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[[0, 0.1735, 0.6209, 0.9942, 0.3642, 0.7733000000000001, 0.5556, 0.7007, 0.7281, 0.9407, 1.8088, 1.8215, 2.7643, 2.2446, 2.9581, 3.3516, 2.0906, 1.9825, 1.8147, 1.1781, 1.0167, 1.9424, 1.7530999999999999, 1.4970999999999999, 1.3571, 1.2402, 0.9618, 1.2801, 2.1814999999999998, 2.2439999999999998, 0.8204, 0.3569, 1.3393000000000002, 1.1433, 1.4087, 1.4578, 1.508], [0.1735, 0, 0.7944, 1.1677, 0.5377000000000001, 0.9468000000000001, 0.7291000000000001, 0.8742, 0.9016000000000001, 1.1142, 1.9823, 1.9949999999999999, 2.9377999999999997, 2.4181, 3.1316, 3.5251, 2.2641, 2.156, 1.9882, 1.3516, 1.1902, 2.1159, 1.9266, 1.6705999999999999, 1.5306, 1.4137, 1.1353, 1.4536, 2.355, 2.4175, 0.7754, 0.5304, 1.5128, 1.3168, 1.5822, 1.6313, 1.6815], [0.6209, 0.7944, 0, 1.3005, 0.6705, 1.0796000000000001, 0.8619, 1.1491, 1.0344, 1.2469999999999999, 2.1151, 2.1277999999999997, 3.0705999999999998, 2.5509, 3.2644, 3.6579, 2.3968999999999996, 2.2888, 2.121, 1.4844, 1.323, 2.5633, 2.1863, 1.8034, 1.6634, 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(37, 37)

37

number\_of\_edges = 58

edge\_pairs = [[0, 1], [0, 2], [0, 4], [0, 27], [0, 31], [1, 30], [2, 4], [2, 28], [2, 29], [2, 32], [2, 33], [2, 35], [3, 4], [3, 5], [3, 27], [4, 5], [4, 6], [4, 8], [4, 14], [4, 15], [4, 26], [4, 28], [5, 20], [6, 7], [7, 8], [7, 22], [7, 31], [8, 9], [8, 22], [9, 13], [9, 16], [9, 22], [9, 26], [10, 11], [10, 12], [10, 13], [10, 17], [10, 19], [11, 12], [11, 19], [13, 26], [14, 31], [15, 27], [18, 24], [19, 20], [19, 23], [19, 24], [20, 26], [21, 22], [21, 31], [24, 25], [25, 26], [27, 36], [29, 31], [30, 31], [32, 33], [33, 34], [35, 36]]

edge\_weights = [0.1735, 0.6209, 0.3642, 1.2801, 0.3569, 0.7754, 0.6705, 1.5606, 2.1042, 0.7184, 0.5224, 0.8369, 0.63, 0.3137, 0.5335, 0.4091, 0.1914, 0.3639, 2.5939, 2.9874, 0.5976, 2.0206, 0.2911, 0.2872, 0.435, 1.0524, 0.3438, 0.2126, 1.1519, 1.4614, 1.1499, 1.1881, 0.6254, 0.2957, 1.0537, 0.5257, 0.1737, 0.6307, 0.9428, 0.6434, 1.2828, 3.2181, 2.7392, 0.4576, 0.1614, 0.319, 0.2994, 0.0549, 0.5023, 1.5855, 0.1169, 0.2784, 0.2279, 1.8871, 0.4653, 0.5295, 0.2654, 0.2796]

controllers = [[4], [4, 15], [6, 14, 15], [0, 5, 14, 15], [2, 14, 15, 20, 31], [2, 8, 10, 14, 15, 22]]

switches = [0, 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36]

all\_pairs\_1 = [[4, 0], [4, 1], [4, 2], [4, 3], [4, 5], [4, 6], [4, 7], [4, 8], [4, 9], [4, 10], [4, 11], [4, 12], [4, 13], [4, 14], [4, 15], [4, 16], [4, 17], [4, 18], [4, 19], [4, 20], [4, 21], [4, 22], [4, 23], [4, 24], [4, 25], [4, 26], [4, 27], [4, 28], [4, 29], [4, 30], [4, 31], [4, 32], [4, 33], [4, 34], [4, 35], [4, 36]]

bea\_val = 18

bea\_val\_list = [18, 18]

con\_swi = [[], []]

