

# Information Retrieval

---

María Carrasco Rodríguez (16874129)  
Fabian Lindenberg (74076658)  
Lea Voget (45869178)

Assignment 5

University of California Irvine

February 27, 2011

# 3

## Scoring and the Vector Space Model

- I) The index contains 18,353 terms and has a size of 2.71 Megabyte.
- II) At the end of this document, we include a subset of the index that contains only the query terms. The term “in” is missing, though, since it is recognized as a stop word and, thus, removed during index construction and query evaluation. Notably, many of the terms have a tfidf-value of *zero*. This is because they occur in *every* document of the corpus, which causes the idf-value and, thereby, the product to be zero.

III)

IV)

V)	Books	Anna Karenina	Emma	Jane Eyre	Moby Dick	Portrait of a La
	Anna Karenina	-	0.00284	0.00408	0.00339	0.00444
	Emma	-	-	0.00398	0.00131	0.00171
	Jane Eyre	-	-	-	0.00356	0.00391
	Moby Dick	-	-	-	-	0.00245
	Portrait of a Lady 1	-	-	-	-	-
	Portrait of a Lady 2	-	-	-	-	-
	Three Men in a Boat	-	-	-	-	-

VI)

# 4

## appendix

**convers** → 0:0.0:5680, 631, 4073, 676, 3071, 3148, 71, 1025, 14, 16, 182, 1129, 9, 1604, 1154, 68, 19, 217, 220, 23, 509, 335, 3374, 648, 2783, 1572, 2375, 284, 254, 3300, 537, 1989, 2234, 85, 1722, 491, 2397, 1593, 8220, 134, 44, 39, 109, 77, 37, 103, 345, 57, 10, 439, 459, 310, 952, 223, 310, 2010, 7325, 5811, 1016, 497, 5978, 4158, 63, 424, 1194, 622, 840, 14, 776, 3645, 8216, 1325, 802, 2443, 4165, 773, 4, 23, 3494, 44, 924, 77, 7264, 20, 6430, 367, 3062, 2177, 60, 4457, 2899, 1420, 237, 26, 245, 175, 10, 2054, 26, 1761, 190, 8148, 9764, 1973, 440, 16, 234, 747, 14, 12, 67, 296, 168, 193, 168, 7, 485, 194, 94, 1083, 348, 53, 977, 309, 1712, 1888, 768, 2822, 3032, 8543, 663, 1396, 20, 160, 5975, 434, 5147, 1671, 34, 6044, 3264, 14155, 2144, 4128, 2874, 115, 42, 38, 721, 6023, 148, 859, 329, 15, 6694, 847, 449, 173, 3766, 17, 144, 52, 24, 33, 45, 67, 2981, 1677, 1532, 121, 2011, 1231, 432, 2450, 999, 2, 53, 4, 22, 172, 662, 311, 401, 3251, 277, 2559, 1012, 1069, 1150, 834, 768, 334, 3048, 1790, 2717, 81, 841, 141, 224, 136, 826, 422, 479, 816, 325, 639, 197, 1094, 2271, 54, 1084, 68, 314, 250, 1, 10, 27, 604, 5919, 176, 2130, 188, 3288, 58, 1085, 2195, 924, 3866, 747, 3123, 3495, 2045, 64, 80, 2099, 300, 25, 1758, 2504, 6506, 532, 258, 767, 780, 165, 384, 720, 1415, 242  
1:0.0:704, 5592, 1171, 14897, 1631, 5030, 425, 3030, 3090, 4514, 6138, 467, 2528, 36, 5281, 735, 3695, 4899, 6573, 1324, 319, 2859, 5661, 7383, 1594, 4623, 1390, 623, 312, 4502, 2251, 5201, 1121, 1409, 5478, 2665, 567, 10102, 1867, 4286, 679, 2064, 485, 66, 3918, 595, 11615, 3352    1:0.0:6317, 3452, 2254, 1012, 4427, 1462, 765, 3133, 1068, 2036, 2627, 258, 1997, 6362, 1784, 1920, 1713, 1198, 986, 11273, 2558, 250, 6492, 2119, 1047, 368, 247, 604, 1711, 626, 5421, 115, 737, 1364, 4030, 2121, 7260, 2395, 594, 59, 301, 559, 12812, 2143, 14493, 394, 3861, 8853, 6185, 8592, 7612, 9861, 2269, 8594, 490    1:0.0:2650, 5251, 51863, 21332, 390, 24090, 16542, 4279, 9846, 10781  
1:0.0:6033, 4, 35, 6234, 1531, 4523, 8027, 914, 35, 1015, 1980, 2863, 2588, 3143, 72, 12322, 3509, 14945, 4657, 3951, 1863, 866, 7686, 243, 2631, 3129, 558, 8662, 1767, 120, 2218, 2961    1:0.0:1010, 344, 2518, 2743, 3953, 16583, 2043, 5839, 3654, 2, 6252, 1928, 1172, 9155, 787, 11757, 6460, 49, 1895, 2377, 1094, 531, 899, 1172, 6007, 2073, 9412, 5177    1:0.0:2482, 1247, 2180, 585,

---

7, 35, 470, 966, 1589, 505, 1412, 4286, 277, 48, 274, 897, 623, 1833, 1435, 621, 1226, 2199, 585, 568, 1162, 193, 380, 444, 3463, 138, 3581, 72, 692, 7403, 4035, 1975, 1192, 1604, 309, 492, 429, 121, 827, 15, 3273, 6588, 929, 2323, 2863, 4875, 3410, 64, 3970, 526, 5680, 141, 7411, 4463, 2317, 2131, 1498, 335, 465, 1031, 966, 1180, 2082, 2413, 1689, 786, 3275    1:0.0:9797, 15759, 3714, 8322, 2307, 6004, 8047, 367, 220, 6748, 5512

**expect** → 0:0.0:4643, 1540, 1468, 938, 10455, 772, 1000, 4411, 1900, 1303, 3035, 2963, 226, 607, 5155, 4869, 3286, 727, 3290, 2936, 8739, 5150, 134, 8710, 2656, 794, 17, 2702, 1833, 3059, 1452, 2786, 203, 7083, 134, 2810, 3558, 5466, 1854, 429, 3828, 3534, 1547, 3478, 1755, 2519, 614, 3323, 589, 292, 550, 356, 30, 2501, 1526, 32, 4740, 11261, 1621, 1716, 2402, 2595, 2459, 428, 1444, 9099, 256, 809, 167, 2041, 825, 2588, 81, 2227, 8155, 1086, 231, 107, 360, 726, 1387, 749, 1677, 26, 2228, 2548, 544, 588, 1214, 1723, 1635, 604, 2531, 147, 290, 13, 38, 27, 304, 121, 89, 4315, 205, 1514, 4599, 497, 581, 2350, 115, 2294, 3944, 3736, 999, 2226, 5044, 620, 3925, 2289, 97, 8412, 422, 23, 349, 4658, 695, 1512, 4177, 1144, 10575, 3210, 823, 160, 56, 40, 766, 850, 1141, 1052, 442, 2678, 574, 15176, 2456, 1317, 5490, 18, 4414, 1598, 3593, 2269, 773, 1540, 1746, 1798, 8599, 622, 4594, 908, 4    1:0.0:7256, 2158, 37, 6, 1547, 1178, 3318, 198, 236, 2437, 2172, 101, 3508, 3313, 121, 750, 1363, 5, 1632, 6572, 1208, 497, 1106, 3946, 2465, 3975, 606, 567, 302, 5207, 1726, 71, 2264, 1155, 133, 1102, 434, 1808, 408, 25, 3578, 5040, 1323, 1664, 1716, 1603, 1821, 1684, 455, 13, 641, 850, 1935, 3346, 4369, 1752, 1425, 119, 1035, 1299, 63, 14, 400, 1718, 2656, 631, 1539, 452, 3093, 5323, 497, 1345, 1045, 521, 394, 5368, 1717, 6782, 74, 2344, 5580, 1295, 2, 4730, 277, 2537, 100, 1722, 526, 2614, 404, 1140    1:0.0:8404, 4310, 7022, 756, 1954, 1492, 12751, 787, 1132, 1024, 549, 371, 1886, 1014, 165, 2168, 3605, 4796, 3214, 267, 696, 3942, 323, 1496, 68, 427, 1679, 168, 479, 4465, 413, 2454, 4994, 1310, 2762, 1777, 1934, 7264, 2415, 798, 2455, 7269, 2091, 5165, 7663, 1074, 1833, 4621, 6166, 406, 262, 448, 838, 3012, 6572, 835, 1533, 791, 32, 1303, 4591, 1010, 283, 324, 2256, 2481, 666, 2565, 12, 779, 321, 2009, 1813, 315, 144, 4180, 475, 4127, 2087, 926, 58, 651, 1198, 1088    1:0.0:40691, 6869, 65154, 12, 240, 117, 3133, 103, 64, 17291, 10424, 64026, 7369    1:0.0:2280, 7589, 423, 1107, 1142, 2831, 3449, 2560, 14, 2078, 1629, 1342, 523, 940, 1789, 498, 1276, 2441, 810, 2425, 612, 308, 1056, 1827, 2349, 3334, 2010, 1205, 1276, 517, 5148, 1239, 3762, 1825, 822, 613, 5862, 1673, 5446, 8042, 5, 11, 15826, 33, 263, 3171, 4104, 273, 5964, 569, 1222, 1187, 1104, 662, 14    1:0.0:2943, 1729, 2320, 478, 541, 138, 805, 21, 1156, 861, 84, 1630, 327, 762, 158, 2921, 390, 409, 4568, 705, 1909, 6369, 18, 877, 68, 385, 3267, 3577, 6105, 373, 3677, 430, 3533, 32, 411, 1612, 4551, 1611, 929, 4164, 1270, 793, 653, 278, 8, 16, 2582, 220, 4816, 109, 86, 190, 4058, 10106, 3085, 299, 654, 598, 1688, 2496, 4108, 7877    1:0.0:1445, 1522, 512, 4205, 642, 3637, 2469, 796, 2223, 577, 864, 836, 714, 5937, 1775, 1109, 81, 1343, 6592, 2153, 589, 2494, 668, 1853, 1091, 667, 754, 1048, 1137, 354, 118, 231, 1584, 1102, 238, 778, 1440, 1050,

