41 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ preceded by x precedes \rightarrow Allen* relations : 3649 elts Max = [0, 0, 0, 0]precedes (1 elts) Min = [0,0,0,0] Max = [16, 16, 16, 16]Max = [9, 10, 13, 14]Min = [16, 16, 16, 16]preceded by (1 elts)

 start (6 elts)
 Min = [1,2,5,6]

 started_by (54 elts)
 Min = [1,4,5,8]

 finishes (6 elts)
 Min = [2,3,6,7]

 Max = [9, 12, 13, 16]Max = [10, 11, 14, 15]Max = [11, 14, 15, 16]Max = [10,14,14,16] Max = [10,10,14,14] preceded by x preceded by -> Allen* relations : 1 elts Min = [16, 16, 16, 16] Max = [16, 16, 16, 16]preceded by (1 elts) Allen* Min = preceded_by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ preceded by x start \rightarrow Allen* relations : 129 elts preceded_by (1 elts) Min = [16,16,16,16] Max = [16, 16, 16, 16]finishes (1 elts) Min = [10,11,14,15][2,3,6,7] Max = [10,11,14,15] Min = [11,12,15,16][3,4,7,8] Max = [11,14,15,16]

 overlapped_by (3 elts)
 Min = [10,12,14,16] [2,4,6,8]
 Max = [10,14,14,16]

 during (1 elts)
 Min = [10,10,14,14] [2,2,6,6]
 Max = [10,10,14,14]

 Allen* Min = during [10,10,14,14] [2,2,6,6], Max = preceded_by [16,16,16,16] _____ preceded by x started_by -> Allen* relations : 41 elts preceded by (1 elts) Min = [16,16,16,16] Max = [16,16,16,16] Allen* Min = preceded_by [16,16,16,16] , Max = preceded by [16,16,16,16] ----preceded by x finishes -> Allen* relations : 41 elts Min = [16, 16, 16, 16]preceded by (1 elts) Max = [16, 16, 16, 16]Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16]

preceded by x finished by -> Allen* relations : 41 elts Min = [16, 16, 16, 16] Max = [16, 16, 16, 16]preceded by (1 elts) Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ preceded by x meets -> Allen* relations : 129 elts preceded_by (1 elts) Min = [16,16,16,16] Max = [16, 16, 16, 16]finishes (1 elts) Min = [10,11,14,15][2,3,6,7] Max = [10,11,14,15] met_by (3 elts)Min = [11,12,15,16] [3,4,7,8]Max = [11,14,15,16]overlapped_by (3 elts)Min = [10,12,14,16] [2,4,6,8]Max = [10,14,14,16]during (1 elts)Min = [10,10,14,14] [2,2,6,6]Max = [10,10,14,14] Allen* Min = during [10,10,14,14] [2,2,6,6], Max = preceded by [16,16,16,16] _____ preceded_by x met_by -> Allen* relations : 41 elts Min = [16,16,16,16] Max = [16,16,16,16] preceded by (1 elts) Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ preceded by x overlaps -> Allen* relations : 129 elts preceded by (1 elts) Min = [16, 16, 16, 16]Max = [16, 16, 16, 16]finishes (1 elts) Min = [10,11,14,15][2,3,6,7] Max = [10,11,14,15] met_by (3 elts)Min = [11,12,15,16] [3,4,7,8]Max = [11,14,15,16]overlapped_by (3 elts)Min = [10,12,14,16] [2,4,6,8]Max = [10,14,14,16]during (1 elts)Min = [10,10,14,14] [2,2,6,6]Max = [10,10,14,14] Allen* Min = during [10,10,14,14] [2,2,6,6], Max = preceded by [16,16,16,16] _____ preceded_by x overlapped_by -> Allen* relations : 41 elts Min = [16, 16, 16, 16]Max = [16, 16, 16, 16]preceded by (1 elts) Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] ----preceded by x during \rightarrow Allen* relations : 129 elts preceded_by (1 elts) Min = [16,16,16,16] Max = [16, 16, 16, 16]finishes (1 elts) Min = [10,11,14,15][2,3,6,7] Max = [10,11,14,15] met_by (3 elts)Min = [11,12,15,16] [3,4,7,8]Max = [11,14,15,16]overlapped_by (3 elts)Min = [10,12,14,16] [2,4,6,8]Max = [10,14,14,16]during (1 elts)Min = [10,10,14,14] [2,2,6,6]Max = [10,10,14,14] Allen* Min = during [10,10,14,14] [2,2,6,6], Max = preceded by [16,16,16,16] _____ preceded by x contains -> Allen* relations : 41 elts preceded by (1 elts) Min = [16,16,16,16] Max = [16,16,16,16] Allen* Min = preceded_by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ preceded by x subset -> Allen* relations : 41 elts preceded by (1 elts) Min = [16, 16, 16, 16]Max = [16, 16, 16, 16]Allen* Min = preceded_by [16,16,16,16] , Max = preceded_by [16,16,16,16] ----start x precedes -> Allen* relations : 1 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0] , Max = precedes [0,0,0,0] _____ start x preceded by -> Allen* relations : 1 elts preceded by (1 elts) Min = [16,16,16,16] Max = [16,16,16,16] Allen* Min = preceded_by [16,16,16,16] , Max = preceded_by [16,16,16,16] _____ start x start -> Allen* relations : 6 elts Max = [9, 10, 13, 14]start (6 elts) Min = [1, 2, 5, 6]Allen* Min = start [1,2,5,6] , Max = start [9,10,13,14]

start x started by -> Allen* relations : 126 elts Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]start (6 elts) Min = [1,4,5,8]Max = [9,12,13,16]Min = [1,3,5,7]Max = [9,11,13,15] started by (30 elts) subset (6 elts) Allen* Min = start [1,2,5,6] , Max = started by [9,12,13,16] _____ start x finishes -> Allen* relations : 6 elts during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] _____ start x finished by -> Allen* relations : 360 elts meets (30 elts)Min = [0,1,4,5][0,1,2,5]Max = [8,9,12,13]overlaps (30 elts)Min = [0,2,4,6][0,2,2,6]Max = [8,10,12,14] Allen* Min = meets [0,1,4,5] [0,1,2,5], Max = overlaps [8,10,12,14] _____ start x meets -> Allen* relations : 340 elts finishes (3 elts) Min = [2, 3, 6, 7]Max = [6, 7, 10, 11] [10, 11, 14, 15]Min = [3, 4, 7, 8]met by (11 elts) Max = [7,8,11,12][11,14,15,16] overlapped_by (11 elts) Min = [2,4,6,8] during (3 elts) Min = [2,2,6,6] Max = [6, 8, 10, 12] [10, 14, 14, 16]during (3 elts) Min = [2, 2, 6, 6]Max = [6, 6, 10, 10] [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = met by [7,8,11,12] [11,14,15,16] _____ start x met by ->Allen* relations : 80 elts meets (5 elts) Min = [3, 5, 7, 9] [0, 1, 2, 5]Max = [7, 9, 11, 13] [8, 9, 12, 13]Min = [3, 4, 7, 8]Min = [3,4,7,8]Max = [11,14,15,16]Min = [3,6,7,10][0,2,2,6]Max = [7,10,11,14][8,10,12,14]met by (80 elts) overlaps (5 elts) Allen* Min = met by [3,4,7,8] , Max = met by [11,14,15,16] ----start x overlaps -> meets (80 elts)Min = [2,3,6,7]Max = [6,7,10,11][10,11,14,15]meets (80 elts)Min = [0,1,2,5]Max = [8,9,12,13]met_by (51 elts)Min = [3,4,7,8]Max = [7,10,11,14][11,14,15,16]overlapped_by (51 elts)Min = [0,2,2,6]Max = [8,10,12,14]overlapped_by (51 elts)Min = [2,2,6,6]Max = [6,6,10,101][10,10,14,14,16]during (3 elts)Min = [2,2,6,6]Max = [6,6,10,101][10,10,14,14,16]Allen* Min = meets [0,1,2,5]Max = overlapped for the set overlap Allen* relations : 1136 elts _____ start x overlapped by -> Allen* relations : 204 elts finishes (6 elts) Min = [2, 3, 6, 7]Max = [10, 11, 14, 15]Min = [2, 5, 6, 9] [0, 1, 2, 5]Max = [6, 9, 10, 13] [8, 9, 12, 13]Min = [2, 6, 6, 10] [0, 2, 2, 6]Max = [6, 10, 10, 14] [8, 10, 12, 14]meets (5 elts) overlaps (5 elts) overlapped_by (80 elts) Min = [2,4,6,8] Max = [10, 14, 14, 16]Max = [10, 10, 14, 14]during (6 elts) Min = [2, 2, 6, 6]Allen* Min = during [2,2,6,6] , Max = overlapped_by [10,14,14,16] _____ start x during -> Allen* relations : 6 elts during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] _____ start x contains ->

 Allen* relations : 888 elts

 finished_by (30 elts)
 Min = [0,3,4,7]
 Max = [8,11,12,15]

 meets (34 elts)
 Min = [0,1,4,5][0,1,2,5]
 Max = [8,9,12,13]

 overlaps (34 elts)
 Min = [0,2,4,6][0,2,2,6]
 Max = [8,10,12,14]

 Contact and
 Max = [8,12,12,16]

 Allen* Min = meets [0,1,4,5] [0,1,2,5], Max = contains [8,12,12,16] start x subset ->

Allen* relations : 6 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]Allen* Min = start [1,2,5,6] , Max = start [9,10,13,14] _____ started by x precedes -> Allen* relations : 17 elts Min = [0, 0, 0, 0]precedes (1 elts) Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0] , Max = precedes [0,0,0,0] _____ started by x preceded by -> Allen* relations : 1 elts Min = [16, 16, 16, 16]preceded by (1 elts) Max = [16, 16, 16, 16]Allen* Min = preceded_by [16,16,16,16] , Max = preceded_by [16,16,16,16] _____ started by x start -> Allen* relations : 166 elts Min = [1, 2, 5, 6]start (6 elts) Max = [9, 10, 13, 14]Min = [1,4,5,8]Max = [9,10,13,14]Min = [1,7,9,15][0,3,4,7]Max = [9,12,13,16]Min = [1,5,9,13][0,1,2,5]Max = [1,7,9,15][8,11,12,15]Min = [1,6,9,14][0,2,2,6]Max = [1,6,9,14][8,10,12,14]Min = [1,8,9,16][0,4,4,8]Max = [1,6,9,14][8,10,12,14]started by (54 elts) finished by (1 elts) meets (1 elts) overlaps (1 elts) contains (1 elts) $Min = [1, 8, 9, 16] [0, 4, 4, 8] \qquad Max = [1, 8, 9, 16] [8, 12, 12, 16]$ subset (6 elts) Min = [1, 3, 5, 7]Max = [9, 11, 13, 15]Allen* Min = start [1,2,5,6] , Max = started_by [9,12,13,16] _____ started by x started by -> Allen* relations : 54 elts started_by (54 elts) Min = [1, 4, 5, 8]Max = [9, 12, 13, 16]Min = [1,7,9,15][0,3,4,7]Max = [1,7,9,15][8,11,12,15]Min = [1,5,9,13][0,1,2,5]Max = [1,5,9,13][8,9,12,13]finished by (1 elts) meets (1 elts) Min = [1,6,9,14][0,2,2,6]Max = [1,6,9,14][8,10,12,14]Min = [1,8,9,16][0,4,4,8]Max = [1,8,9,16][8,12,12,16] overlaps (1 elts) contains (1 elts) Allen* Min = started_by [1,4,5,8] , Max = started_by [9,12,13,16] _____ started by x finishes -> Allen* relations : 98 elts finished_by (1 elts) Min = [2,7,10,15][0,3,4,7] Max = [2,7,10,15][8,11,12,15]meets (5 elts) meets (5 elts)Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]overlaps (5 elts)Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14]overlapped by (98 elts)Min = [2,4,6,8]Max = [10,14,14,16]contains (3 elts)Min = [2,8,10,16][0,4,4,8]Max = [2,10,10,16][8,12,12,16] Allen* Min = overlapped_by [2,4,6,8], Max = overlapped by [10,14,14,16]_____ started by x finished by -> Allen* relations : 148 elts finished_by (1 elts)Min = [0,7,8,15][0,3,4,7]Max = [0,7,8,15][8,11,12,15]meets (3 elts)Min = [0,5,6,13][0,1,2,5]Max = [0,5,8,13][8,9,12,13]overlaps (3 elts)Min = [0,6,6,14][0,2,2,6]Max = [0,6,8,14][8,10,12,14] contains (148 elts) Min = [0, 4, 4, 8]Max = [8, 12, 12, 16]Allen* Min = contains [0,4,4,8], Max = contains [8,12,12,16] _____ started by x meets -> Allen* relations : 734 elts AltenJosteticityfinished_by(53 elts)meets(3 elts)Min =[0,5,6,13][0,1,2,5] Max = [8, 11, 12, 15]Max = [0, 5, 8, 13][8, 9, 12, 13]._~y (25 elts) overlaps (97 elts) overlapped by (1 $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 16] [11, 14, 15, 16]$ Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped_by (25 elts)Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,16][10,14,14,16]contains (168 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = overlaps [0,2,2,6] , Max = contains [8,12,12,16] _____ started by x met by -> Allen* relations : 98 elts finished by (1 elts) Min = [3,7,11,15][0,3,4,7] Max = [3,7,11,15][8,11,12,15] meets (5 elts) $Min = [3, 5, 7, 9][0, 1, 2, 5] \qquad Max = [7, 9, 11, 13][8, 9, 12, 13]$ met_by (98 elts) overlaps (5 elts) Min = [3,4,7,8]Max = [11,14,15,16]Min = [3,6,7,10][0,2,2,6]Max = [7,10,11,14][8,10,12,14]