con\_dist = [[0.3642, 3.3516], [0.5377000000000001, 3.5251], [0.6705, 3.6579], [0.63, 3.2727], [0.4091, 3.3965], [0.1914, 3.1788], [0.4786, 3.4659999999999997], [0.3639, 3.3513], [0.5765, 3.5639000000000003], [1.4445999999999999, 4.432], [1.4573, 4.4447], [2.4001, 5.3875], [1.8803999999999998, 4.8678], [2.5939, 5.581300000000001], [1.7264, 4.7138], [1.6182999999999998, 4.605700000000001], [1.4505, 4.4379], [0.8139, 3.8013], [0.6525, 3.6399], [2.0181, 5.0055], [1.5158, 4.5032], [1.1329, 4.1203], [0.9929, 3.9802999999999997], [0.876, 3.8634], [0.5976, 3.585], [1.1635, 2.7392], [2.0206, 5.008], [2.6082, 5.5956], [1.1846, 4.172], [0.7211000000000001, 3.7085], [1.3889, 4.3763000000000005], [1.1928999999999998, 4.1803], [1.4583, 4.4456999999999995], [1.5074, 3.2466999999999997], [1.3914, 2.9671]]

con\_swi = [[0, 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19], [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36]]

bea\_val = 12

bea\_val\_list = [12, 12, 12]

con\_swi = [[], [], []]

con\_dist = [[0.5556, 2.9581, 3.3516], [0.7291, 3.1315999999999997, 3.5251], [0.8619, 3.2644, 3.6579], [0.8214, 3.2239, 3.2727], [0.1914, 2.5939, 2.9874], [0.6005, 3.003, 3.3965], [0.2872, 3.0725, 3.4659999999999997], [0.5553, 2.9578, 3.3513], [0.7679, 3.1704000000000003, 3.5639000000000003], [1.6360000000000001, 4.0385, 4.432], [1.6487, 4.0512, 4.4447], [2.5915, 4.994, 5.3875], [2.0718, 4.4742999999999995, 4.8678], [1.9178, 4.3203000000000005, 4.7138], [1.8097, 4.2122, 4.605700000000001], [1.6419000000000001, 4.0444, 4.4379], [1.0053, 3.4078, 3.8013], [0.8439, 3.2464, 3.6399], [1.8418999999999999, 4.612, 5.0055], [1.3396, 4.1097, 4.5032], [1.3243, 3.7268, 4.1203], [1.1843000000000001, 3.5868, 3.9802999999999997], [1.0674000000000001, 3.4699, 3.8634], [0.789, 3.1915, 3.585], [1.3549, 3.7574, 2.7392], [2.2119999999999997, 4.6145, 5.008], [2.5181, 5.1052, 5.5956], [1.0945, 3.6816000000000004, 4.172], [0.631, 3.2181, 3.7085], [1.5803, 3.9828, 4.3763000000000005], [1.3843, 3.7868000000000004, 4.1803], [1.6497000000000002, 4.0522, 4.4456999999999995], [1.6987999999999999, 4.1013, 3.2466999999999997], [1.5828, 3.9853, 2.9671]]

con\_swi = [[0, 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12], [13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26], [27, 28, 29, 30, 31, 32, 33, 34, 35, 36]]

bea\_val = 9

bea\_val\_list = [9, 9, 9, 9]

con\_swi = [[], [], [], []]