---

282, 2585, 684, 857, 287, 209, 1281, 922, 13, 2052, 345, 5168, 834, 2296, 55, 535, 1229, 1875, 959, 404, 458, 735, 306, 2278, 1146, 638, 537, 1470, 367, 343, 10, 1299, 390, 50, 2776, 253, 33, 33, 651, 76, 138, 633, 266, 1921, 1282, 676, 1400, 1100, 3774, 892, 49, 343, 1155, 587, 205, 277, 965, 614, 1195, 289, 1051, 445, 904, 351, 945, 280, 1043, 622, 115, 3052, 1855, 485 1:0.0:648, 723, 5388, 3787, 3278, 459, 220, 10073, 75, 5, 32, 110, 12, 1354, 17694, 5002, 4478, 6948, 2667, 214, 3047

**fall**  $\rightarrow$  0:0.0:14297, 2293, 2941, 4, 11281, 9597, 38, 2346, 1956, 498, 17226, 80, 442, 1955, 1051, 9983, 10604, 5675, 17802, 73, 2084, 284, 1970, 639, 8159, 139, 10124, 1968, 3541, 9189, 2676, 23033, 25171, 6845, 4014, 22065, 5004, 1873, 7979, 19, 38, 4351, 33544, 3520, 26179, 4869, 2824, 9671, 1730, 8679, 3607, 1242, 4789, 4226, 2389 1:0.0:12696, 7522, 7277, 1219, 502, 7509, 1272, 2293, 1239, 503, 7806, 21564, 215, 4046, 20801, 43042, 7982, 6896, 6305, 735 1:0.0:3675, 758, 2866, 319, 8, 129, 3875, 2526, 2549, 5106, 791, 943, 1864, 6208, 56, 9047, 7289, 1565, 22253, 1102, 13600, 22434, 2056, 19038, 8632, 1767, 12075, 4811, 14696, 454, 6346, 2067, 6316 1:0.0:4267, 7695, 8982, 13987, 5079, 6839, 4545, 993, 9812, 3894, 5914, 11354, 29193, 7625, 3250, 1392, 4513, 3526, 907, 8102, 2726, 3410, 215, 33, 275, 3546, 1071, 1894, 30497, 1249, 4166, 8239, 5088, 369 1:0.0:775, 186, 8464, 302, 11, 706, 22784, 14, 4273, 22193, 17565, 10, 23450, 2049, 4779, 925 1:0.0:37309, 3631, 4171, 3521, 21525, 3158, 25030 1:0.0:335, 1457, 4148, 7762, 20138, 10086, 1008, 33359, 8883, 108, 6444, 6896, 7118, 12566 1:0.0:4436, 5546, 3763, 823, 309, 6850, 9332, 603, 4900, 836, 6772, 7308, 14545, 888, 1154

**father**  $\rightarrow$  0:0.0:3277, 5, 59, 64, 41, 14, 23, 1460, 8, 4, 29, 1080, 3167, 9935, 4161, 16, 17, 260, 859, 3813, 12011, 575, 192, 8971, 2427, 67, 99, 116, 12, 481, 32, 10, 1240, 14382, 6357, 79, 936, 4958, 1967, 5203, 2118, 52, 35, 9849, 58, 1146, 19, 490, 482, 92, 599, 132, 10660, 14018, 255, 6231, 59, 9723, 624, 2439, 16844, 26, 707, 11667, 2608, 434, 14935, 154, 4883, 357, 426, 1317, 11638, 10847, 1726, 3016, 1957, 370, 7, 51, 158, 107, 44, 253, 11, 17, 36, 15, 66, 81, 9, 26, 162, 173, 34, 50, 39, 102, 28, 4584, 4, 127, 14, 605, 5674, 3461, 2329, 16623, 14933, 861, 6008, 7479, 70, 156, 4455, 422, 24, 2849, 260, 15092, 21, 46, 62, 104, 17, 58, 19, 87, 23561, 355, 486, 916, 1581, 500, 101, 413, 5963 1:0.0:67, 283, 20, 320, 205, 43, 660, 424, 132, 145, 211, 1307, 398, 4, 143, 12, 420, 1183, 30, 921, 164, 1556, 611, 2931, 1479, 4, 6106, 5356, 1109, 8, 86, 64, 8, 256, 642, 302, 2397, 110, 43, 40, 246, 49, 268, 606, 197, 2298, 131, 746, 395, 730, 2399, 342, 213, 1029, 377, 106, 1408, 347, 90, 204, 1412, 77, 1609, 205, 425, 55, 7, 472, 1014, 316, 61, 250, 31, 394, 172, 2465, 79, 1152, 275, 216, 178, 1917, 176, 1432, 888, 2312, 1564, 676, 33, 86, 200, 225, 35, 75, 370, 335, 368, 6, 76, 472, 14, 2, 515, 177, 322, 1799, 22, 735, 114, 264, 1076, 345, 43, 1332, 1403, 344, 2263, 166, 1198, 5093, 365, 302, 164, 16, 58, 368, 91, 415, 94, 1836, 287, 144, 336, 870, 1650, 842, 1084, 39, 326, 1224, 401, 3774, 68, 6717, 281, 1201, 1262, 1427, 24, 108, 202, 3444, 2606, 308,