Min = [3, 8, 11, 16] [0, 4, 4, 8]contains (3 elts) Max = [3, 10, 11, 16] [8, 12, 12, 16]Allen* Min = met by [3,4,7,8] , Max = met by [11,14,15,16] _____ started by x overlaps -> Allen* relations : 734 elts Min = [0, 3, 4, 7]finished by (53 elts) Max = [8, 11, 12, 15] $Min = [0,5,6,13][0,1,2,5] \qquad Max = [0,5,8,13][8,9,12,13]$ meets (3 elts) met by (25 elts) $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 16] [11, 14, 15, 16]$ overlaps (97 elts) Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]Max = [6,10,10,16][10,14,14,16] overlapped by (25 elts) Min = [2, 6, 6, 10] [2, 4, 6, 8]contains (168 elts) Min = [0, 4, 4, 8]contains (168 elts) Min = [0, 4, 4, 8]Max = [8, 12, 12, 16]Allen* Min = overlaps [0,2,2,6] , Max = contains [8,12,12,16] ----started by x overlapped by \rightarrow Allen* relations : 98 elts finished by (1 elts) Min = [2,7,10,15][0,3,4,7] Max = [2,7,10,15][8,11,12,15] Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14] meets (5 elts)Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]overlaps (5 elts)Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14]overlapped_by (98 elts)Min = [2,4,6,8]Max = [10,14,14,16]contains (3 elts)Min = [2,8,10,16][0,4,4,8]Max = [2,10,10,16][8,12,12,16] meets (5 elts) Allen* Min = overlapped by [2,4,6,8], Max = overlapped by [10,14,14,16]_____ started by x during -> Allen* relations : 234 elts Min = [2,3,6,7]Max = [10,11,14,15]Min = [2,7,10,15][0,3,4,7]Max = [2,7,10,15][8,11,12,15]Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14] finishes (6 elts) finished by (1 elts) meets (5 elts) overlaps (5 elts) overlapped by (98 elts) Min = [2, 4, 6, 8]Max = [10, 14, 14, 16]

 during (6 elts)
 Min = [2,2,6,6]
 Max = [10,10,14,14]

 contains (3 elts)
 Min = [2,8,10,16][0,4,4,8]
 Max = [2,10,10,16][8,12,12,16]

 Allen* Min = during [2,2,6,6] , Max = overlapped by [10,14,14,16] _____ started by x contains \rightarrow Allen* relations : 148 elts finished by (1 elts) $Min = [0,7,8,15][0,3,4,7] \qquad Max = [0,7,8,15][8,11,12,15]$ Min = [0,5,6,13][0,1,2,5] Max = [0,5,8,13][8,9,12,13] meets (3 elts) $Min = [0, 6, 6, 14] [0, 2, 2, 6] \qquad Max = [0, 6, 8, 14] [8, 10, 12, 14]$ overlaps (3 elts) contains (148 elts) Min = [0, 4, 4, 8]Max = [8, 12, 12, 16]Allen* Min = contains [0,4,4,8] , Max = contains [8,12,12,16] ----started by x subset \rightarrow Allen* relations : 54 elts Max = [9, 12, 13, 16]started_by (54 elts) Min = [1, 4, 5, 8]finished_by (1 elts)Min = [1,7,9,15] [0,3,4,7]Max = [1,7,9,15] [8,11,12,15]meets (1 elts)Min = [1,5,9,13] [0,1,2,5]Max = [1,5,9,13] [8,9,12,13]overlaps (1 elts)Min = [1,6,9,14] [0,2,2,6]Max = [1,6,9,14] [8,10,12,14]contains (1 elts)Min = [1,8,9,16] [0,4,4,8]Max = [1,8,9,16] [8,12,12,16] Allen* Min = started by [1,4,5,8] , Max = started by [9,12,13,16] _____ finishes x precedes -> Allen* relations : 1 elts Min = [0, 0, 0, 0]precedes (1 elts) Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]----finishes x preceded by \rightarrow Allen* relations : 1 elts Min = [16, 16, 16, 16] Max = [16, 16, 16, 16]preceded by (1 elts) Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ finishes x start -> Allen* relations : 6 elts Min = [2, 2, 6, 6]during (6 elts) Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] _____ finishes x started by -> Allen* relations : 360 elts

met_by (30 elts)Min = [3,4,7,8]Max = [11,12,15,16][11,14,15,16]overlapped_by (30 elts)Min = [2,4,6,8]Max = [10,12,14,16][10,14,14,16] Allen* Min = overlapped by [2,4,6,8] , Max = met by [11,12,15,16] [11,14,15,16] _____ finishes x finishes -> Allen* relations : 6 elts Min = [2, 3, 6, 7]Max = [10, 11, 14, 15]finishes (6 elts) Allen* Min = finishes [2,3,6,7] , Max = finishes [10,11,14,15] _____ finishes x finished by \rightarrow Allen* relations : 126 elts Min = [2, 3, 6, 7]finishes (6 elts) Max = [10, 11, 14, 15]Initial finished_by (30 elts)Min = [0,3,4,7]Max = [8,11,12,15]subset (6 elts)Min = [1,3,5,7]Max = [9,11,13,15] Allen* Min = finished by [0,3,4,7] , Max = finishes [10,11,14,15] _____ finishes x meets -> Allen* relations : 80 elts met_by (5 elts) Min = [0, 1, 2, 5]Max = [8, 9, 12, 13]met_by (5 elts)Min = [3,5,7,9][3,4,7,8]Max = [7,9,11,13][11,14,15,16]overlapped_by (5 elts)Min = [2,5,6,9][2,4,6,8]Max = [6,9,10,13][10,14,14,16] Allen* Min = meets [0,1,2,5] , Max = meets [8,9,12,13] _____ finishes x met by -> Allen* relations : 340 elts $Min = [5, 6, 9, 10] [1, 2, 5, 6] \qquad Max = [9, 10, 13, 14]$ Max = [8, 9, 12, 13]Max = [8, 9, 12, 13]Max = [8, 9, 12, 14]Max = [8, 9, 12, 14]Max = [8, 9, 10, 14]Max = [1, 14]Mstart (3 elts) meets (11 elts) Max = [9, 10, 13, 14]Min = [4, 5, 8, 9] [0, 1, 2, 5]overlaps (11 elts)Min = [4,6,8,10][0,2,2,6]Max = [8,10,12,14]during (3 elts)Min = [6,6,10,10][2,2,6,6]Max = [10,10,14,14] Allen* Min = meets [4,5,8,9] [0,1,2,5], Max = during [10,10,14,14] _____ finishes x overlaps -> Allen* relations : 204 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]met_by (5 elts) $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 14] [11, 14, 15, 16]$ overlaps (80 elts) Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]
 overlapped_by (5 elts)
 Min = [2,6,6,10][2,4,6,8]
 Max = [6,10,10,14][10,14,14,16]
 during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]Allen* Min = overlaps [0,2,2,6] , Max = during [10,10,14,14] _____ finishes x overlapped by \rightarrow Allen* relations : 1136 elts start (3 elts) $Min = [5, 6, 9, 10] [1, 2, 5, 6] \qquad Max = [9, 10, 13, 14]$ meets (51 elts) Min = [2,5,6,9][0,1,2,5] Max = [8,9,12,13] Min = [3, 4, 7, 8]met_by (80 elts)Min = [3,4,7,8]Max = [11,14,15,16]overlaps (51 elts)Min = [2,6,6,10][0,2,2,6]Max = [8,10,12,14]overlapped_by (80 elts)Min = [2,4,6,8]Max = [10,14,14,16]during (3 elts)Min = [6,6,10,10][2,2,6,6]Max = [10,10,14,14] Allen* Min = overlapped by [2,4,6,8] , Max = met by [11,14,15,16] _____ finishes x during -> Allen* relations : 6 elts Min = [2, 2, 6, 6]during (6 elts) Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] ----finishes x contains -> Allen* relations : 888 elts Max = [9, 12, 13, 16]started_by (30 elts) Min = [1, 4, 5, 8]met_by (34 elts)Min = [3,4,7,8]Max = [11,12,15,16] [11,14,15,16]overlapped_by (34 elts)Min = [2,4,6,8]Max = [10,12,14,16] [10,14,14,16]contains (56 elts)Min = [0,4,4,8]Max = [8,12,12,16] Max = [11,12,15,16][11,14,15,16] Allen* Min = contains [0,4,4,8] , Max = met by [11,12,15,16] [11,14,15,16] finishes x subset -> Allen* relations : 6 elts finishes (6 elts) Min = [2, 3, 6, 7]Max = [10, 11, 14, 15]Allen* Min = finishes [2,3,6,7] , Max = finishes [10,11,14,15]

finished by x precedes -> Allen* relations : 1 elts Min = [0, 0, 0, 0]precedes (1 elts) Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ finished by x preceded by ->Allen* relations : 17 elts Min = [16, 16, 16, 16]preceded by (1 elts) Max = [16, 16, 16, 16]Allen* Min = preceded_by [16,16,16,16] , Max = preceded_by [16,16,16,16] _____ finished by x start \rightarrow Allen* relations : 98 elts started by (1 elts) Min = [1, 6, 9, 14] [1, 4, 5, 8]Max = [1, 6, 9, 14] [9, 12, 13, 16]met_by (5 elts) overlaps (98 elts) $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 14] [11, 14, 15, 16]$ Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped_by (5 elts)Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,14][10,14,14,16]contains (3 elts)Min = [0,6,6,14][0,4,4,8]Max = [0,6,8,14][8,12,12,16] Allen* Min = overlaps [0,2,2,6] , Max = overlaps [8,10,12,14] _____ finished by x started by \rightarrow Allen* relations : 148 elts started_by (1 elts) Min = [1,8,9,16][1,4,5,8] Max = [1, 8, 9, 16] [9, 12, 13, 16]met by (3 elts) Min = [3,8,11,16][3,4,7,8] Max = [3,10,11,16][11,14,15,16] overlapped by (3 elts)Min = [2,8,10,16][2,4,6,8]Max = [2,10,10,16][10,14,14,16]contains (148 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = contains [0,4,4,8] , Max = contains [8,12,12,16] _____ finished by x finishes \rightarrow Allen* relations : 166 elts Max = [1,7,9,15][9,12,13,16] started_by (1 elts) Min = [1,7,9,15][1,4,5,8]

 stated_by (1 cits),
 Inn (1,1,1,1,15)

 finishes (6 elts)
 Min = [2,3,6,7]
 Max = [10,11,14,15]

 finished_by (54 elts)
 Min = [0,3,4,7]
 Max = [8,11,12,15]

 met_by (1 elts)
 Min = [3,7,11,15][3,4,7,8]
 Max = [3,7,11,15][11,14,15,16]