---

366, 121, 500, 3671, 1204, 577, 644, 2885, 558, 660, 83, 2067, 88, 529, 124, 486, 1929, 61, 92, 790, 281, 5208, 236, 1197, 48, 14, 2182, 450, 549, 3102, 35, 34, 556, 467, 92, 339, 2307, 9, 1120, 13, 30, 82, 65, 88, 919, 3016, 1272, 70, 255, 3233, 58, 264, 384, 694, 980     1:0.0:2540, 4778, 680, 151, 615, 46, 9926, 387, 9761, 3477, 163, 4449, 109, 14817, 2561, 2124, 2599, 36046, 2462, 11426, 97, 13, 17010, 155, 365, 331, 397, 712, 69, 8459, 2581, 133, 3046, 11, 39, 455, 146, 61, 3274, 1131, 426, 917, 295, 13, 65, 1848, 3066, 115, 186, 961, 247, 4718, 89, 4460, 13298, 1759     1:0.0:16596, 1212, 45, 66, 154, 98, 100, 46, 411, 3556, 2473, 57, 29, 315, 112, 841, 10835, 777, 8918, 16048, 3544, 30414, 49107, 22512, 20333, 5062, 8119, 90, 89, 4397, 8524     1:0.0:8143, 4, 68, 469, 137, 416, 199, 329, 260, 1272, 152, 99, 973, 46, 1195, 1253, 277, 317, 1961, 11, 290, 58, 100, 1118, 13, 223, 165, 90, 95, 47, 72, 230, 890, 25, 660, 382, 249, 27, 134, 753, 17, 112, 83, 1758, 931, 2327, 11, 676, 98, 15, 84, 52, 996, 1384, 26796, 1569, 7664, 2234, 100, 391, 87, 992, 1310, 578, 1111, 151, 462, 55, 69, 87, 276, 238, 540, 158, 181, 571, 4564, 88, 313, 344, 3164, 763, 533, 22, 1676, 29, 240, 2974, 37, 193, 3301, 76, 18, 31, 168, 510, 483, 284, 84, 391, 366, 297, 42, 1788, 5372, 5386, 35, 161, 1426, 365, 2269     1:0.0:5641, 933, 178, 219, 709, 77, 8790, 2724, 493, 2048, 128, 383, 132, 2006, 180, 16, 580, 1250, 1642, 2310, 422, 444, 350, 3479, 350, 7656, 418, 1128, 10467, 417, 391, 2676, 38, 787, 8261, 237, 57, 50, 211, 139, 109, 38, 156, 242, 24, 21, 288, 173, 3045, 7578, 13813, 7504, 1767, 78, 131, 1227, 5559, 2397, 778, 303, 92     1:0.0:1091, 171, 280, 344, 2064, 3886, 30, 469, 393, 56, 384, 1215, 414, 1897, 5163, 621, 39, 2345, 29, 174, 2724, 75, 463, 81, 168, 83, 70, 9, 188, 152, 1105, 10, 5174, 65, 1837, 110, 959, 577, 606, 876, 4122, 2941, 1293, 289, 17, 125, 19, 471, 1773, 2934, 997, 29, 112, 57, 6815, 2911, 599, 586, 22, 15, 21, 158, 72, 317, 312, 243, 1249, 1284, 12, 19, 529, 3052, 1639, 631, 270, 129, 275, 1102, 185, 2949, 514, 7495, 12, 479, 131, 142, 620, 929, 884, 38, 1011, 270, 1281, 519, 215, 113, 893, 124, 635, 520, 440, 60, 122, 452, 37, 233, 68, 378, 242, 219, 47, 2988, 2559, 17, 55, 4283, 3394, 123, 2860, 478, 23, 1077, 82, 112, 385, 495, 1575, 2144, 97, 12, 208, 200, 704, 1978, 75     1:0.0:31812, 2011, 5, 60, 12, 114, 29, 40, 17, 112, 16530, 211, 299, 3135, 13808

**great**  $\rightarrow$  0:0.0:436, 7419, 826, 268, 48, 1317, 837, 5903, 1360, 240, 184, 2718, 1910, 1338, 257, 158, 567, 5681, 218, 721, 379, 201, 5663, 20, 2519, 1957, 284, 2979, 1633, 419, 1345, 2318, 1022, 689, 1006, 416, 1126, 1559, 774, 2437, 1287, 826, 1226, 4336, 1262, 1792, 38, 17, 1273, 2817, 107, 24, 171, 903, 2810, 2990, 2005, 1298, 293, 23, 2660, 575, 1200, 627, 3099, 3222, 535, 2718, 5258, 10252, 7236, 6847, 467, 4609, 65, 1193, 5865, 1720, 2911, 3222, 318, 375, 197, 950, 335, 4792, 117, 352, 1813, 3453, 1677, 1105, 629, 211, 1723, 1909, 1033, 1555, 1077, 295, 2454, 620, 1251, 924, 297, 8235, 4605, 1490, 2422, 4520, 201, 2386, 1729, 2163, 608, 636, 2264, 680, 1698, 5343, 174, 1120, 4507, 3484, 544, 1274, 4421, 13323, 1567, 1247, 888, 1930, 2627, 798, 448, 1990, 271, 308, 2467, 71, 1941, 1197, 5472, 438, 1236, 81, 1106, 473, 307, 1438, 2207, 1084, 335, 617, 1, 750, 1490, 207, 146, 516, 7,

---

116, 270, 963, 5978, 1011, 1156, 2138, 365, 1916, 1827, 11, 325, 230, 210,  
 755, 1035, 984, 933, 360, 1695, 432, 62, 355, 4981, 2792, 2291, 97, 4176,  
 4993, 1615, 4622, 3042, 2105, 675, 191, 23, 71, 64, 96, 607, 543, 2047, 1643,  
 2920, 4398, 1006, 3094, 1085     1:0.0:645, 34, 398, 393, 63, 282, 142, 1283,  
 47, 171, 133, 546, 418, 366, 272, 510, 156, 397, 713, 494, 276, 1299, 721,  
 154, 691, 317, 1409, 580, 158, 581, 425, 15, 466, 1818, 574, 78, 388, 1515,  
 1362, 592, 208, 166, 39, 587, 46, 168, 13, 249, 170, 871, 4511, 31, 84, 11,  
 701, 890, 664, 60, 140, 996, 569, 363, 731, 867, 208, 230, 199, 691, 7, 320,  
 227, 441, 162, 51, 1528, 24, 106, 297, 419, 306, 971, 214, 130, 346, 250, 932,  
 1286, 251, 1798, 88, 260, 735, 479, 103, 177, 198, 169, 304, 483, 959, 959,  
 729, 66, 369, 689, 371, 439, 1799, 405, 553, 10, 754, 198, 3786, 778, 5, 48,  
 997, 156, 12, 947, 533, 2303, 1191, 233, 1183, 207, 33, 64, 842, 578, 413, 560,  
 133, 869, 195, 1358, 279, 50, 771, 27, 1210, 94, 80, 769, 1401, 54, 94, 2158,  
 1783, 374, 172, 25, 536, 344, 402, 330, 39, 1269, 47, 414, 1250, 1391, 624,  
 169, 362, 74, 1223, 1150, 370, 51, 817, 2, 2, 69, 2484, 516, 736, 2114, 893,  
 375, 1144, 444, 395, 109, 615, 1195, 328, 2552, 28, 548, 1157, 237, 126, 1659,  
 58, 2102, 160, 139, 166, 443, 361, 9, 500, 720, 258, 56, 882, 2627, 1141, 410,  
 615, 648, 203, 2341, 59, 1138, 92, 189, 1050, 68, 401, 142, 22, 221, 475, 2906,  
 265, 447, 1115, 355, 169, 444, 593, 68, 1834, 1084, 726, 221, 712, 935, 1582,  
 1698, 1368, 1704, 545, 1020, 429, 536, 1238, 301, 881, 320, 229, 452, 1812,  
 96, 898, 318, 733, 220, 361, 625, 960, 706     1:0.0:585, 2851, 558, 1493, 855,  
 2566, 2077, 579, 4139, 617, 525, 43, 189, 418, 34, 1806, 392, 15, 1576, 73,  
 737, 710, 274, 279, 2123, 670, 774, 2758, 31, 164, 2467, 844, 6354, 385, 142,  
 162, 105, 241, 452, 88, 80, 130, 653, 549, 5, 974, 398, 1585, 204, 2021, 112,  
 45, 1681, 2378, 1222, 6, 1572, 2389, 860, 1836, 233, 5909, 1553, 8382, 2524,  
 1390, 994, 2294, 2918, 4581, 3643, 153, 601, 406, 939, 1258, 390, 1890, 1502,  
 1195, 3366, 2240, 354, 5040, 352, 430, 6535, 1627, 2809, 7968, 925, 4377,  
 3872, 551, 91, 1617, 5151, 4536, 1846, 523, 5602, 1251, 207, 149, 2056, 2250,  
 1430, 1374, 2294, 728, 278, 349, 2007, 826, 2225, 16, 1736, 3152, 949, 2659  
 1:0.0:601, 26, 32, 54, 67, 64, 100, 48, 229, 265, 400, 69, 119, 785, 1551, 1465,  
 143, 233, 562, 1058, 42, 248, 1692, 911, 2253, 902, 105, 621, 552, 369, 162,  
 585, 1508, 151, 1102, 1880, 198, 890, 3463, 504, 143, 1537, 995, 166, 37, 562,  
 2448, 17, 4515, 512, 13, 67, 28, 139, 262, 204, 108, 245, 1586, 328, 277, 1403,  
 479, 2751, 194, 255, 300, 975, 464, 115, 624, 529, 37, 574, 261, 381, 2179,  
 783, 29, 480, 47, 144, 106, 49, 1364, 41, 260, 320, 389, 197, 258, 501, 47,  
 217, 464, 509, 2505, 74, 181, 249, 505, 294, 78, 657, 1411, 1036, 295, 118,  
 29, 1101, 640, 2764, 51, 678, 458, 31, 1424, 176, 613, 327, 188, 48, 89, 401,  
 1128, 1483, 1183, 515, 1448, 38, 202, 1920, 9, 55, 98, 250, 2716, 3850, 386,  
 449, 1812, 2964, 899, 2224, 4916, 415, 413, 289, 577, 153, 187, 33, 471, 210,  
 946, 445, 395, 896, 440, 259, 660, 1380, 2704, 632, 2423, 94, 221, 1410, 161,  
 245, 146, 750, 298, 163, 9, 201, 235, 382, 1191, 2774, 859, 2000, 540, 619,  
 98, 526, 162, 93, 540, 122, 1095, 217, 11, 414, 438, 77, 152, 561, 41, 18, 862,  
 107, 158, 27, 99, 1000, 488, 22, 8, 384, 30, 1558, 227, 189, 1138, 477, 11,  
 389, 77, 89, 126, 225, 835, 362, 636, 761, 998, 576, 336, 541, 1185, 486, 93,

---

---

1445, 1919, 438, 634, 1305, 222, 436, 543, 3842, 284, 3615, 1949, 55, 204, 83,  
 32, 170, 994, 172, 219, 1935, 215, 363, 61, 112, 119, 540, 821, 344, 89, 65,  
 179, 51, 1826, 225, 160, 23, 268, 218, 596, 429, 186, 341, 50, 221, 454, 1663,  
 6, 46, 2152, 1507, 2162, 1264, 2463, 3888, 67, 4102, 241, 2785, 3791, 1371,  
 2356, 325, 954, 1599, 1136, 678, 2016, 1955, 1637, 1093, 214, 318, 192, 4  
 1:0.0:3675, 3542, 91, 175, 158, 87, 854, 725, 21, 24, 368, 1050, 289, 357, 211,  
 257, 255, 767, 157, 843, 1308, 355, 72, 416, 115, 535, 72, 519, 295, 741, 66,  
 35, 34, 232, 1076, 1807, 1067, 377, 143, 737, 748, 996, 231, 788, 366, 142,  
 543, 623, 585, 105, 170, 81, 370, 388, 482, 1278, 733, 316, 105, 2, 2, 2, 2, 11,  
 1024, 212, 336, 92, 2, 384, 429, 1181, 77, 1919, 151, 1804, 234, 275, 17, 185,  
 193, 377, 539, 486, 1877, 136, 8, 173, 318, 946, 73, 193, 214, 490, 632, 3,  
 104, 107, 1053, 684, 447, 237, 321, 150, 293, 677, 2112, 2180, 688, 161, 109,  
 338, 697, 967, 154, 178, 215, 531, 1472, 213, 1679, 114, 193, 501, 431, 735,  
 890, 116, 4, 1520, 750, 516, 566, 9, 1540, 706, 40, 296, 201, 8, 79, 441, 134,  
 218, 259, 136, 8, 1324, 364, 20, 166, 265, 891, 654, 113, 221, 312, 297, 289,  
 99, 3, 8, 84, 25, 826, 487, 96, 505, 139, 283, 244, 98, 579, 21, 479, 306, 3,  
 107, 419, 451, 413, 274, 147, 461, 139, 8, 1078, 45, 474, 511, 439, 993, 318,  
 861, 119, 811, 107, 128, 70, 44, 673, 140, 260, 703, 1704, 1632, 160, 1589,  
 373, 2055, 294, 120, 96, 1078, 388, 580, 236, 199, 518, 1154, 421, 835, 121,  
 1738, 297, 229, 367, 1646, 252, 1782, 6, 625, 655, 1187, 1508, 182, 7, 142,  
 926, 244, 586, 205, 665, 116, 229 1:0.0:883, 86, 200, 35, 140, 272, 187,  
 1269, 276, 56, 1069, 321, 858, 505, 138, 729, 350, 227, 772, 249, 223, 2557,  
 1130, 64, 200, 1104, 159, 1029, 78, 192, 259, 407, 62, 278, 950, 1025, 113, 43,  
 1110, 59, 414, 252, 154, 731, 1278, 675, 946, 644, 3440, 624, 360, 794, 169,  
 985, 701, 1447, 776, 9, 406, 220, 207, 2702, 146, 89, 185, 294, 2514, 346, 695,  
 156, 515, 2830, 291, 1120, 435, 16, 1291, 28, 18, 148, 42, 48, 197, 33, 3958,  
 3, 149, 10, 440, 1272, 53, 175, 1322, 71, 196, 30, 3178, 1022, 552, 177, 689,  
 618, 176, 391, 198, 2267, 454, 828, 1624, 257, 703, 1389, 488, 132, 366, 172,  
 167, 239, 321, 310, 1851, 317, 291, 496, 222, 277, 454, 566, 555, 106, 425,  
 109, 908, 949, 505, 1491, 2310, 8, 906, 557, 40, 1563, 205, 306, 430, 398, 5,  
 1129, 636, 17, 774, 773, 593, 1166, 321, 1801, 2359, 110, 66, 150, 143, 167,  
 1682, 439, 729, 539, 319, 912, 1041, 1209, 1223, 1885, 2096, 1881, 418, 466,  
 408, 1160, 934 1:0.0:1321, 917, 550, 559, 147, 77, 586, 641, 573, 238, 495,  
 557, 939, 45, 1720, 1289, 23, 574, 14, 709, 488, 2164, 105, 280, 98, 194, 157,  
 465, 203, 743, 2221, 154, 773, 881, 2875, 195, 1330, 353, 903, 1577, 1713,  
 1622, 4136, 2349, 922, 48, 451, 676, 998, 491, 1213, 809, 1955, 3754, 640,  
 244, 427, 650, 46, 898, 666, 170, 265, 44, 754, 411, 802, 376, 889, 286, 312,  
 498, 39, 2272, 532, 372, 951, 362, 2011, 1250, 393, 1271, 206, 36, 199, 107,  
 296, 795, 203, 1443, 1000, 349, 440, 2745, 486, 195, 93, 972, 414, 1609, 128,  
 842, 5, 190, 287, 1593, 236, 12, 1756, 1732, 2372, 1485, 295, 1561, 23, 323,  
 406, 59, 1845, 340, 1735, 269, 242, 714, 1689, 2901, 180, 258, 421, 3328, 992,  
 1115, 1562, 238, 1320, 2767, 244, 3050, 1313, 1159, 860, 453, 885, 282  
 1:0.0:4440, 2512, 937, 5128, 643, 1503, 124, 1074, 99, 263, 218, 215, 66, 544,  
 250, 1, 174, 992, 32, 1524, 1970, 2972, 6339, 872, 1787, 46, 132, 203, 40, 739,

---



---

2305, 241, 53, 35, 9, 181, 68, 106, 182, 276, 7, 183, 963, 2451, 725, 1922, 57, 19, 2742, 1314, 159, 134, 670, 2578, 4665, 411, 829, 517, 3988, 32, 2970, 289