 Min = [2,7,10,15][2,4,6,8] Max = [2,7,10,15][10,14,14,16] Min = [0,7,8,15][0,4,4,8] Max = [0,7,8,15][8,12,12,16] overlapped by (1 elts) contains (1 elts) Max = [9, 11, 13, 15]subset (6 elts) Min = [1, 3, 5, 7]Allen* Min = finished by [0,3,4,7] , Max = finishes [10,11,14,15] _____ finished by x finished by \rightarrow Allen* relations : 54 elts started by (1 elts) Min = [1, 7, 9, 15] [1, 4, 5, 8]Max = [1, 7, 9, 15] [9, 12, 13, 16]finished by (54 elts) Min = [0, 3, 4, 7]Max = [8, 11, 12, 15]Min = [3,7,11,15] [3,4,7,8] Max = [3,7,11,15] [11,14,15,16] met by (1 elts) overlapped by (1 elts)Min = [2,7,10,15][2,4,6,8]Max = [2,7,10,15][10,14,14,16]contains (1 elts)Min = [0,7,8,15][0,4,4,8]Max = [0,7,8,15][8,12,12,16] Allen* Min = finished by [0, 3, 4, 7], Max = finished by [8, 11, 12, 15]_____ finished by x meets -> Allen* relations : 98 elts started_by (1 elts) Min = [1,5,9,13][1,4,5,8] Max = [1,5,9,13][9,12,13,16] meets (98 elts) Min = [0, 1, 2, 5]Max = [8, 9, 12, 13]met_by (5 elts)Min = [3,5,7,9][3,4,7,8]overlapped_by (5 elts)Min = [2,5,6,9][2,4,6,8]contains (3 elts)Min = [0,5,6,13][0,4,4,8] Max = [7,9,11,13][11,14,15,16] Max = [6, 9, 10, 13] [10, 14, 14, 16]Max = [0, 5, 8, 13] [8, 12, 12, 16]Allen* Min = meets [0,1,2,5] , Max = meets [8,9,12,13] _____ finished by x met_by -> Allen* relations : 734 elts started_by (53 elts)Min = [1,4,5,8]Max = [9,12,13,16]meets (25 elts)Min = [0,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13] $Min = [3,8,11,16] [3,4,7,8] \qquad Max = [3,10,11,16] [11,14,15,16]$ met by (3 elts) overlaps (25 elts) $Min = [0, 6, 6, 10] [0, 2, 2, 6] \qquad Max = [6, 10, 10, 14] [8, 10, 12, 14]$
 overlaps (25 elts)
 Min
 [0,0,0,10]

 overlapped_by (97 elts)
 Min = [2,4,6,8]

 contains (168 elts)
 Min = [0,4,4,8]
 Max = [10, 14, 14, 16]Max = [8, 12, 12, 16]Allen* Min = contains [0, 4, 4, 8], Max = overlapped by [10, 14, 14, 16]_____

finished by x overlaps -> Allen* relations : 98 elts started_by (1 elts) Min = [1,6,9,14][1,4,5,8] Max = [1,6,9,14][9,12,13,16] Min = [3,6,7,10][3,4,7,8] met by (5 elts) Max = [7, 10, 11, 14] [11, 14, 15, 16]overlaps (98 elts) Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]

 overlappe (30 cleb)
 Inin [0,2,2,2,3]

 overlapped_by (5 elts)
 Min = [2,6,6,10][2,4,6,8]

 Max = [6,10,10,14][10,14,14,16]

 contains (3 elts)
 Min = [0,6,6,14][0,4,4,8]

 Allen* Min = overlaps [0,2,2,6] , Max = overlaps [8,10,12,14] _____ finished by x overlapped by \rightarrow Allen* relations : 734 elts started by (53 elts) Min = [1, 4, 5, 8]Max = [9, 12, 13, 16]Min = [0, 5, 6, 9] [0, 1, 2, 5]Max = [6, 9, 10, 13] [8, 9, 12, 13]meets (25 elts) $Min = [3, 8, 11, 16] [3, 4, 7, 8] \qquad Max = [3, 10, 11, 16] [11, 14, 15, 16]$ met by (3 elts) overlaps (25 elts) $Min = [0, 6, 6, 10] [0, 2, 2, 6] \qquad Max = [6, 10, 10, 14] [8, 10, 12, 14]$
 overlapped_by (97 elts)
 Min = [2,4,6,8]

 contains (168 elts)
 Min = [0,4,4,8]
 Max = [10, 14, 14, 16]Max = [8, 12, 12, 16]Allen* Min = contains [0,4,4,8], Max = overlapped by [10,14,14,16]_____ finished by x during \rightarrow Allen* relations : 234 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]started by (1 elts) $Min = [1, 6, 9, 14] [1, 4, 5, 8] \qquad Max = [1, 6, 9, 14] [9, 12, 13, 16]$ met_by (5 elts)
overlaps (98 elts) Min = [3,6,7,10][3,4,7,8] Max = [7,10,11,14][11,14,15,16] Min = [0,2,2,6] Min = [2,6,6,10][2,4,6,8] Max = [8, 10, 12, 14]overlapped by (5 elts) Max = [6, 10, 10, 14] [10, 14, 14, 16]
 during (6 elts)
 Min = [2,2,6,6]

 contains (3 elts)
 Min = [0,6,6,14]
 Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]Min = [0, 6, 6, 14] [0, 4, 4, 8]Max = [0, 6, 8, 14] [8, 12, 12, 16]Allen* Min = overlaps [0,2,2,6] , Max = during [10,10,14,14] _____ finished by x contains -> Allen* relations : 148 elts started_by (1 elts) Min = [1,8,9,16][1,4,5,8] Max = [1, 8, 9, 16] [9, 12, 13, 16]Min = [3,8,11,16][3,4,7,8] Max = [3,10,11,16][11,14,15,16] met by (3 elts) overlapped by (3 elts)Min = [2,8,10,16][2,4,6,8]Max = [2,10,10,16][10,14,14,16]contains (148 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = contains [0,4,4,8] , Max = contains [8,12,12,16] finished by x subset \rightarrow Allen* relations : 54 elts started by (1 elts) $Min = [1,7,9,15] [1,4,5,8] \qquad Max = [1,7,9,15] [9,12,13,16]$ Min = [0, 3, 4, 7]finished by (54 elts) Max = [8, 11, 12, 15]met by (1 elts) Min = [3,7,11,15][3,4,7,8] Max = [3,7,11,15][11,14,15,16] overlapped by (1 elts)Min = [2,7,10,15][2,4,6,8]Max = [2,7,10,15][10,14,14,16]contains (1 elts)Min = [0,7,8,15][0,4,4,8]Max = [0,7,8,15][8,12,12,16] Allen* Min = finished by [0,3,4,7], Max = finished by [8,11,12,15]_____ meets x precedes -> Allen* relations : 1 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0] , Max = precedes [0,0,0,0] _____ meets x preceded by \rightarrow Allen* relations : 17 elts Min = [16, 16, 16, 16]preceded by (1 elts) Max = [16, 16, 16, 16]Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ meets x start -> Allen* relations : 98 elts started by (1 elts) Min = [1, 5, 9, 13] [1, 4, 5, 8]Max = [1, 5, 9, 13] [9, 12, 13, 16]meets (98 elts) met by (5 elts) overlapped by (5 elts)Min = [2,5,6,9][2,4,6,8]contains (3 elts)Min = [0,5,6,13][0,4,4,8] Allen* Min = meets [0,1,2,5] , Max = meets [8,9,12,13] meets x started by ->

Allen* relations : 98 elts started_by (1 elts) Min = [1,5,9,13][1,4,5,8] Max = [1,5,9,13][9,12,13,16] meets (98 elts) Min = [0, 1, 2, 5]Max = [8, 9, 12, 13]

 meets (98 elts)
 Min = [0,1,2,5]
 Max = [8,9,12,13]

 met_by (5 elts)
 Min = [3,5,7,9][3,4,7,8]
 Max = [7,9,11,13][11,14,15,16]

 overlapped_by (5 elts)
 Min = [2,5,6,9][2,4,6,8]
 Max = [6,9,10,13][10,14,14,16]

 contains (3 elts)
 Min = [0,5,6,13][0,4,4,8]
 Max = [0,5,8,13][8,12,12,16]

 Allen* Min = meets [0,1,2,5] , Max = meets [8,9,12,13] _____ meets x finishes ->

 start (6 elts)
 Min = [1,2,5,6]
 Max = [9,10,13,14]

 started_by (1 elts)
 Min = [1,6,9,14][1,4,5,8]
 Max = [1,6,9,14][9,12,13,16]

 met_by (5 elts)
 Min = [3,6,7,10][3,4,7,8]
 Max = [7,10,11,14][11,14,15,16]

 overlaps (98 elts)
 Min = [0,2,2,6]
 Max = [9,10,12,13]

 Min = [0,2,2,6]Max = [8,10,12,14]Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,14][10,14,14,16] overlapped by (5 elts) during (6 elts) Min = [2,2,6,6]contains (3 elts) Min = [0,6,6,14][0]Min = [2,2,6,6] Max = [10,10,14,14] Min = [0,6,6,14][0,4,4,8] Max = [0,6,8,14][8,12,12,16] contains (3 elts) Allen* Min = overlaps [0,2,2,6] , Max = during [10,10,14,14] _____ meets x finished by -> Allen* relations : 520 elts started_by (11 elts)Min = [1,4,5,8]Max = [5,8,9,12] [9,12,13,16]met_by (13 elts)Min = [3,4,7,8]Max = [7,8,11,12] [11,14,15,16]overlapped_by (13 elts)Min = [2,4,6,8]Max = [6,8,10,12] [10,14,14,16]contains (21 elts)Min = [0,4,4,8]Max = [4,8,8,12] [8,12,12,16] Allen* Min = contains [0,4,4,8] , Max = met_by [7,8,11,12] [11,14,15,16] _____ meets x meets -> Allen* relations : 980 elts start (3 elts)Min = [1,2,5,6]Max = [5,6,9,10][9,10,13,14]started_by (11 elts)Min = [1,4,5,8]Max = [5,8,9,12][9,12,13,16]finishes (3 elts)Min = [2,3,6,7]Max = [6,7,10,11][10,11,14,15]finished_by (11 elts)Min = [0,3,4,7]Max = [4,7,8,11][8,11,12,15]met_by (17 elts)Min = [3,4,7,8]Max = [7,8,11,12][11,14,15,16]overlaps (25 elts)Min = [0,2,2,6]Max = [4,6,8,10][8,10,12,14]overlapped_by (17 elts)Min = [2,4,6,8]Max = [6,8,10,12][10,14,14,16]during (3 elts)Min = [0,4,4,8]Max = [4,8,8,12][8,12,12,16]subset (3 elts)Min = [1,3,5,7]Max = [5,7,9,11][9,11,13,15] start (3 elts) Min = [1,2,5,6] Max = [5, 6, 9, 10] [9, 10, 13, 14]Allen* Min = overlaps [0,2,2,6] , Max = met by [7,8,11,12] [11,14,15,16] ----meets x met by -> Allen* relations : 166 elts started_by (1 elts) Min = [1,7,9,15][1,4,5,8] Max = [1,7,9,15][9,12,13,16]

 finishes (6 elts)
 Min = [2,3,6,7]
 Max = [10,11,14,15]

 finished_by (54 elts)
 Min = [0,3,4,7]
 Max = [8,11,12,15]

 met_by (1 elts)
 Min = [3,7,11,15][3,4,7,8]
 Max = [3,7,11,15][11,14,15,16]

 min = [37,711,73] [3,47,76]
 Max = [37,711,73] [11,74,76,76]

 overlapped_by (1 elts)
 Min = [2,7,10,15] [2,4,6,8]
 Max = [2,7,10,15] [10,14,14,16]

 contains (1 elts)
 Min = [0,7,8,15] [0,4,4,8]
 Max = [0,7,8,15] [8,12,12,16]

 subset (6 elts)
 Min = [1,3,5,7]
 Max = [9,11,13,15]