**love**  $\rightarrow$  0:0.0:1054, 2327, 481, 11, 321, 797, 57, 69, 79, 543, 6, 4, 7, 5, 2617, 769, 22, 295, 18, 17, 15, 104, 56, 133, 118, 54, 21, 4, 6, 45, 3900, 1932, 720, 5, 179, 340, 328, 118, 284, 4, 12, 61, 68, 5, 34, 10, 26, 9, 139, 313, 36, 228, 88, 639, 4, 114, 443, 224, 288, 26, 4, 41, 16, 327, 700, 165, 48, 1745, 7, 56, 430, 18, 281, 56, 460, 46, 37, 263, 616, 324, 56, 947, 2006, 352, 4, 108, 3, 190, 261, 152, 458, 9, 769, 2912, 1102, 221, 1072, 818, 25, 3414, 356, 604, 253, 435, 77, 119, 5, 3056, 90, 4, 803, 1674, 283, 1388, 2245, 994, 202, 8, 121, 18, 85, 422, 1030, 1046, 1766, 816, 570, 36, 2, 10, 119, 6, 30, 101, 326, 51, 133, 47, 93, 30, 629, 1, 462, 91, 122, 2100, 20, 8, 3, 12, 14, 27, 780, 6, 1055, 1663, 1353, 1865, 3278, 1748, 54, 38, 322, 39, 70, 35, 929, 3006, 43, 65, 34, 59, 128, 620, 276, 1144, 144, 635, 74, 6718, 867, 872, 1642, 248, 8, 318, 3015, 192, 173, 47, 539, 49, 226, 548, 987, 4014, 2700, 8466, 3592, 91, 8, 19, 92, 195, 3, 1845, 1540, 4718, 1084, 15, 1007, 43, 3, 7, 37, 125, 55, 92, 314, 2991, 1746, 644, 5, 112, 16, 348, 473, 238, 1847, 79, 13, 167, 38, 593, 1271, 5, 11, 18, 2798, 167, 1695, 9396, 892, 148, 4070, 11, 6, 6, 2, 141, 14, 19, 829, 1800, 5927, 6, 2442, 3116, 1090, 27, 7, 817, 446, 166, 143, 1057, 4, 85, 251, 986, 18, 257, 88, 117, 331, 112, 623, 2016, 249, 8, 1107, 14, 6, 324, 411, 762, 1888, 65, 268, 1065, 389, 5, 31, 518, 1106, 997, 414, 45, 715, 1658, 782, 12, 44, 9, 347, 127, 70, 46, 289, 92, 60, 51, 5, 55, 14, 13, 2699, 105, 94, 315, 2, 466, 247, 447, 35, 2226, 526, 38, 563, 79, 3, 7, 60, 58, 12, 258, 584, 3457, 704, 788, 5, 707, 13, 610, 32, 116, 29, 362, 37, 86, 484, 333, 1485, 145, 997, 7, 880, 3749, 1562, 1131, 4, 8, 35, 273, 1517, 2, 545, 386, 424, 15, 6, 14, 15, 18, 18, 97, 43, 20, 14, 988, 917, 27, 733, 5, 7, 263, 290, 77, 459, 740, 266, 73, 278, 482, 319, 309, 1420, 1447, 17, 1437, 180, 249, 312, 44, 60, 15, 287, 71, 93, 133, 54, 1355, 26, 2615, 182, 9, 6, 4, 31, 33, 1853, 158, 172, 1002, 238, 157, 138, 19, 38, 43, 44, 24, 364, 913, 3, 8, 167, 16, 268, 31, 439, 565, 8, 1331, 1035, 411, 541, 10895, 3908, 7, 5, 5, 71, 4, 171, 105, 11, 15, 1298, 52, 804, 5, 3, 267, 98, 1057, 51, 1979, 7, 1310, 426, 413, 206, 74, 159, 2427, 1958, 6, 9, 1118, 90, 1237, 4448, 5288, 262, 37, 22, 168, 7, 517, 660, 64, 71, 133, 11703, 138, 11, 8, 5, 131, 125, 688, 929, 196, 73, 46, 19, 96, 17, 918, 123, 438, 107, 97, 47, 385, 3053, 3493, 2896, 1092, 112, 12, 69, 2091, 174, 82, 5, 12, 14, 26, 187, 317, 282, 5, 10, 5, 17, 77, 3, 774, 5, 144, 8, 144, 146, 20, 259, 173, 3, 31, 4, 750, 30, 511, 398, 41, 382, 134, 109, 85, 107, 212, 4, 70, 45, 2127, 294, 161, 10, 210, 346, 225, 253, 1042, 48, 86, 94, 74, 141, 23, 42, 4, 122, 153, 23, 9, 14, 268, 2490, 4388, 1466, 1744, 4163, 64, 7323, 143 1:0.0:688, 1393, 1385, 130, 72, 1698, 264, 1074, 631, 171, 1594, 2784, 170, 43, 307, 12, 282, 4, 1787, 819, 21, 266, 2896, 87, 859, 783, 906, 2022, 177, 159, 178, 602, 21, 25, 307, 415, 54, 71, 297, 1810, 233, 14, 19, 528, 682, 417, 971, 827, 163, 2743, 2420, 22, 304, 625, 3536, 211, 796, 806, 36, 1863, 58, 309, 574, 1405, 2658, 264, 4759, 7, 2525, 1699, 1348, 77, 206, 5780, 152,

---

436, 252, 311, 266, 449, 1060, 335, 907, 1087, 619, 134, 112, 4, 285, 1750, 15,  
 369, 13, 10431, 1041, 326, 53, 47, 225, 223, 102, 27, 8, 194, 1169, 95, 702,  
 53, 4809, 1356, 78, 8348, 284, 187, 3376, 1075, 214, 389, 420, 835, 492, 4348,  
 5109, 427, 1725, 5194, 882, 3177, 500, 555, 352, 1083, 1088, 160, 2210, 71,  
 80, 1336, 61, 349, 2546, 7, 751, 870, 247, 1952, 1863, 61, 465, 963, 803, 450,  
 256, 2628, 475, 78, 1308, 172, 1042, 1009, 258, 453, 2370, 233 1:0.0:1828,  
 2779, 8, 403, 4953, 18, 3201, 8, 214, 8868, 79, 22, 4738, 35, 44, 2322, 3010,  
 5, 697, 3161, 5146, 14941, 1268, 62, 1002, 6835, 254, 76, 374, 4690, 583, 17,  
 21, 388, 881, 2949, 162, 314, 264, 355, 1421, 3574, 96, 11, 6360, 1542, 6227,  
 2414, 88, 2519, 265, 470, 852, 974, 396, 36, 3, 429, 393, 12, 67, 224, 117, 93,  
 479, 402, 504, 69, 345, 177, 5, 838, 233, 33, 129, 488, 2786, 162, 54, 1, 170,  
 23, 21, 1, 590, 1007, 1618, 703, 56, 4, 1728, 72, 673, 3391, 370, 768, 414, 761,  
 806, 91, 91, 48, 847, 73, 714, 1427, 67, 3, 873, 1339, 29, 163, 10, 63, 5, 5,  
 9, 133, 155, 212, 5, 597, 84, 90, 21, 549, 63, 280, 240, 341, 642, 11123, 651,  
 3553, 12, 8, 6, 293, 1212, 200, 397, 1020, 3, 352, 131, 427, 159, 1625, 259,  
 922, 1307, 10, 2243, 316, 738, 171, 72, 2027, 13, 2246, 1471, 456, 861, 240,  
 141, 231, 1313, 19, 151, 332, 341, 794, 593, 411, 257, 135, 39, 16, 71, 37,  
 1335, 18, 8, 282, 1973, 81, 927, 12, 91, 3034, 958, 561, 884, 247, 967, 42, 109,  
 5, 3, 4, 7, 161, 10, 292, 10, 146, 39, 2143, 323, 17, 231, 70, 5 1:0.0:152,  
 318, 2098, 3385, 7600, 10387, 541, 7543, 19647, 5909, 5324, 189, 3812, 974,  
 6293, 2509, 196, 6754, 10333, 2703, 447, 39911, 166, 3386, 4715, 479, 6647,  
 247, 7, 6889, 713, 1044, 5955, 6127, 12833, 120, 3371, 3607, 104, 5199, 3248,  
 3407, 173, 760, 223, 1307, 6119, 865 1:0.0:9427, 302, 11, 706, 798, 266,  
 589, 1398, 3496, 6, 581, 3313, 7, 3905, 1753, 2946, 3271, 455, 14, 452, 1147,  
 1448, 619, 391, 216, 12, 684, 71, 189, 5, 2248, 3453, 1237, 238, 4914, 7, 997,  
 13, 6, 1526, 4263, 910, 4160, 3102, 8, 537, 1848, 890, 707, 12, 2484, 880, 17,  
 8, 828, 1713, 24, 349, 15, 605, 6492, 17, 1278, 5894, 1070, 983, 14, 674, 1083,  
 1947, 863, 5992, 5818, 1897, 2560, 358, 482, 5531 1:0.0:1303, 3240, 110,  
 985, 442, 12692, 28, 4, 935, 421, 49, 10, 277, 384, 297, 6, 207, 7, 2845, 90,  
 25, 5, 406, 143, 309, 82, 238, 409, 678, 65, 1996, 7, 196, 1062, 240, 1704, 11,  
 15, 3337, 10, 26, 2303, 655, 191, 240, 1473, 49, 211, 524, 45, 593, 1055, 904,  
 990, 49, 181, 354, 3521, 311, 613, 22, 7, 9, 8, 104, 1213, 245, 5, 304, 537,  
 203, 21, 2905, 564, 16, 124, 186, 1037, 1097, 162, 497, 66, 30, 12, 3, 3117,  
 4, 169, 518, 13, 2952, 324, 227, 373, 12, 1367, 7, 8, 12564, 3335, 1405, 248,  
 171, 59, 6, 1813, 3516, 2938, 5070, 6, 3402, 3470, 5209, 8, 312, 9, 296, 170,  
 123, 4769, 741 1:0.0:337, 1135, 132, 190, 3792, 172, 184, 1758, 2, 830,  
 4386, 76, 12, 8, 3868, 1258, 2960, 13065, 220, 2973, 75, 139, 8, 758, 548,  
 449, 1707, 1005, 90, 658, 283, 19, 274, 557, 77, 13, 43, 72, 7, 512, 284, 168,  
 28, 1947, 73, 27, 490, 100, 350, 7000, 1050, 338, 6, 367, 2134, 1530, 10, 939,  
 1841, 1915, 12, 5785, 1470, 2609, 211, 4009, 1871, 921, 424, 4, 104, 2, 1494,  
 2415, 6, 1649, 136, 2463, 235, 153, 5376, 3105, 1286, 2909, 3018, 654, 690,  
 434, 1679, 5308, 1603, 491, 40, 152, 55, 46, 95, 863, 387, 434, 194, 269, 350,  
 55, 358, 202, 861, 440, 270 1:0.0:2196, 1184, 912, 43, 145, 3482, 4, 2968,  
 3071, 94, 3346, 1494, 128, 1163, 1951, 9433, 95, 1661, 114, 42, 4, 1196, 339,

---

---

2924, 6098, 36, 8995, 5358, 336, 1775, 3595, 130, 1836, 715, 9, 104

**mother**  $\rightarrow$  0:0.0:1059, 141, 2248, 4, 478, 167, 5087, 49, 1847, 2904, 26, 51, 46, 27, 1022, 1983, 1383, 224, 153, 5, 66, 281, 462, 42, 23, 24, 46, 188, 8, 37, 38, 47, 990, 1234, 1146, 395, 517, 761, 35, 288, 662, 53, 15, 40, 279, 235, 138, 535, 128, 319, 385, 21, 2491, 173, 648, 6, 13, 7, 629, 472, 295, 1486, 801, 1294, 4191, 23, 201, 35, 34, 5218, 479, 1, 15, 4218, 462, 83, 15, 107, 4, 192, 416, 888, 10, 21, 185, 28, 1063, 2512, 1160, 8352, 8606, 99, 766, 2219, 276, 1606, 24, 1005, 94, 1934, 1706, 5625, 88, 10, 3677, 868, 97, 127, 378, 323, 1117, 90, 169, 1159, 373, 15, 7, 12, 204, 4056, 34, 11, 9734, 2117, 119, 158, 294, 131, 498, 56, 1289, 35, 11, 33, 24, 1580, 2532, 5942, 294, 6575, 33, 68, 54, 243, 28359, 9729, 3481, 2604, 562, 5893, 5068, 8, 7019, 2204, 1756, 22486, 1729, 5367, 70, 110, 1330, 27, 129, 82, 9, 105, 666, 10, 2131, 44, 153, 6, 152, 140, 66, 25, 354, 199, 29, 6, 29, 5, 152, 93, 475, 2880, 1538, 29, 156, 1041, 394, 753, 282, 116, 236, 50, 145, 238, 21, 35, 4292, 72, 352, 14426, 220, 12, 4, 14, 2108, 5367, 904, 7509, 13562, 546, 5297, 1437, 4177, 8459, 410, 3620, 22, 302, 34, 47, 33, 53, 220, 30, 5166, 1404, 1304, 911, 54, 28, 32, 66, 2219, 426, 3064, 1609, 3624, 74, 581, 86, 1684, 1661, 8, 84, 139, 35, 115, 109, 5866, 337, 84, 24, 474, 6680 1:0.0:88, 37, 3639, 685, 1135, 76, 2043, 265, 559, 2674, 14, 918, 5157, 395, 7826, 4599, 1350, 17467, 6, 1069, 548, 91, 91, 29, 116, 98, 83, 238, 52, 74, 901, 63, 388, 474, 1504, 1528, 157, 54, 196, 178, 17, 156, 2935, 634, 2157, 11676, 1579, 1815, 59, 93, 16, 211, 249, 273, 1323, 484, 102, 22215, 3697, 9, 38, 83, 16, 7047, 893, 43, 54, 12095, 360, 21243, 5442, 50 1:0.0:2173, 39, 1999, 148, 539, 3102, 772, 36, 38, 1652, 3983, 4645, 400, 13799, 2990, 4159, 36, 18633, 149, 25, 153, 11146, 2398, 5786, 1757, 1596, 8442, 80, 75, 262, 484, 128, 1937, 1453, 1205, 43, 293, 182, 377, 6487, 1505, 15492, 6060, 390, 253, 5548, 1563, 334, 2601, 2068, 3133, 6688, 2451, 6455, 2238, 165, 4031 1:0.0:13790, 20696, 1221, 1938, 7048, 382, 22405, 18204, 35793, 8538, 20499, 15, 88, 358, 4209, 15259, 1034, 15097, 344, 1691, 1545, 3510, 11835, 806, 11291 1:0.0:9856, 58, 33, 215, 961, 151, 211, 106, 195, 732, 6, 29, 3894, 2671, 55, 166, 1615, 69, 90, 125, 149, 568, 229, 141, 131, 767, 7, 197, 4, 69, 4954, 338, 548, 7, 2005, 149, 3395, 18445, 5061, 4301, 494, 4580, 2224, 1409, 240, 1861, 104, 12, 60, 18, 1000, 12, 71, 55, 70, 1317, 606, 20762, 28, 21, 2491, 2, 3553, 187, 7273, 1093, 400, 289, 1635, 480, 74, 24 1:0.0:16017, 566, 2990, 3569, 1634, 3984, 22, 4724, 2467, 681, 116, 10, 24017, 10, 49, 23451, 8694, 5002, 609, 1045, 10, 8, 228, 1614, 22, 113, 21, 782, 7756 1:0.0:958, 166, 1728, 2263, 341, 2281, 80, 295, 225, 434, 31, 36, 284, 1263, 1422, 129, 353, 272, 110, 389, 161, 98, 2048, 1962, 500, 1375, 7845, 2866, 699, 56, 245, 39, 83, 49, 1452, 277, 595, 1561, 41, 246, 804, 337, 3384, 205, 958, 909, 1356, 2147, 56, 170, 1763, 3451, 587, 168, 15, 44, 100, 6706, 3450, 1361, 2803, 48, 120, 561, 38, 3015, 1508, 44, 269, 388, 704, 150, 1308, 189, 115, 17, 9979, 503, 101, 385, 102, 1721, 1877, 126, 9, 1471, 541, 56, 1143, 1333, 257, 143, 1314, 369, 179, 665, 1436, 245, 231, 248, 295, 272, 5346, 175, 169, 383, 81, 413, 155, 796, 182, 53, 487, 800, 224, 29, 68, 247, 28,

---

219, 63, 111, 1348, 60, 269, 738, 135, 413, 743, 44, 5103, 238, 8, 911, 256, 71, 1917 1:0.0:4493, 2825, 878, 9941, 986, 12615, 2989, 1931, 4982, 182, 3371, 1682, 4064, 13510, 1647 mystic 0:0.124939:225305 2:0.162549:85895, 79577 1:0.303772:3431, 1264, 43107, 15869, 2692, 3264, 1445, 2394, 1118, 110, 1957, 295, 3351, 39502, 4, 11722, 458, 2555, 731, 6198, 5531, 26570, 5385, 6363, 3044, 15253, 7951 1:0.124939:6032 1:0.162549:6153, 26025 2:0.162549:43543, 71