 Allen* Min = finished_by [0,3,4,7] , Max = finishes [10,11,14,15] _____ meets x overlaps -> Allen* relations : 980 elts Min = [1, 4, 5, 8] Min = [1, 4, 5, 8]start (3 elts) Max = [5, 6, 9, 10] [9, 10, 13, 14]started by (11 elts) Max = [5, 8, 9, 12] [9, 12, 13, 16]Min = [2, 3, 6, 7]Min = [0, 3, 4, 7]finishes (3 elts) Max = [6,7,10,11][10,11,14,15] Max = [4,7,8,11] [8,11,12,15] Max = [7,8,11,12] [11,14,15,16] Max = [4,6,8,10] [8,10,12,14] Max = [6,8,10,12] [10,14,14,16] Max = [6,6,10,10] [10,10,14,14] Max = [4,8,8,12] [8,12,12,16] Max = [5,7,9,11] [9,11.13,15] finished_by (11 elts)

 met_by (17 elts)
 Min = [3,4,7,8]

 overlaps (25 elts)
 Min = [0,2,2,6]

 overlapped_by (17 elts)
 Min = [2,4,6,8]

 during (3 elts)
 Min = [2,2,6,6]

 contains (21 elts)Min = [0,4,4,8]subset (3 elts)Min = [1,3,5,7] Allen* Min = overlaps [0,2,2,6] , Max = met by [7,8,11,12] [11,14,15,16] _____ meets x overlapped by \rightarrow

Allen* relations : 234 elts Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]start (6 elts) started_by (1 elts)Min = [1, 6, 9, 14][1, 4, 5, 8]Max = [1, 6, 9, 14][9, 12, 13, 16]met_by (5 elts)Min = [3, 6, 7, 10][3, 4, 7, 8]Max = [1, 6, 9, 14][9, 12, 13, 16]overlaps (98 elts)Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped_by (5 elts)Min = [2, 6, 6, 10][2, 4, 6, 8]Max = [6, 10, 10, 14][10, 14, 14, 16]Max = [1, 6, 9, 14] [9, 12, 13, 16]Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]during (6 elts) $Min = [0, 6, 6, 14] [0, 4, 4, 8] \qquad Max = [0, 6, 8, 14] [8, 12, 12, 16]$ contains (3 elts) Allen* Min = overlaps [0,2,2,6] , Max = during [10,10,14,14] _____ meets x during \rightarrow Allen* relations : 234 elts Max = [9, 10, 13, 14]start (6 elts) Min = [1, 2, 5, 6]Min = [1,6,9,14][1,4,5,8] Max = [1,6,9,14][9,12,13,16] started by (1 elts) met_by (5 elts) overlaps (98 elts) $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 14] [11, 14, 15, 16]$ Min = [0, 2, 2, 6]Min = [2, 6, 6, 10] [2, 4, 6, 8] Max = [8, 10, 12, 14]Max = [6, 10, 10, 14] [10, 14, 14, 16]overlapped by (5 elts) during (6 elts) contains (3 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14] $Min = [0, 6, 6, 14] [0, 4, 4, 8] \qquad Max = [0, 6, 8, 14] [8, 12, 12, 16]$ Allen* Min = overlaps [0,2,2,6] , Max = during [10,10,14,14] _____ meets x contains -> Allen* relations : 520 elts started_by (11 elts) Min = [1,4,5,8] Max = [5, 8, 9, 12] [9, 12, 13, 16]

 met_by (13 elts)
 Min = [3,4,7,8]
 Max = [7,8,11,12][11,14,15,1]

 overlapped_by (13 elts)
 Min = [2,4,6,8]
 Max = [6,8,10,12][10,14,14,1]

 contains (21 elts)
 Min = [0,4,4,8]
 Max = [4,8,8,12][8,12,12,16]

 Max = [7, 8, 11, 12] [11, 14, 15, 16]Max = [6, 8, 10, 12] [10, 14, 14, 16]Allen* Min = contains [0,4,4,8], Max = met by [7,8,11,12] [11,14,15,16] _____ meets x subset -> Allen* relations : 98 elts started_by (1 elts) Min = [1,5,9,13][1,4,5,8] Max = [1, 5, 9, 13] [9, 12, 13, 16]Min = [0, 1, 2, 5]meets (98 elts) Max = [8, 9, 12, 13]meters (50 elts)Min = [0, 1, 2, 3]Max = [0, 3, 12, 13]met_by (5 elts)Min = [3, 5, 7, 9] [3, 4, 7, 8]Max = [7, 9, 11, 13] [11, 14, 15, 16]overlapped_by (5 elts)Min = [2, 5, 6, 9] [2, 4, 6, 8]Max = [6, 9, 10, 13] [10, 14, 14, 16]contains (3 elts)Min = [0, 5, 6, 13] [0, 4, 4, 8]Max = [0, 5, 8, 13] [8, 12, 12, 16] Allen* Min = meets [0,1,2,5] , Max = meets [8,9,12,13] _____ met by x precedes -> Allen* relations : 17 elts Min = [0, 0, 0, 0]precedes (1 elts) Max = [0.0.0.0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ met by x preceded by -> Allen* relations : 1 elts preceded by (1 elts) Min = [16,16,16,16] Max = [16,16,16,16] Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ met by x start -> Allen* relations : 234 elts finishes (6 elts) Min = [2,3,6,7] Max = [10, 11, 14, 15]Min = [2,7,10,15][0,3,4,7] Max = [2,7,10,15][8,11,12,15] finished by (1 elts) Min = [2,5,6,9][0,1,2,5] Min = [2,6,6,10][0,2,2,6] meets (5 elts) overlaps (5 elts) Max = [6, 9, 10, 13] [8, 9, 12, 13]Max = [6, 10, 10, 14] [8, 10, 12, 14]Min = [2, 4, 6, 8]overlapped_by (98 elts) Max = [10, 14, 14, 16]

 during (6 elts)
 Min = [2,2,6,6]
 Max = [10,10,14,14]

 contains (3 elts)
 Min = [2,8,10,16][0,4,4,8]
 Max = [2,10,10,16][8,12,12,16]

 Allen* Min = during [2,2,6,6] , Max = overlapped_by [10,14,14,16] _____ met by x started by ->Allen* relations : 520 elts finished by (11 elts) $Min = [4,7,8,11][0,3,4,7] \qquad Max = [8,11,12,15]$ meets (13 elts)Min = [4,5,8,9][0,1,2,5]Max = [8,9,12,13]overlaps (13 elts)Min = [4,6,8,10][0,2,2,6]Max = [8,10,12,14]contains (21 elts)Min = [4,8,8,12][0,4,4,8]Max = [8,12,12,16] Allen* Min = meets [4,5,8,9] [0,1,2,5], Max = contains [8,12,12,16] -----

met by x finishes -> Allen* relations : 98 elts finished_by (1 elts) Min = [3,7,11,15][0,3,4,7] Max = [3,7,11,15][8,11,12,15] Min = [3,5,7,9][0,1,2,5] Max = [7, 9, 11, 13] [8, 9, 12, 13]meets (5 elts) Min = [3, 4, 7, 8]met by (98 elts) Max = [11, 14, 15, 16]Min = [3, 6, 7, 10] [0, 2, 2, 6]overlaps (5 elts) Max = [7, 10, 11, 14] [8, 10, 12, 14]Min = [3, 8, 11, 16] [0, 4, 4, 8]contains (3 elts) Max = [3, 10, 11, 16] [8, 12, 12, 16]Allen* Min = met_by [3,4,7,8] , Max = met_by [11,14,15,16] _____ met by x finished by -> Allen* relations : 98 elts finished by (1 elts) Min = [3, 7, 11, 15] [0, 3, 4, 7]Max = [3, 7, 11, 15] [8, 11, 12, 15]Min = [3, 5, 7, 9] [0, 1, 2, 5]Max = [7, 9, 11, 13] [8, 9, 12, 13]meets (5 elts) met by (98 elts) Min = [3, 4, 7, 8]Max = [11, 14, 15, 16]overlaps (5 elts)Min = [3,6,7,10][0,2,2,6]Max = [7,10,11,14][8,10,12,14]contains (3 elts)Min = [3,8,11,16][0,4,4,8]Max = [3,10,11,16][8,12,12,16] Allen* Min = met_by [3,4,7,8] , Max = met_by [11,14,15,16] _____ met by x meets -> Allen* relations : 166 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]started by (54 elts) Min = [1, 4, 5, 8]Max = [9, 12, 13, 16]finished_by (1 elts) Min = [1, 7, 9, 15] [0, 3, 4, 7]Max = [1, 7, 9, 15] [8, 11, 12, 15]Max = [1, 5, 9, 13] [8, 9, 12, 13]Min = [1, 5, 9, 13] [0, 1, 2, 5]meets (1 elts) overlaps (1 elts)Min = [1,6,9,14][0,2,2,6]Max = [1,6,9,14][8,contains (1 elts)Min = [1,8,9,16][0,4,4,8]Max = [1,8,9,16][8,subset (6 elts)Min = [1,3,5,7]Max = [9,11,13,15] Max = [1, 6, 9, 14] [8, 10, 12, 14]Max = [1, 8, 9, 16] [8, 12, 12, 16]Allen* Min = start [1,2,5,6] , Max = started_by [9,12,13,16] _____ met by x met by -> Allen* relations : 980 elts Max = [9, 10, 13, 14]start (3 elts) Min = [5, 6, 9, 10] [1, 2, 5, 6]Max = [9, 12, 13, 16]Min = [5,8,9,12][1,4,5,8] started by (11 elts) $Min = [6,7,10,11] [2,3,6,7] \qquad Max = [10,11,14,15]$ finishes (3 elts) Min = [4, 7, 8, 11] [0, 3, 4, 7]finished by (11 elts) Max = [8, 11, 12, 15]meets (17 elts) Min = [4, 5, 8, 9] [0, 1, 2, 5]Max = [8, 9, 12, 13]Max = [8, 10, 12, 14]overlaps (17 elts) Min = [4, 6, 8, 10] [0, 2, 2, 6]overlapped_by (25 elts) Min = [6,8,10,12][2,4,6,8] Max = [10,14,14,16] Min = [6, 6, 10, 10] [2, 2, 6, 6]during (3 elts) Max = [10, 10, 14, 14]Min = [4,8,8,12][0,4,4,8]Max = [8,12,12,16]Min = [5,7,9,11][1,3,5,7]Max = [9,11,13,15] contains (21 elts) subset (3 elts) Allen* Min = meets [4,5,8,9] [0,1,2,5], Max = overlapped by [10,14,14,16] _____ met by x overlaps -> Allen* relations : 234 elts finishes (6 elts)Min = [2,3,6,7]Max = [10,11,14,15]finished_by (1 elts)Min = [2,7,10,15][0,3,4,7]Max = [2,7,10,15][8,11,12,15] Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14]meets (5 elts) overlaps (5 elts) overlapped by (98 elts) Min = [2, 4, 6, 8]Max = [10, 14, 14, 16]during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14] $Min = [2, 8, 10, 16] [0, 4, 4, 8] \qquad Max = [2, 10, 10, 16] [8, 12, 12, 16]$ contains (3 elts) Allen* Min = during [2,2,6,6] , Max = overlapped by [10,14,14,16] _____ met_by x overlapped_by -> Allen* relations : 980 elts start (3 elts) Min = [5, 6, 9, 10] [1, 2, 5, 6]Max = [9, 10, 13, 14]Min = [5,8,9,12][1,4,5,8] Max = [9, 12, 13, 16]started by (11 elts) Min = [6,7,10,11][2,3,6,7] Min = [4,7,8,11][0,3,4,7] Min = [4,5,8,9][0,1,2,5] finishes (3 elts) Max = [10, 11, 14, 15]Max = [8, 11, 12, 15]finished by (11 elts) meets (17 elts) Max = [8, 9, 12, 13]Min = [4, 6, 8, 10] [0, 2, 2, 6]Max = [8, 10, 12, 14]overlaps (17 elts)