**night**  $\rightarrow$  0:0.0:3428, 20458, 460, 938, 7039, 4297, 3528, 4957, 328, 330, 56, 375, 4456, 10858, 1462, 2359, 951, 54, 9325, 2808, 5587, 4892, 1095, 108, 6206, 1556, 74, 155, 2346, 5091, 6398, 788, 1723, 7062, 28, 10, 52, 43, 38, 171, 25, 68, 340, 155, 1278, 3432, 6110, 9082, 122, 659, 17, 6449, 1630, 7211, 966, 2281, 9409, 6682, 308, 408, 32, 774, 2395, 65, 2486, 18033, 7614, 8628, 250, 1088, 2321, 880, 17810, 10772, 816, 2516, 4677, 7, 786, 6, 799, 1265, 541, 44, 133, 1395, 2702, 12232, 196, 23, 52, 13319, 261, 16927, 437, 288, 352, 36232 1:0.0:1361, 443, 6100, 3795, 6130, 1023, 3102, 9308, 4702, 1876, 4463, 241, 1218, 1557, 10050, 8007, 35, 9432, 602, 5, 2937, 168, 506, 303, 317, 163, 2260, 533, 75, 248, 2764, 17822, 9011, 653, 527, 4096, 16967, 4252, 7670, 677, 2973, 3831, 8219, 1307, 50 1:0.0:4422, 1462, 177, 128, 75, 119, 884, 571, 45, 807, 1345, 107, 464, 1202, 3302, 614, 903, 53, 524, 635, 2187, 8099, 73, 1172, 236, 59, 518, 236, 1282, 86, 891, 3, 1458, 167, 849, 862, 2080, 638, 288, 2, 127, 232, 120, 1991, 1455, 5141, 260, 1449, 1595, 248, 587, 135, 1523, 135, 84, 3063, 241, 224, 1920, 839, 167, 1187, 47, 14, 181, 292, 142, 225, 117, 399, 444, 306, 196, 129, 45, 250, 88, 796, 168, 3026, 4666, 209, 660, 115, 40, 6849, 537, 2495, 35, 36, 789, 853, 297, 70, 343, 496, 182, 1248, 122, 1261, 29, 245, 93, 51, 35, 57, 2937, 567, 113, 564, 184, 310, 285, 3426, 986, 117, 171, 2694, 36, 394, 712, 1682, 211, 2, 171, 206, 2128, 376, 770, 556, 2896, 766, 4, 118, 675, 49, 606, 146, 277, 672, 467, 1065, 295, 125, 49, 18, 3977, 54, 2241, 307, 2697, 29, 875, 126, 1363, 2726, 42, 178, 3, 1862, 142, 36, 80, 11, 38, 313, 1867, 222, 496, 811, 344, 644, 217, 256, 44, 573, 55, 55, 176, 221, 1322, 2424, 997, 5941, 468, 5, 633, 113, 4095, 179, 964, 290, 1055, 52, 128, 2, 2004, 2275, 259, 104, 160, 1430, 472, 4684, 117, 6, 604, 2267, 575, 1140, 439, 1947, 27, 552, 222, 1843, 722, 1111, 173, 191, 344, 137, 3041, 34, 72, 136, 229, 117 1:0.0:2716, 2172, 1227, 223, 6, 41, 75, 223, 648, 877, 356, 1457, 94, 155, 66, 298, 152, 99, 63, 53, 78, 90, 432, 731, 1183, 755, 1077, 1294, 3832, 2362, 450, 1024, 93, 68, 4767, 2549, 3144, 1434, 95, 65, 2642, 843, 33, 1799, 157, 818, 139, 649, 59, 6753, 38, 103, 84, 689, 6899, 8718, 2, 701, 223, 276, 3, 461, 7489, 1293, 192, 18, 7, 1111, 300, 2281, 2161, 5201, 2302, 30, 43, 37, 52, 208, 71, 64, 2, 734, 57, 2770, 1145, 3176, 69, 347, 1165, 19, 267, 880, 6134, 5628, 192, 438, 377, 1806, 557, 301, 244, 235, 390, 6445, 938, 789, 134, 9551, 11150, 14067, 562, 861, 218, 593, 145, 261, 567, 888, 581, 65, 3791, 31, 8656, 710, 1139, 5706, 3966, 132, 1754, 2051, 839, 1702, 2692, 2291, 1390, 241, 42, 75, 61, 18, 17, 2, 150, 1252, 1823, 3466, 168, 66, 26, 3, 179, 496, 2544, 62, 47, 606, 505, 57, 1068, 1107, 1495 1:0.0:6355,

---

857, 11847, 4895, 2, 7034, 211, 286, 98, 5341, 21963, 10559, 428, 992, 507, 2620, 22413, 24655    1:0.0:741, 4555, 6229, 3584, 11950, 6750, 4363, 1913, 9152, 5759, 91, 1537, 1081, 7286, 56, 8, 17, 8922, 9788, 838, 16056, 1697, 5, 1430, 2840, 57, 3968, 1585, 25, 5743    1:0.0:4934, 3482, 256, 3069, 2428, 8839, 3254, 5116, 1670, 5119, 751, 8506, 13706, 103, 130, 427, 1802, 11540, 415, 8921, 407, 147, 1313, 2723, 964, 1133, 2434, 10630, 5555, 177, 1154, 3471, 3113, 594, 1271    1:0.0:1516, 322, 2096, 3, 233, 253, 193, 1019, 31, 297, 145, 80, 4798, 1857, 1257, 5020, 72, 7482, 3869, 793, 29, 345, 63, 42, 168, 1724, 131, 403, 41, 234, 32, 128, 46, 324, 89, 3169, 116, 921, 1246, 618, 156, 411, 63, 1767, 309, 365, 448, 3921, 535, 1350, 23, 254, 57, 491, 117, 141, 220, 52, 272, 508, 30, 23, 38, 8691, 3, 232, 3, 2016, 1524, 1143, 240, 81, 8, 77, 617, 841

**reason**  $\rightarrow$  0:0.0:2671, 2245, 6187, 8307, 4575, 1863, 35, 5892, 498, 12599, 2778, 571, 304, 2374, 10505, 1812, 1469, 3243, 6690, 1011, 12936, 10658, 558, 3071, 1921, 17822, 2433, 1296, 7839, 1171, 11338, 4020, 11, 11, 1180, 6295, 76, 3737, 6741, 16344, 18848, 2292, 5942, 3322, 8335, 708, 13649, 1925, 25825, 4412, 6575, 1921, 2104, 316, 316, 2506, 23734, 3497, 34, 2073, 3410, 598, 7065, 11985, 118, 8212, 866, 59, 1647, 1745, 904, 44, 1, 27, 6, 309, 350, 7258, 12, 594, 1448    1:0.0:5785, 8, 6265, 6392, 85, 896, 901, 1260, 231, 9, 3105, 1643, 2321, 3271, 3632, 10459, 477, 2999, 1479, 2445, 412, 7381, 1957, 978, 2412, 1872, 921, 13, 665, 440, 281, 953, 911, 4048, 439, 2259, 3327, 5219, 4609, 378, 4539, 523, 14589, 906, 2550, 1962, 1790, 557, 666, 5341, 2294, 79, 5847, 4246, 961, 727, 1096, 66, 115, 1644, 4352, 1125, 1517, 4869, 2623, 500, 2403, 2347    1:0.0:4468, 17728, 1469, 158, 9299, 545, 6141, 5, 3291, 876, 12755, 7, 8694, 599, 356, 6639, 722, 2588, 601, 1584, 4025, 119, 14161, 3495, 2596, 8770, 1500, 4660, 7303, 178, 565, 2033, 3809, 13214, 1451, 2109, 3933, 4333, 15531, 6566, 11962    1:0.0:6007, 3374, 138, 964, 2921, 4910, 38, 5636, 226, 1638, 11011, 370, 6938, 2523, 6851, 338, 5230, 6322, 251, 1602, 4592, 697, 351, 71, 3832, 905, 2294, 418, 119, 2153, 25, 185, 48, 14, 934, 869, 8367, 695, 1483, 931, 8451, 7034, 5632, 1915, 550, 168, 830, 303, 5489, 3623, 2601, 915, 2160, 70, 2205, 1304, 500, 167, 1478, 116, 47, 196, 212, 1490, 332, 440, 454, 2715, 5592, 659, 1486, 50, 206, 5181, 11, 823, 3582, 13001, 870, 69, 1058, 6071, 9583, 132, 3339, 477, 581, 1397, 6448, 10321, 1502    1:0.0:2436, 1958, 1112, 2953, 587, 3957, 33, 243, 65, 2804, 978, 1337, 2571, 2410, 11405, 229, 5416, 558, 104, 766, 1699, 217, 26, 1503, 3658, 92, 97, 182, 1582, 1455, 388, 3007, 12, 375, 594, 1387, 3272, 4437, 34, 2345, 1997, 172, 4305, 2839, 177, 1171, 2215, 1586, 16, 2410, 2673, 233, 3453, 360, 617, 1581, 164, 1309, 2591, 54, 300, 2071, 5065, 21, 16, 14, 7861, 9538    1:0.0:2868, 1144, 2104, 2, 2991, 1965, 508, 259, 816, 812, 11, 41, 784, 68, 484, 564, 1333, 757, 1014, 5932, 1721, 77, 1026, 6984, 6732, 1181, 704, 443, 353, 363, 379, 552, 236, 645, 822, 512, 5318, 1650, 298, 552, 3173, 719, 13, 809, 20, 1625, 249, 8, 266, 2079, 343, 928, 2807, 571, 3019, 3714, 100, 105, 2553, 1509, 3189, 304, 2346, 217, 6, 1002, 1802, 5044, 506, 1138, 11, 155, 1961, 463, 1072, 135, 660,

---

2187, 2239, 353, 2578, 7649, 7, 2387, 2532     1:0.0:6018, 3202, 5341, 3465, 336, 4779, 617, 5174, 1526, 2432, 63, 1075, 444, 82, 1086, 2638, 2222, 1422, 1489, 2941, 1534, 1040, 3661, 2206, 2954, 84, 82, 1639, 101, 497, 1627, 2898, 620, 2825, 1576, 749, 1552, 1781, 659, 273, 7381, 773, 2195, 183, 1570, 2044, 3976, 6856, 853, 558, 494, 397, 671, 136, 13, 2512, 401, 2339, 735, 341, 361, 1872, 388, 147, 705, 585, 555, 568, 116, 1682, 236, 2548, 1389, 189, 10, 820, 2957     1:0.0:5736, 11523, 18150, 153, 5119, 12201, 4647, 12203