 overlapped_by (25 elts)
 Min = [6,8,10,12][2,4,6,8]
 Max = [10,14,14,16]

 during (3 elts) $Min = [6, 6, 10, 10] [2, 2, 6, 6] \qquad Max = [10, 10, 14, 14]$ contains (21 elts) $Min = [4,8,8,12][0,4,4,8] \qquad Max = [8,12,12,16]$ subset (3 elts) Min = [5, 7, 9, 11] [1, 3, 5, 7]Max = [9, 11, 13, 15]Allen* Min = meets [4,5,8,9] [0,1,2,5], Max = overlapped by [10,14,14,16]

met by x during -> Allen* relations : 234 elts finishes (6 elts)Min = [2,3,6,7]Max = [10,11,14,15]finished_by (1 elts)Min = [2,7,10,15][0,3,4,7]Max = [2,7,10,15][8,11,12,15]meets (5 elts)Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]overlaps (5 elts)Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14] overlaps (5 elts)
 overlapped_by (98 elts)
 Min = [2,4,6,8]

 during (6 elts)
 Min = [2,2,6,6]
 Max = [10, 14, 14, 16]during (6 elts) Max = [10, 10, 14, 14]contains (3 elts) $Min = [2,8,10,16] [0,4,4,8] \qquad Max = [2,10,10,16] [8,12,12,16]$ Allen* Min = during [2,2,6,6] , Max = overlapped by [10,14,14,16] ----met by x contains -> Allen* relations : 520 elts Min = [4,7,8,11][0,3,4,7]Max = [8,11,12,15]Min = [4,5,8,9][0,1,2,5]Max = [8,9,12,13] finished by (11 elts) meets (13 elts) Min = [4,6,8,10][0,2,2,6] Max = [8,10,12,14] Min = [4,8,8,12][0,4,4,8] Max = [8,12,12,16] overlaps (13 elts) contains (21 elts) Allen* Min = meets [4,5,8,9] [0,1,2,5], Max = contains [8,12,12,16] _____ met by x subset -> Allen* relations : 98 elts finished by (1 elts) Min = [3,7,11,15][0,3,4,7] Max = [3,7,11,15][8,11,12,15] meets (5 elts) $Min = [3,5,7,9][0,1,2,5] \qquad Max = [7,9,11,13][8,9,12,13]$ met by (98 elts) Min = [3, 4, 7, 8]Max = [11, 14, 15, 16]Min = [3, 6, 7, 10] [0, 2, 2, 6]overlaps (5 elts)Min = [3,6,7,10][0,2,2,6]Max = [7,10,11,14][8,10,12,14]contains (3 elts)Min = [3,8,11,16][0,4,4,8]Max = [3,10,11,16][8,12,12,16] Allen* Min = met by [3,4,7,8], Max = met by [11,14,15,16] _____ overlaps x precedes \rightarrow Allen* relations : 1 elts Min = [0, 0, 0, 0]precedes (1 elts) Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0] , Max = precedes [0,0,0,0] ----overlaps x preceded by -> Allen* relations : 17 elts Min = [16, 16, 16, 16]preceded by (1 elts) Max = [16, 16, 16, 16]Allen* Min = preceded_by [16,16,16,16] , Max = preceded_by [16,16,16,16] _____ overlaps x start -> Allen* relations : 98 elts started by (1 elts) Min = [1, 6, 9, 14] [1, 4, 5, 8]Max = [1, 6, 9, 14] [9, 12, 13, 16]met_by (5 elts) overlaps (98 elts) $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 14] [11, 14, 15, 16]$ Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped by (5 elts)Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,14][10,14,14,16]contains (3 elts)Min = [0,6,6,14][0,4,4,8]Max = [0,6,8,14][8,12,12,16] Allen* Min = overlaps [0,2,2,6] , Max = overlaps [8,10,12,14] _____ overlaps x started by \rightarrow Allen* relations : 740 elts started_by (9 elts) Min = [1,6,9,14][1,4,5,8] Max = [1, 8, 9, 16] [9, 12, 13, 16]Min = [0, 3, 4, 7]finished by (54 elts) Max = [8, 11, 12, 15]met_by (25 elts)
overlaps (98 elts) Min = [3, 6, 7, 10] [3, 4, 7, 8]Max = [7,10,11,16][11,14,15,16] Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped by (25 elts)Min = [2,6,6,10][2,4,6,8]contains (166 elts)Min = [0,4,4,8] Max = [6, 10, 10, 16] [10, 14, 14, 16]Max = [8, 12, 12, 16]Allen* Min = overlaps [0,2,2,6] , Max = contains [8,12,12,16] _____ overlaps x finishes \rightarrow Allen* relations : 234 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]Min = [1,6,9,14][1,4,5,8] started by (1 elts) Max = [1, 6, 9, 14] [9, 12, 13, 16] $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 14] [11, 14, 15, 16]$ met by (5 elts) overlaps (98 elts)

 overlapped_by (5 elts)
 Min = [2,6,6,10][2,4,6,8]
 Max = [8,10,12,14]

 during (6 elts)
 Min = [2,2,6,6]
 Max = [6,10,10,14][10,14,14,16]

 contains (2,2,1)
 Min = [2,2,6,6]
 Max = [10,10,14,14]

 Min = [2,2,6,6] Min = [0,6,6,14][0,4,4,8] contains (3 elts) Max = [0, 6, 8, 14] [8, 12, 12, 16]

Allen* Min = overlaps [0,2,2,6] , Max = during [10,10,14,14] _____ overlaps x finished by ->Allen* relations : 1568 elts Max = [5,8,9,14][9,12,13,16] started_by (25 elts) Min = [1,4,5,8] meets (98 elts) Min = [0,1,2,5] Max = [8, 9, 12, 13]Min = [3, 4, 7, 8]Max = [7,10,11,14][11,14,15,16] met by (51 elts) overlaps (98 elts) Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped_by (51 elts) Min = [2,4,6,8]contains (55 elts) Min = [0,4,4,8]Max = [6, 10, 10, 14] [10, 14, 14, 16]contains (55 elts) Min = [0, 4, 4, 8]Max = [4, 8, 8, 14] [8, 12, 12, 16]Allen* Min = meets [0,1,2,5] , Max = overlaps [8,10,12,14] ----overlaps x meets -> Allen* relations : 980 elts Min = [1, 2, 5, 6]start (3 elts) Max = [5, 6, 9, 10] [9, 10, 13, 14]Max = [5, 8, 9, 10] [9, 10, 10, 14] Max = [5, 8, 9, 12] [9, 12, 13, 16] Max = [6, 7, 10, 11] [10, 11, 14, 15] Max = [4, 7, 8, 11] [8, 11, 12, 15] Max = [7, 8, 11, 12] [11, 14, 15, 16] Max = [4, 6, 8, 10] [8, 10, 12, 14] Max = [6, 8, 10, 12] [10, 14, 14, 16] Max = [6, 6, 10, 10] [10, 10, 14, 14]started by (11 elts) Min = [1, 4, 5, 8]Min = [2, 3, 6, 7] Min = [0, 3, 4, 7] Min = [3, 4, 7, 8]finishes (3 elts) finished by (11 elts)

 met_by (17 elts)
 Min = [3,4,7,8]

 overlaps (25 elts)
 Min = [0,2,2,6]

 overlapped_by (17 elts)
 Min = [2,4,6,8]

 Min = [2,2,6,6]

 during (3 elts) Min = [2, 2, 6, 6]Max = [6, 6, 10, 10] [10, 10, 14, 14]

 contains (21 elts)
 Min = [0,4,4,8]

 subset (3 elts)
 Min = [1,3,5,7]

 Max = [4, 8, 8, 12] [8, 12, 12, 16]Max = [5, 7, 9, 11] [9, 11, 13, 15]Allen* Min = overlaps [0,2,2,6] , Max = met by [7,8,11,12] [11,14,15,16] _____ overlaps x met by -> Allen* relations : 734 elts Min = [1,4,5,8]Max = [9,12,13,16]Min = [0,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13] started_by (53 elts) Min = [1,4,5,8] meets (25 elts) met_by (3 elts)Min = [3,8,11,16][3,4,7,8]Max = [3,10,11,16][11,14,15,16]overlaps (25 elts)Min = [0,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14]overlapped_by (97 elts)Min = [2,4,6,8]Max = [10,14,14,16]contains (168 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = contains [0,4,4,8], Max = overlapped by [10,14,14,16]_____ overlaps x overlaps -> Allen* relations : 1867 elts

 start (3 elts)
 Min = [1,2,5,6]

 started_by (25 elts)
 Min = [1,4,5,8]

 finishes (3 elts)
 Min = [2,3,6,7]

 finished_by (11 elts)
 Min = [0,3,4,7]

 meets (98 elts)
 Min = [0,1,2,5]

 Max = [5, 6, 9, 10] [9, 10, 13, 14]Max = [5, 8, 9, 14] [9, 12, 13, 16]Max = [6,7,10,11][10,11,14,15] Max = [4, 7, 8, 11] [8, 11, 12, 15]Max = [8, 9, 12, 13]met by (51 elts) Min = [3, 4, 7, 8]Max = [7,10,11,14][11,14,15,16] ____ () erts) overlaps (98 elts)

 nmet_by (Sretcs,
 nmet_by (Sretcs,

 overlaps (98 elts)
 Min = [0,2,2,6]

 overlapped_by (S1 elts)
 Min = [2,4,6,8]

 during (3 elts)
 Min = [2,2,6,6]

 Max = [8, 10, 12, 14] Max = [6, 10, 10, 14] [10, 14, 14, 16] Max = [6, 6, 10, 10] [10, 10, 14, 14] $\min_{i=1}^{n} = [0, 4, 4, 8]$ Max = [4, 8, 8, 14] [8, 12, 12, 16]contains (55 elts) Min = [1, 3, 5, 7]Max = [5, 7, 9, 11] [9, 11, 13, 15]subset (3 elts) Allen* Min = meets [0,1,2,5] , Max = overlaps [8,10,12,14] _____ overlaps x overlapped by \rightarrow Allen* relations : 2269 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]Min = [1, 4, 5, 8]started by (54 elts) Max = [9, 12, 13, 16]
 started_by (54 elts)
 Min = [1, 4, 5, 6]

 finishes (6 elts)
 Min = [2, 3, 6, 7]

 finished_by (54 elts)
 Min = [0, 3, 4, 7]
 Max = [10, 11, 14, 15]meets (25 elts)Min = [0,5,6,9][0,1,2,5]Max = [8,11,12,15]met_by (25 elts)Min = [0,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]overlaps (98 elts)Min = [3,6,7,10][3,4,7,8]Max = [7,10,11,16][11,14,15,16]overlapped_by (98 elts)Min = [0,2,2,6]Max = [8,10,12,14]overlapped_by (98 elts)Min = [2,4,6,8]Max = [10,14,14,16]during (6 elts)Min = [2,2,6,6]Max = [10,10,14,14] Min = [0, 4, 4, 8]contains (169 elts) Max = [8, 12, 12, 16]Min = [1, 3, 5, 7]Max = [9, 11, 13, 15]subset (6 elts) Allen* Min = overlaps [0,2,2,6] , Max = overlapped by [10,14,14,16] overlaps x during ->

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Allen* relations : 234 elts
                                    Min = [1, 2, 5, 6]
start (6 elts)
                                                                           Max = [9, 10, 13, 14]
started_by (1 elts)Min = [1,6,9,14][1,4,5,8]Max = [1,6,9,14][9,12,13,16]met_by (5 elts)Min = [3,6,7,10][3,4,7,8]Max = [7,10,11,14][11,14,15,16]overlaps (98 elts)Min = [0,2,2,6]Max = [8,10,12,14]overlapped_by (5 elts)Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,14][10,14,14,16]
during (6 elts)
                                    Min = [2, 2, 6, 6]
                                                                           Max = [10, 10, 14, 14]
                                     Min = [0, 6, 6, 14] [0, 4, 4, 8] \qquad Max = [0, 6, 8, 14] [8, 12, 12, 16]
contains (3 elts)
Allen* Min = overlaps [0,2,2,6] , Max = during [10,10,14,14]
_____
overlaps x contains ->
Allen* relations : 2505 elts
started_by (39 elts) Min = [1,4,5,8]
                                                                            Max = [5, 8, 9, 16] [9, 12, 13, 16]
finished by (54 elts)
                                    Min = [0, 3, 4, 7]
                                                                           Max = [8, 11, 12, 15]
                               Min = [0, 3, 4, 7]
Min = [0, 1, 2, 5]
Min = [3, 4, 7, 8]
meets (98 elts)
                                                                           Max = [8, 9, 12, 13]
                                    Min = [3, 4, 7, 8]
                                                                           Max = [7,10,11,16][11,14,15,16]
met_by (77 elts)
overlaps (98 elts)

      overlaps (98 elts)
      Min = [0,2,2,6]

      overlapped_by (77 elts)
      Min = [2,4,6,8]

      contains (169 elts)
      Min = [0,4,4,8]

                                                                            Max = [8, 10, 12, 14]
                                                                             Max = [6, 10, 10, 16] [10, 14, 14, 16]
                                                                             Max = [8, 12, 12, 16]
Allen* Min = meets [0,1,2,5] , Max = contains [8,12,12,16]
_____
overlaps x subset ->
Allen* relations : 98 elts
started_by (1 elts) Min = [1,6,9,14][1,4,5,8] Max = [1,6,9,14][9,12,13,16]
                                      Min = [3,6,7,10][3,4,7,8]
met_by (5 elts)
overlaps (98 elts)
                                                                             Max = [7, 10, 11, 14] [11, 14, 15, 16]
                                      Min = [0, 2, 2, 6]
                                                                             Max = [8, 10, 12, 14]

      overlapped_by (5 elts)
      Min = [2,6,6,10][2,4,6,8]
      Max = [6,10,10,14][10,14,14,16]

      contains (3 elts)
      Min = [0,6,6,14][0,4,4,8]
      Max = [0,6,8,14][8,12,12,16]

Allen* Min = overlaps [0,2,2,6] , Max = overlaps [8,10,12,14]
_____
overlapped by x precedes \rightarrow
Allen* relations : 17 elts
                                    Min = [0, 0, 0, 0]
precedes (1 elts)
                                                                           Max = [0, 0, 0, 0]
Allen* Min = precedes [0,0,0,0] , Max = precedes [0,0,0,0]
_____
overlapped by x preceded by \rightarrow
Allen* relations : 1 elts
preceded by (1 elts)
                                      Min = [16, 16, 16, 16]
                                                                            Max = [16, 16, 16, 16]
Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16]
_____
overlapped by x start ->
Allen* relations : 234 elts
finishes (6 elts) Min = [2,3,6,7]
                                                                            Max = [10, 11, 14, 15]
finished_by (1 elts)
                                    Min = [2,7,10,15] [0,3,4,7] \qquad Max = [2,7,10,15] [8,11,12,15]
meets (5 elts)Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]overlaps (5 elts)Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14]overlapped_by (98 elts)Min = [2,4,6,8]Max = [10,14,14,16]during (6 elts)Min = [2,2,6,6]Max = [10,10,14,14]
                                                                            Max = [6,10,10,14][8,10,12,14]
Max = [10,14,14,16]
contains (3 elts)
                                    Min = [2, 8, 10, 16] [0, 4, 4, 8] \qquad Max = [2, 10, 10, 16] [8, 12, 12, 16]
Allen* Min = during [2,2,6,6] , Max = overlapped by [10,14,14,16]
_____
overlapped by x started by ->
Allen* relations : 1568 elts
finished_by (25 elts)Min = [2,7,8,11][0,3,4,7]Max = [8,11,12,15]meets (51 elts)Min = [2,5,6,9][0,1,2,5]Max = [8,9,12,13]
-_vy (98 elts)
overlaps (51 elts)
overlapped by (۵۲
                                    Min = [3, 4, 7, 8]
                                                                           Max = [11, 14, 15, 16]
                                    Min = [2, 6, 6, 10] [0, 2, 2, 6] \qquad Max = [8, 10, 12, 14]
overlapped_by (98 elts)Min = [2,4,6,8]Max = [10,14,14,16]contains (55 elts)Min = [2,8,8,12][0,4,4,8]Max = [8,12,12,16]
Allen* Min = overlapped by [2,4,6,8] , Max = met by [11,14,15,16]
_____
overlapped by x finishes ->
Allen* relations : 98 elts
finished by (1 elts)
                                    Min = [2,7,10,15][0,3,4,7] Max = [2,7,10,15][8,11,12,15]

      meets (5 elts)
      Min = [2,5,6,9][0,1,2,5]
      Max = [6,9,10,13][8,9,12,13]

      overlaps (5 elts)
      Min = [2,6,6,10][0,2,2,6]
      Max = [6,10,10,14][8,10,12,14]

      overlapped_by (98 elts)
      Min = [2,4,6,8]
      Max = [10,14,14,16]
```

```
contains (3 elts) Min = [2,8,10,16][0,4,4,8] Max = [2,10,10,16][8,12,12,16]
Allen* Min = overlapped by [2,4,6,8], Max = overlapped by [10,14,14,16]
overlapped by x finished by \rightarrow
Allen* relations : 740 elts

      Airent local
      Min = [1,4,5,8]
      Max - [2,12,10,10]

      started_by (54 elts)
      Min = [0,7,8,15][0,3,4,7]
      Max = [2,7,10,15][8,11,12,15]

      finished by (9 elts)
      Min = [0,7,8,15][0,3,4,7]
      Max = [2,7,10,15][8,11,12,15]

      Max = [2,7,10,13][8,9,12,13]
      Max = [6,9,10,13][8,9,12,13]

                                                    Min = [0,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]Min = [0,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14]
meets (25 elts)
overlaps (25 elts)

      overlapped_by (98 elts)
      Min = [2,4,6,8]

      contains (166 elts)
      Min = [0,4,4,8]

                                                                                                             Max = [10, 14, 14, 16]
                                                                                                               Max = [8, 12, 12, 16]
Allen* Min = contains [0,4,4,8], Max = overlapped by [10,14,14,16]
 _____
overlapped by x meets \rightarrow
Allen* relations : 734 elts
                                                                                                            Max = [8,11,12,15]
finished_by (53 elts) Min = [0, 3, 4, 7]
                                                    Min = [0,5,6,13][0,1,2,5]Max = [0,5,8,13][8,9,12,13]Min = [3,6,7,10][3,4,7,8]Max = [7,10,11,16][11,14,15,16]Min = [0,2,2,6]Max = [8,10,12,14]
meets (3 elts)
overlaps (97 elts)

      overlapped_by (25 elts)
      Min = [2,6,6,10][2,4,6,8]
      Max = [6,10,10,16][10,14,14,16]

      contains (168 elts)
      Min = [0,4,4,8]
      Max = [8,12,12,16]

Allen* Min = overlaps [0,2,2,6] , Max = contains [8,12,12,16]
 _____
overlapped by x met by ->
Allen* relations : 980 elts

      start (3 elts)
      Min = [5,6,9,10][1,2,5,6]
      Max = [9,10,13,14]

      started_by (11 elts)
      Min = [5,8,9,12][1,4,5,8]
      Max = [9,12,13,16]

      finishes (3 elts)
      Min = [6,7,10,11][2,3,6,7]
      Max = [10,11,14,15]

      finished_by (11 elts)
      Min = [4,7,8,11][0,3,4,7]
      Max = [8,9,12,13]

meets (17 elts)Min = [4,5,8,9][0,1,2,5]Max = [8,9,12,13]overlaps (17 elts)Min = [4,6,8,10][0,2,2,6]Max = [8,10,12,14]overlapped_by (25 elts)Min = [6,8,10,12][2,4,6,8]Max = [10,14,14,16]during (3 elts)Min = [6,6,10,10][2,2,6,6]Max = [10,10,14,14]
                                                                                                           Max = [8,10,12,14]
Max = [10,14,14,16]
Max = [10,10,14,14]
                                      \begin{aligned} \text{Min} &= [4,8,8,12] [0,4,4,8] \\ \text{Min} &= [5,7,9,11] [1,3,5,7] \end{aligned} \qquad \text{Max} = [8,12,12,16] \\ \text{Max} &= [9,11,13,15] \end{aligned}
contains (21 elts)
subset (3 elts)
Allen* Min = meets [4,5,8,9] [0,1,2,5], Max = overlapped by [10,14,14,16]
_____
overlapped by x overlaps \rightarrow
Allen* relations : 2269 elts
                                           Min = [1,2,5,6]
Min = [1,4,5,8]
start (6 elts)
                                                                                                              Max = [9, 10, 13, 14]

      started_by (54 elts)
      Min = [1,4,5,6]

      finishes (6 elts)
      Min = [2,3,6,7]

      finished_by (54 elts)
      Min = [0,3,4,7]

      Min = [0,5,6,9][0,1]

started by (54 elts)
                                                                                                             Max = [9, 12, 13, 16]
                                                                                                             Max = [10, 11, 14, 15]

      meets (25 elts)
      Min = [0,5,6,9][0,1,2,5]
      Max = [8,11,12,15]

      met_by (25 elts)
      Min = [3,6,7,10][3,4,7,8]
      Max = [6,9,10,13][8,9,12,13]

      overlaps (98 elts)
      Min = [0,2,2,6]
      Max = [7,10,11,16][11,14,15,16]

      overlapped_by (98 elts)
      Min = [2,4,6,8]
      Max = [10,14,14,161

during (6 elts)
                                                     Min = [2, 2, 6, 6]
                                                                                                             Max = [10, 10, 14, 14]

      contains (169 elts)
      Min = [0, 4, 4, 8]

      subset (6 elts)
      Min = [1, 3, 5, 7]

                                                                                                             Max = [8, 12, 12, 16]
subset (6 elts)
                                                     Min = [1, 3, 5, 7]
                                                                                                            Max = [9, 11, 13, 15]
Allen* Min = overlaps [0,2,2,6] , Max = overlapped_by [10,14,14,16]
_____
overlapped by x overlapped by ->
Allen* relations : 1867 elts
start (3 elts)
                                                     Min = [5,6,9,10][1,2,5,6]
                                                                                                            Max = [9, 10, 13, 14]
                                                    Min = [5, 8, 9, 12] [1, 4, 5, 8] Max = [9, 12, 13, 16]
started by (11 elts)

      started_by (11 elts)
      MIN = [0,0,0,12][1,1,0,0]
      Max = [10,11,14,15]

      finishes (3 elts)
      Min = [6,7,10,11][2,3,6,7]
      Max = [10,11,14,15]

      finished_by (25 elts)
      Min = [2,7,8,11][0,3,4,7]
      Max = [8,9,12,13]

                                                    Min = [2,7,8,11]_{10},5,1,1]Max = [8,9,12,13]Min = [2,5,6,9][0,1,2,5]Max = [11,14,15,16]Min = [2,6,6,10][0,2,2,6]Max = [8,10,12,14]Min = [2,6,6,10][0,2,2,6]Max = [10,14,14,16]Max = [10,14,14,16]Max = [10,14,14,16]
meets (51 elts)

      met_by (98 elts)
      Min = [3,4,7,8]

      overlaps (51 elts)
      Min = [2,6,6,10]

      overlapped_by (98 elts)
      Min = [2,4,6,8]