**sentiment** → 0:0.0:9283, 47358, 14334, 52249, 62530, 39541, 1212, 56, 26019, 24186, 42477     1:0.0:7312, 8415, 190, 5305, 1567, 13554, 1058, 5190, 4201, 19215, 19833, 1889, 2192, 193, 13891, 29094, 789, 9669, 602 1:0.0:1666, 7551, 3179, 1182, 7155, 10119, 26962, 7598, 395, 6168, 4222, 122, 1289, 16141, 2417, 16681, 32961, 951, 1645, 7281, 1088, 13791, 396 1:0.0:46523, 11060, 5867, 4536, 93353     1:0.0:8458, 4561, 5841, 9292, 1615, 19727, 696, 3259, 9029, 15085, 2848, 8642, 3167, 1255, 7698, 11291 1:0.0:6154, 13290, 11, 5343, 1804, 2014, 5762, 2719, 9759, 3405, 3168, 3617, 12397, 13550, 32014, 1256     1:0.0:8297, 21480, 29528, 1816, 125, 385, 1045, 7244, 7705, 9291, 10123, 5716, 2506, 6306, 1422, 2634, 1805     1:0.0:25632, 41600

**sister** → 0:0.0:1744, 54, 4132, 44, 2407, 676, 131, 331, 93, 8904, 1112, 5601, 167, 2285, 321, 22, 230, 162, 16, 24, 44, 189, 80, 344, 452, 110, 351, 13, 710, 1244, 9981, 49, 947, 527, 3702, 4959, 1412, 236, 92, 216, 66, 14, 83, 2, 47, 196, 254, 19, 10695, 6524, 13620, 8562, 4625, 3440, 1351, 10701, 1158, 3709, 675, 30, 23573, 287, 1503, 1219, 66, 155, 116, 4487, 11353, 4919, 536, 235, 277, 1647, 2623, 266, 431, 597, 3374, 19, 11315, 1042, 45, 7911, 994, 1837, 320, 322, 95, 128, 16243, 15369, 1080, 8962, 7099, 9062, 7042, 179, 1327, 325, 5246, 10816, 75, 10930, 23, 885, 688, 2601, 1364, 1274, 249, 2676, 2301, 717, 70, 76, 155, 22, 7954, 3246, 1136, 235, 96, 224, 2550, 8765, 257, 506, 6490, 2984, 371, 1350, 1791, 482, 41, 863     1:0.0:74, 89, 619, 7188, 788, 204, 2207, 816, 302, 33, 1409, 1783, 298, 1482, 184, 160, 51, 3619, 4838, 1912, 1603, 460, 237, 39, 3602, 1141, 6082, 17434, 412, 970, 573, 29218, 258, 169, 3550, 7974, 1240, 331, 6363, 10, 7213, 33297, 472, 1866, 5067 1:0.0:1917, 297, 1992, 920, 2877, 1354, 27086, 13562, 7, 15188, 4983, 665, 363, 8349, 10704, 2394, 874, 22, 1469, 545, 1185, 2332, 534, 20250, 646, 25, 6195, 12091, 1434, 410, 1856, 1033, 435, 761, 390, 227, 114, 911, 105, 206, 622, 1688, 436, 1054, 3369, 6673, 20, 54, 203, 456, 403, 27, 4, 19, 185, 76, 846, 1635, 533, 181, 419, 138, 193, 282, 65, 3131, 79, 30, 109, 150, 2, 958, 17, 630, 675, 1075, 592, 8210, 3278, 84     1:0.0:17022, 9037, 9662, 4636, 112, 2081     1:0.0:4866, 5143, 10, 62, 5, 34, 50, 3524, 1304, 112, 1058, 122, 147, 94, 211, 312, 1102, 61, 87, 3343, 94, 3410, 110, 1157, 5346, 11, 57, 13, 433, 2142, 331, 319, 90, 49, 96, 564, 5356, 333, 12978, 892, 143, 1195, 259, 633, 2569, 47, 205, 33, 116, 1671, 7465, 551, 6662, 3815, 3382, 10200, 258, 640, 106, 28, 73, 59, 168, 83, 20, 127, 87, 109, 169, 135, 363, 278, 54, 88,

---

5473, 1676, 1083, 329, 1265, 17, 148, 102, 18, 847, 3323, 60, 2960, 375, 15, 1899, 2835, 617    1:0.0:5626, 2836, 108, 194, 132, 187, 86, 11067, 1992, 122, 10801, 20591, 6154, 117, 173, 49, 213, 15289, 2058, 6966, 6259, 1270, 1022, 560, 123, 2450, 208, 591, 307, 18, 450, 580, 2025, 911, 1167, 138, 1141, 181, 4770, 5752, 123    1:0.0:662, 1437, 22, 27, 412, 105, 177, 386, 172, 306, 88, 234, 362, 952, 123, 43, 272, 514, 561, 108, 890, 100, 878, 656, 110, 255, 125, 153, 108, 61, 130, 54, 122, 84, 317, 594, 20, 69, 43, 12, 45, 221, 634, 279, 194, 219, 226, 150, 58, 1191, 753, 221, 1342, 44, 106, 126, 3110, 665, 1121, 2527, 522, 88, 783, 608, 1266, 251, 562, 320, 91, 119, 965, 61, 141, 71, 520, 435, 34, 289, 59, 4278, 372, 258, 57, 69, 91, 390, 14, 31, 143, 1921, 205, 452, 385, 45, 720, 120, 87, 105, 162, 610, 141, 91, 166, 428, 150, 40, 75, 99, 363, 170, 187, 1354, 237, 94, 43, 244, 232, 56, 505, 503, 695, 658, 178, 1961, 146, 359, 34, 34, 91, 1552, 549, 302, 1017, 678, 1368, 1020, 243, 885, 176, 777, 679, 199, 70, 58, 67, 41, 204, 67, 84, 108, 118, 92, 849, 210, 38, 424, 1231, 109, 158, 137, 2558, 96, 99, 111, 1196, 274, 87, 349, 400, 228, 106, 134, 741, 583, 67, 301, 953, 384, 41, 204, 154, 2089, 626, 2262, 80, 109, 798, 13, 760, 103, 145, 275, 165, 639, 1033, 134, 375, 427, 87, 453, 1038, 542, 986, 544, 1098, 768, 132, 491, 187, 994, 214, 1846, 336, 265, 268, 500, 449, 337, 156, 1094, 70, 930, 153, 74, 161, 2, 214, 238, 128, 89, 59, 307, 560, 523, 579, 1082, 469, 69, 203, 318, 23, 66, 116, 279, 67, 345, 300, 219, 119, 15, 278, 400, 543, 402, 218, 94, 509, 577, 361, 376, 218, 90, 97, 146, 35, 42, 24, 448, 100, 114, 707, 535, 480, 852, 38, 635, 35, 771, 1020, 1663, 240, 54, 103, 40, 612, 2693, 547, 202, 331, 49, 149, 35, 519, 114    1:0.0:8627, 13203, 28951, 13673

**summer**  $\rightarrow$  0:0.0:67890, 952, 31, 1023, 6711, 6, 4101, 3376, 4068, 459, 17, 9350, 5807, 1064, 16, 494, 204, 5010, 3322, 346, 85, 20, 1237, 2364, 3632, 4063, 3305, 1937, 12065, 5745, 3888, 11899, 928, 46229, 31579, 33, 24, 53, 193, 6655, 3211, 5267, 8925, 12657, 2857, 14356, 21321, 1668, 3849, 13293, 1299, 17424    1:0.0:5863, 1777, 19, 7302, 5, 3601, 1392, 31406, 17288, 40, 2798, 5180, 13593, 137, 27, 1960, 6607, 888, 10068, 5176, 2949, 5452, 17507    1:0.0:831, 30910, 7314, 6080, 4804, 10401, 7393, 32484, 2793, 3129, 8102, 9339, 9906, 590, 593, 3386, 28834, 9917, 3513    1:0.0:1214, 6130, 13, 9293, 91, 10721, 18615, 5, 15092, 2678, 56381, 32003, 8, 20467, 13146, 4903, 15520, 7604    1:0.0:6770, 37, 14449, 65382, 4596, 16164, 6455, 2538, 2547    1:0.0:3217, 3582, 1803, 12752, 2288, 5481, 50976, 1495, 2740, 5261 1:0.0:22672, 20388, 5301, 2586, 6960, 5254, 94, 3131, 2051, 44, 32, 2703, 3438, 3, 922, 1136, 6263, 1298, 26785    1:0.0:3691, 10810, 1701, 303, 7414, 14180, 1968, 4082, 630, 10549, 9950