      Min = (2,4,6,8)
      Min = [2,4,6,8]

met by (98 elts)
during (3 elts)
                                                     Min = [6, 6, 10, 10] [2, 2, 6, 6] \qquad Max = [10, 10, 14, 14]
auring (0 order)Min = [2,8,8,12][0,4,4,8]Max = [8,12,12,16]subset (3 elts)Min = [5,7,9,11][1,3,5,7]Max = [9,11,13,15]
Allen* Min = overlapped by [2,4,6,8] , Max = met by [11,14,15,16]
 _____
```

overlapped by x during -> Allen* relations : 234 elts $\begin{aligned} \text{Min} &= [2,3,6,7] & \text{Max} &= [10,11,14,15] \\ \text{Min} &= [2,7,10,15] [0,3,4,7] & \text{Max} &= [2,7,10,15] [8,11,12,15] \\ \text{Min} &= [2,5,6,9] [0,1,2,5] & \text{Max} &= [6,9,10,13] [8,9,12,13] \\ \text{Min} &= [2,6,6,10] [0,2,2,6] & \text{Max} &= [6,10,10,14] [8,10,12,14] \end{aligned}$ finishes (6 elts) finished by (1 elts) meets (5 elts) overlaps (5 elts) overlapped by (98 elts) Min = [2,4,6,8] Max = [10, 14, 14, 16]during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14] $Min = [2,8,10,16] [0,4,4,8] \qquad Max = [2,10,10,16] [8,12,12,16]$ contains (3 elts) Allen* Min = during [2,2,6,6] , Max = overlapped_by [10,14,14,16] _____ overlapped by x contains \rightarrow Allen* relations : 2505 elts started_by (54 elts) Min = [1,4,5,8] Max = [9, 12, 13, 16]finished by (39 elts) $Min = [0,7,8,11] [0,3,4,7] \qquad Max = [8,11,12,15]$ meets (77 elts) Max = [8, 9, 12, 13]Min = [0, 5, 6, 9] [0, 1, 2, 5]

 met_by (98 elts)
 Min = [3,4,7,8]

 overlaps (77 elts)
 Min = [0,6,6,10][0,2,2,6]

 overlapped_by (98 elts)
 Min = [2,4,6,8]

 contains (169 elts)
 Min = [0,4,4,8]

 Max = [11, 14, 15, 16]Max = [8,10,12,14] Max = [10,14,14,16] Max = [8, 12, 12, 16]Allen* Min = contains [0,4,4,8] , Max = met by [11,14,15,16] _____ overlapped by x subset -> Allen* relations : 98 elts Min = [2,7,10,15][0,3,4,7]Max = [2,7,10,15][8,11,12,15]Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13] finished by (1 elts) Min = [2,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]Min = [2,6,6,10][0,2,2,6]Max = [6,10,10,14][8,10,12,14] meets (5 elts) overlaps (5 elts) overlapped_by (98 elts)Min = [2,4,6,8]Max = [10,14,14,16]contains (3 elts)Min = [2,8,10,16][0,4,4,8]Max = [2,10,10,16][8,12,12,16] Allen* Min = overlapped_by [2,4,6,8] , Max = overlapped_by [10,14,14,16] _____ during x precedes -> Allen* relations : 1 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ during x preceded_by -> Allen* relations : 1 elts preceded by (1 elts) Min = [16, 16, 16, 16]Max = [16, 16, 16, 16]Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ during x start \rightarrow Allen* relations : 6 elts Min = [2, 2, 6, 6]during (6 elts) Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] ----during x started by -> Allen* relations : 600 elts finishes (6 elts) Min = [2, 3, 6, 7]Max = [10, 11, 14, 15]met by (30 elts) Min = [3, 4, 7, 8]Max = [11,12,15,16][11,14,15,16] overlapped_by (30 elts) Min = [2, 4, 6, 8]during (6 elts) Min = [2, 2, 6, 6]Max = [10,12,14,16][10,14,14,16] during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = met by [11,12,15,16] [11,14,15,16] _____ during x finishes \rightarrow Allen* relations : 6 elts Min = [2, 2, 6, 6]during (6 elts) Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] _____ during x finished by \rightarrow Allen* relations : 600 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]Min = [0,2,4,6] [0,2,2,6] Max = [8,9,12,13] Max = [8,10,12,14] Max = [8,10,12,14] Max = [10,12,14] Max = [10,12,14] Max = [10,12,14]meets (30 elts) overlaps (30 elts) during (6 elts) Max = [10, 10, 14, 14]Allen* Min = meets [0,1,4,5] [0,1,2,5], Max = during [10,10,14,14] _____

during x meets -> Allen* relations : 340 elts Max = [6,7,10,11][10,11,14,15] finishes (3 elts) Min = [2,3,6,7] met_by (11 elts)Min = [3,4,7,8]overlapped_by (11 elts)Min = [2,4,6,8]during (3 elts)Min = [2,2,6,6] Max = [7, 8, 11, 12] [11, 14, 15, 16]Max = [6, 8, 10, 12] [10, 14, 14, 16]Max = [6,6,10,10][10,10,14,14] Allen* Min = during [2,2,6,6] , Max = met by [7,8,11,12] [11,14,15,16] _____ during x met by ->Allen* relations : 340 elts $Min = [5,6,9,10] [1,2,5,6] \qquad Max = [9,10,13,14]$ Min = [4,5,8,9] [0,1,2,5] Max = [8,9,12,13]start (3 elts) Min = [4,5,8,9][0,1,2,5] Max = [8,9,12,13] Min = [4,6,8,10][0,2,2,6] Max = [8,10,12,14] meets (11 elts) overlaps (11 elts) $Min = [6, 6, 10, 10] [2, 2, 6, 6] \qquad Max = [10, 10, 14, 14]$ during (3 elts) Allen* Min = meets [4,5,8,9] [0,1,2,5], Max = during [10,10,14,14] _____ during x overlaps \rightarrow Allen* relations : 1401 elts start (6 elts) Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]Min = [2, 3, 6, 7]Max = [6,7,10,11][10,11,14,15] finishes (3 elts) Min = [0, 1, 2, 5]Max = [8, 9, 12, 13]meets (80 elts) met by (51 elts) Min = [3, 4, 7, 8]Max = [7,10,11,14][11,14,15,16] overlaps (80 elts) Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped_by (51 elts) Min = [2, 4, 6, 8]during (6 elts) Min = [2, 2, 6, 6]Max = [6, 10, 10, 14] [10, 14, 14, 16]during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]Allen* Min = meets [0,1,2,5] , Max = during [10,10,14,14] _____ during x overlapped by \rightarrow Allen* relations : 1401 elts start (3 elts) $Min = [5, 6, 9, 10] [1, 2, 5, 6] \qquad Max = [9, 10, 13, 14]$ Min = [2,3,6,7] Max = [10, 11, 14, 15]Max = [10,11,14,15] Min = [2,5,6,9] [0,1,2,5] Max = [8,9,12,13] Max = [11,14,15] Max = [11,14,15]finishes (6 elts) meets (51 elts) met by (80 elts) Max = [11, 14, 15, 16]overlaps (51 elts) $Min = [2, 6, 6, 10] [0, 2, 2, 6] \qquad Max = [8, 10, 12, 14]$
 overlapped_by (80 elts)
 Min = [2,4,6,8]

 during (6 elts)
 Min = [2,2,6,6]
 Max = [10, 14, 14, 16]Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = met_by [11,14,15,16] _____ during x during -> Allen* relations : 6 elts Min = [2, 2, 6, 6]during (6 elts) Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] _____ during x contains -> Allen* relations : 2441 elts Min = [1,2,5,6]ts) Min = [1,4,5,8] Min = [2,3,6,7]Max = [9, 10, 13, 14]start (6 elts) Max = [9, 12, 13, 16]started by (30 elts) Min = [2, 3, 6, 7]Max = [10, 11, 14, 15]finishes (6 elts) Min = [0,3,4,7]Max = [8,11,12,15]Min = [0,1,4,5][0,1,2,5]Max = [8,9,12,13]Max = [11,12,15,16]finished by (30 elts) Max = [8, 11, 12, 15]meets (50 elts) met_by (50 elts) Min = [3, 4, 7, 8]Max = [11,12,15,16] [11,14,15,16] Min[0,1,1,0]Max[8,10,12,14]overlapped_by(50 elts)Min = [2,4,6,8]Max = [10,12,14,16]during(6 elts)Min = [2,2,6,6]Max = [10,10,14,14]Max = [10, 12, 14, 16] [10, 14, 14, 16]during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]contains (56 elts) Min = [0, 4, 4, 8]Max = [8, 12, 12, 16]Min = [1, 3, 5, 7]subset (6 elts) Max = [9, 11, 13, 15]Allen* Min = meets [0,1,4,5] [0,1,2,5], Max = met_by [11,12,15,16] [11,14,15,16] _____ during x subset -> Allen* relations : 6 elts Min = [2, 2, 6, 6]during (6 elts) Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] _____ contains x precedes -> Allen* relations : 17 elts precedes (1 elts) Min = [0.0.0.0]Max = [0, 0, 0, 0]Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]

contains x preceded by -> Allen* relations : 17 elts Min = [16, 16, 16, 16] Max = [16, 16, 16, 16]preceded by (1 elts) Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ contains x start -> Allen* relations : 743 elts started_by (9 elts) Min = [1,6,9,14][1,4,5,8] Max = [1,8,9,16][9,12,13,16] Min = [0, 3, 4, 7]Max = [8, 11, 12, 15]finished by (54 elts) Min = [0,5,6,13][0,1,2,5]Max = [0,5,8,13][8,9,12,13]Min = [3,6,7,10][3,4,7,8]Max = [7,10,11,16][11,14,15,16] meets (3 elts) met by (25 elts) overlaps (98 elts) Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped by (25 elts)Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,16][10,14,14,16]contains (169 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = overlaps [0,2,2,6] , Max = contains [8,12,12,16] _____ contains x started by \rightarrow Allen* relations : 169 elts started_by (1 elts)Min = [1,8,9,16][1,4,5,8]Max = [1,8,9,16][9,12,13,16]finished by (1 elts)Min = [0,7,8,15][0,3,4,7]Max = [0,7,8,15][8,11,12,15] meets (3 elts) Min = [0, 5, 6, 13] [0, 1, 2, 5]Max = [0, 5, 8, 13] [8, 9, 12, 13]met by (3 elts) $Min = [3,8,11,16] [3,4,7,8] \qquad Max = [3,10,11,16] [11,14,15,16]$ overlaps (3 elts) Min = [0, 6, 6, 14] [0, 2, 2, 6]Max = [0, 6, 8, 14] [8, 10, 12, 14]overlapped by (3 elts)Min = [2,8,10,16][2,4,6,8]contains (169 elts)Min = [0,4,4,8] Max = [2, 10, 10, 16] [10, 14, 14, 16]Max = [8, 12, 12, 16]Allen* Min = contains [0,4,4,8] , Max = contains [8,12,12,16] _____ contains x finishes -> Allen* relations : 743 elts Max = [9, 12, 13, 16]started_by (54 elts) Min = [1,4,5,8] Min = [0,7,8,15][0,3,4,7]Max = [2,7,10,15][8,11,12,15]Min = [0,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13] finished by (9 elts) meets (25 elts) met_by (3 elts) Min = [3,8,11,16][3,4,7,8] Max = [3,10,11,16][11,14,15,16] overlaps (25 elts) $Min = [0, 6, 6, 10] [0, 2, 2, 6] \qquad Max = [6, 10, 10, 14] [8, 10, 12, 14]$
 overlapped_by (98 elts)
 Min = [2,4,6,8]

 contains (169 elts)
 Min = [0,4,4,8]
 Max = [10, 14, 14, 16]Max = [8, 12, 12, 16]Allen* Min = contains [0,4,4,8], Max = overlapped by [10,14,14,16]_____ contains x finished by \rightarrow Allen* relations : 169 elts Min = [1,8,9,16][1,4,5,8] started by (1 elts) Max = [1, 8, 9, 16] [9, 12, 13, 16]finished by (1 elts) $Min = [0,7,8,15][0,3,4,7] \qquad Max = [0,7,8,15][8,11,12,15]$ Min = [0, 5, 6, 13] [0, 1, 2, 5]meets (3 elts) Max = [0, 5, 8, 13] [8, 9, 12, 13]Min = [3,8,11,16][3,4,7,8] Max = [3,10,11,16][11,14,15,16] met by (3 elts) overlaps (3 elts) overlaps (3 elts)Min = [0,6,6,14][0,2,2,6]Max = [0,6,8,14][8,10,12,14]overlapped_by (3 elts)Min = [2,8,10,16][2,4,6,8]Max = [2,10,10,16][10,14,14,16]contains (169 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = contains [0,4,4,8], Max = contains [8,12,12,16] _____ contains x meets -> Allen* relations : 743 elts Min = [1,6,9,14][1,4,5,8] Min = [0,3,4,7] started by (9 elts) Max = [1, 8, 9, 16] [9, 12, 13, 16]finished by (54 elts) Max = [8, 11, 12, 15]Min = [0, 5, 6, 13] [0, 1, 2, 5]Max = [0, 5, 8, 13] [8, 9, 12, 13]meets (3 elts) met by (25 elts) $Min = [3, 6, 7, 10] [3, 4, 7, 8] \qquad Max = [7, 10, 11, 16] [11, 14, 15, 16]$ overlaps (98 elts) Min = [0, 2, 2, 6]Max = [8, 10, 12, 14]overlapped by (25 elts)Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,16][10,14,14,16]contains (169 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = overlaps [0,2,2,6] , Max = contains [8,12,12,16] _____ contains x met by \rightarrow $\dots - [1, 4, 5, 8]$ Max = [9, 12, 13, 16]Min = [0, 7, 8, 15] [0, 3, 4, 7]Max = [2, 7, 10, 15] [8, 11, 12, 15]Min = [0, 5, 6, 9] [0, 1, 2, 5]Max = [6, 9, 10, 121 [0, 0, 15]Min = [3, 8, 11, 16] [0, 12]Max = [6, 9, 10, 121 [0, 0, 15]Allen* relations : 743 elts started by (54 elts) finished_by (9 elts) meets (25 elts) Min = [0,5,6,9][0,1,2,5]Max = [6,9,10,13][8,9,12,13]Min = [3,8,11,16][3,4,7,8]Max = [3,10,11,16][11,14,15,16] met by (3 elts)

overlaps (25 elts) $Min = [0, 6, 6, 10] [0, 2, 2, 6] \qquad Max = [6, 10, 10, 14] [8, 10, 12, 14]$ overlapped_by (98 elts)Min = [2,4,6,8]Max = [10,14,14,16]contains (169 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = contains [0,4,4,8], Max = overlapped by [10,14,14,16]_____ contains x overlaps -> Allen* relations : 743 elts Min = [1,6,9,14][1,4,5,8] started by (9 elts) Max = [1, 8, 9, 16] [9, 12, 13, 16]Min = [0, 3, 4, 7]finished_by (54 elts) Max = [8, 11, 12, 15]meets (3 elts) $Min = [0, 5, 6, 13] [0, 1, 2, 5] \qquad Max = [0, 5, 8, 13] [8, 9, 12, 13]$ Min = [3,6,7,10][3,4,7,8] Min = [0,2,2,6] met by (25 elts) Max = [7, 10, 11, 16] [11, 14, 15, 16]overlaps (98 elts) Max = [8, 10, 12, 14]

 overlapped_by (25 elts)
 Min = [2,6,6,10][2,4,6,8]
 Max = [6,10,10,16][10,14,14,16]

 contains (169 elts)
 Min = [0,4,4,8]
 Max = [8,12,12,16]

 Allen* Min = overlaps [0,2,2,6] , Max = contains [8,12,12,16] _____ contains x overlapped by -> Allen* relations : 743 elts

 started_by (54 elts)
 Min = [1,4,5,8]
 Max = [9,12,13,16]

 finished_by (9 elts)
 Min = [0,7,8,15][0,3,4,7]
 Max = [2,7,10,15][8,11,12,15]

 meets (25 elts)
 Min = [0,5,6,9][0,1,2,5]
 Max = [6,9,10,13][8,9,12,13]

 met_by (3 elts)
 Min = [3,8,11,16][3,4,7,8]
 Max = [3,10,11,16][11,14,15,16]

 overlaps (25 elts)
 Min = [0,6,6,10][0,2,2,6]
 Max = [6,10,10,14][0,10,16][11,14,15,16]

 overlaps (25 elts)
 Min = [0,6,6,10] [0,2,2,6]
 Max = [3,10,11,16] [11,14,15,16]

 overlapped_by (98 elts)
 Min = [2,4,6,8]
 Max = [6,10,10,14] [8,10,12,14]

 contains (169 elts)
 Min = [0,4,4,81
 Max = [10,14,14,16]

 $Min = [3,8,11,16] [3,4,7,8] \qquad Max = [3,10,11,16] [11,14,15,16]$ Allen* Min = contains [0,4,4,8], Max = overlapped by [10,14,14,16]_____ contains x during -> Allen* relations : 2269 elts Max = [9, 10, 13, 14]start (6 elts) Min = [1,2,5,6] Max = [9,12,13,16] Max = [10,11,14,15] Max = [8,11,12,15] Min = [1, 4, 5, 8]started by (54 elts)

 started_by (54 elts)
 Min = [2,3,6,7]
 Max = [10,11,14,15]

 finished_by (54 elts)
 Min = [0,3,4,7]
 Max = [8,11,12,15]

 meets (25 elts)
 Min = [0,5,6,9][0,1,2,5]
 Max = [6,9,10,13][8,9,12,13]

 met_by (25 elts)
 Min = [3,6,7,10][3,4,7,8]
 Max = [7,10,11,16][11,14,15,16]

 met_by (25 elts)
 Min = [3,6,7,10][5

 overlaps (98 elts)
 Min = [0,2,2,6]

 overlapped_by (98 elts)
 Min = [2,4,6,8]

 dwing (6 olts)
 Min = [2,2,6]

 Max = [8, 10, 12, 14]Max = [10, 14, 14, 16]during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]

 contains (169 elts)
 Min = [0,4,4,8]

 subset (6 elts)
 Min = [1,3,5,7]

 Max = [8, 12, 12, 16]Max = [9, 11, 13, 15]Allen* Min = overlaps [0,2,2,6] , Max = overlapped_by [10,14,14,16] _____ contains x contains -> Allen* relations : 169 elts Max = [1, 8, 9, 16] [9, 12, 13, 16]started_by (1 elts) Min = [1,8,9,16][1,4,5,8] Min = [0,7,8,15][0,3,4,7]Max = [0,7,8,15][8,11,12,15]Min = [0,5,6,13][0,1,2,5]Max = [0,5,8,13][8,9,12,13] Max = [0, 7, 8, 15] [8, 11, 12, 15]finished by (1 elts) meets (3 elts) met by (3 elts) Min = [3,8,11,16][3,4,7,8] Max = [3,10,11,16][11,14,15,16] overlaps (3 elts) $Min = [0, 6, 6, 14] [0, 2, 2, 6] \qquad Max = [0, 6, 8, 14] [8, 10, 12, 14]$
 overlapped_by (3 elts)
 Min = [2,8,10,16][2,4,6,8]
 Max = [2,10,10,16][10,14,14,16]

 contains (169 elts)
 Min = [0,4,4,8]
 Max = [8,12,12,16]
 contains (169 elts) Min = [0, 4, 4, 8]Max = [8, 12, 12, 16]Allen* Min = contains [0,4,4,8] , Max = contains [8,12,12,16] _____ contains x subset -> Allen* relations : 169 elts started_by (1 elts) Min = [1,8,9,16][1,4,5,8] Max = [1, 8, 9, 16] [9, 12, 13, 16]finished by (1 elts) $Min = [0,7,8,15][0,3,4,7] \qquad Max = [0,7,8,15][8,11,12,15]$ Min = [0, 5, 6, 13] [0, 1, 2, 5]meets (3 elts) Max = [0, 5, 8, 13] [8, 9, 12, 13]met_by (3 elts)Min = [3,8,11,16][3,4,7,8]Max = [3,10,11,16][11,14,15,16]overlaps (3 elts)Min = [0,6,6,14][0,2,2,6]Max = [0,6,8,14][8,10,12,14]overlapped_by (3 elts)Min = [2,8,10,16][2,4,6,8]Max = [2,10,10,16][10,14,14,16]contains (169 elts)Min = [0,4,4,8]Max = [8,12,12,16] Allen* Min = contains [0,4,4,8], Max = contains [8,12,12,16] _____ subset x precedes -> Allen* relations : 1 elts precedes (1 elts) Min = [0, 0, 0, 0]Max = [0, 0, 0, 0]

Allen* Min = precedes [0,0,0,0], Max = precedes [0,0,0,0]_____ subset x preceded by -> Allen* relations : 1 elts preceded by (1 elts) Min = [16,16,16,16] Max = [16,16,16,16] Allen* Min = preceded by [16,16,16,16] , Max = preceded by [16,16,16,16] _____ subset x start -> Allen* relations : 6 elts Min = [1, 2, 5, 6]Max = [9, 10, 13, 14]start (6 elts) Allen* Min = start [1,2,5,6] , Max = start [9,10,13,14] _____ subset x started by -> Allen* relations : 30 elts started by (30 elts) Min = [1, 4, 5, 8]Max = [9, 12, 13, 16]Allen* Min = started_by [1,4,5,8] , Max = started_by [9,12,13,16] _____ subset x finishes -> Allen* relations : 6 elts finishes (6 elts) Min = [2, 3, 6, 7]Max = [10, 11, 14, 15]Allen* Min = finishes [2,3,6,7] , Max = finishes [10,11,14,15] _____ subset x finished by -> Allen* relations : 30 elts Min = [0, 3, 4, 7]finished by (30 elts) Max = [8, 11, 12, 15]Allen* Min = finished by [0,3,4,7], Max = finished by [8,11,12,15]_____ subset x meets -> Allen* relations : 80 elts meets (80 elts) Min = [0, 1, 2, 5]Max = [8, 9, 12, 13]

 met_by (5 elts)
 Min = [3,5,7,9][3,4,7,8]
 Max = [7,9,11,13][11,14,15,16]

 overlapped_by (5 elts)
 Min = [2,5,6,9][2,4,6,8]
 Max = [6,9,10,13][10,14,14,16]

 allort Min = masks [0,1,0,2]
 Min = [2,5,6,9][2,4,6,8]
 Max = [6,9,10,13][10,14,14,16]

 Allen* Min = meets [0,1,2,5] , Max = meets [8,9,12,13] _____ subset x met by \rightarrow Allen* relations : 80 elts Min = [3,5,7,9][0,1,2,5] meets (5 elts) Max = [7, 9, 11, 13] [8, 9, 12, 13]Min = [3, 4, 7, 8]Max = [11, 14, 15, 16]met by (80 elts) overlaps (5 elts) Min = [3, 6, 7, 10] [0, 2, 2, 6]Max = [7, 10, 11, 14] [8, 10, 12, 14]Allen* Min = met_by [3,4,7,8] , Max = met_by [11,14,15,16] _____ subset x overlaps -> Allen* relations : 80 elts met_by (5 elts) Min = [3,6,7,10][3,4,7,8] Max = [7, 10, 11, 14] [11, 14, 15, 16]overlaps (80 elts)Min = [0,2,2,6]Max = [8,10,12,14]overlapped_by (5 elts)Min = [2,6,6,10][2,4,6,8]Max = [6,10,10,14][10,14,14,16] Allen* Min = overlaps [0,2,2,6] , Max = overlaps [8,10,12,14] _____ subset x overlapped by \rightarrow Allen* relations : 80 elts meets (5 elts) Min = [2, 5, 6, 9] [0, 1, 2, 5]Max = [6, 9, 10, 13] [8, 9, 12, 13]overlaps (5 elts) Min = [2,6,6,10][0,2,2,6] Max = [6,10,10,14][8,10,12,14] overlapped_by (80 elts) Min = [2, 4, 6, 8]Max = [10, 14, 14, 16]Allen* Min = overlapped_by [2,4,6,8] , Max = overlapped_by [10,14,14,16] ----subset x during -> Allen* relations : 6 elts during (6 elts) Min = [2, 2, 6, 6]Max = [10, 10, 14, 14]Allen* Min = during [2,2,6,6] , Max = during [10,10,14,14] _____ subset x contains -> Allen* relations : 56 elts Min = [0, 4, 4, 8] Max = [8, 12, 12, 16] contains (56 elts) Allen* Min = contains [0,4,4,8] , Max = contains [8,12,12,16] _____ subset x subset -> Allen* relations : 6 elts

subset (6 elts) Min = [1,3,5,7] Max = [9,11,13,15] Allen* Min = subset [1,3,5,7] , Max = subset [9,11,13,15] _____