con\_dist = [[0.1735, 0.9468000000000001, 3.1315999999999997, 3.5251], [0.6209, 1.0796000000000001, 3.2644, 3.6579], [0.9942, 0.3137, 3.2239, 3.2727], [0.3642, 0.4091, 2.5939, 2.9874], [0.5556, 0.6005, 2.7853, 3.1788], [0.7007, 0.8877, 3.0725, 3.4659999999999997], [0.7281, 0.773, 2.9578, 3.3513], [0.9407, 0.9714, 3.1704000000000003, 3.5639000000000003], [1.8088, 1.0832000000000002, 4.0385, 4.432], [1.8215, 1.0958999999999999, 4.0512, 4.4447], [2.7643, 2.0387, 4.994, 5.3875], [2.2446, 1.6089000000000002, 4.4742999999999995, 4.8678], [2.0906, 2.1212999999999997, 4.3203000000000005, 4.7138], [1.9825, 1.2569000000000001, 4.2122, 4.605700000000001], [1.8147, 1.1989, 4.0444, 4.4379], [1.1781, 0.4525, 3.4078, 3.8013], [1.0167, 0.2911, 3.2464, 3.6399], [1.9424, 2.4272, 4.612, 5.0055], [1.7530999999999999, 1.9249, 4.1097, 4.5032], [1.4970999999999999, 0.7715000000000001, 3.7268, 4.1203], [1.3571, 0.7413000000000001, 3.5868, 3.9802999999999997], [1.2402, 0.6244000000000001, 3.4699, 3.8634], [0.9618, 0.34600000000000003, 3.1915, 3.585], [1.2801, 0.8472, 3.7574, 2.7392], [2.1814999999999998, 2.4297, 4.6145, 5.008], [2.2439999999999998, 3.0173, 5.1052, 5.5956], [0.8204, 1.5937000000000001, 3.6816000000000004, 4.172], [0.3569, 1.1302, 3.2181, 3.7085], [1.3393000000000002, 1.798, 3.9828, 4.3763000000000005], [1.1433, 1.602, 3.7868000000000004, 4.1803], [1.4087, 1.8674000000000002, 4.0522, 4.4456999999999995], [1.4578, 1.3547, 4.1013, 3.2466999999999997], [1.508, 1.0751, 3.9853, 2.9671]]

con\_swi = [[1, 2, 4, 6, 7, 8, 9, 16, 21], [3, 10, 11, 12, 13, 17, 18, 19, 20], [22, 23, 24, 25, 26, 27, 28, 29, 30], [31, 32, 33, 34, 35, 36]]

bea\_val = 7

bea\_val\_list = [7, 7, 7, 7, 7]

con\_swi = [[], [], [], [], []]

con\_dist = [[0.6209, 2.9581, 3.3516, 1.0167, 0.3569], [0.7944, 3.1315999999999997, 3.5251, 1.1902, 0.5304], [1.3005, 3.2239, 3.2727, 0.6048, 1.3511000000000002], [0.6705, 2.5939, 2.9874, 0.6525, 0.7211000000000001], [1.0796000000000001, 3.003, 3.3965, 0.2911, 1.1302], [0.8619, 2.7853, 3.1788, 0.8439, 0.631], [1.1491, 3.0725, 3.4659999999999997, 1.1311, 0.3438], [1.0344, 2.9578, 3.3513, 0.8928999999999999, 0.7787999999999999], [1.2469999999999999, 3.1704000000000003, 3.5639000000000003, 0.6802999999999999, 0.9914], [2.1151, 4.0385, 4.432, 0.7921, 2.1657], [2.1277999999999997, 4.0512, 4.4447, 0.8048, 2.1784], [3.0705999999999998, 4.994, 5.3875, 1.7475999999999998, 3.1212], [2.5509, 4.4742999999999995, 4.8678, 1.3178, 2.4528], [2.3968999999999996, 4.3203000000000005, 4.7138, 1.8301999999999998, 2.1412999999999998], [2.2888, 4.2122, 4.605700000000001, 0.9658, 2.3394000000000004], [2.121, 4.0444, 4.4379, 0.9077999999999999, 2.1716], [1.4844, 3.4078, 3.8013, 0.1614, 1.5350000000000001], [2.5633, 4.612, 5.0055, 2.3707, 1.5855], [2.1863, 4.1097, 4.5032, 1.8683999999999998, 1.3961999999999999], [1.8034, 3.7268, 4.1203, 0.4804, 1.854], [1.6634, 3.5868, 3.9802999999999997, 0.4502, 1.7140000000000002], [1.5465, 3.4699, 3.8634, 0.3333, 1.5971000000000002], [1.2681, 3.1915, 3.585, 0.0549, 1.3187000000000002], [1.3444, 3.7574, 2.7392, 1.1383, 1.637], [1.5606, 4.6145, 5.008, 2.6731, 2.5384], [2.1042, 5.1052, 5.5956, 3.2607, 1.8871], [1.4413, 3.6816000000000004, 4.172, 1.8371, 0.4635], [0.7184, 3.9828, 4.3763000000000005, 2.0414, 1.6962000000000002], [0.5224, 3.7868000000000004, 4.1803, 1.8454, 1.5002], [0.7878000000000001, 4.0522, 4.4456999999999995, 2.1108, 1.7656], [0.8369, 4.1013, 3.2466999999999997, 1.6458000000000002, 1.8147], [1.1165, 3.9853, 2.9671, 1.3662, 1.8649]]

con\_swi = [[13, 16, 17, 18, 19, 23, 24], [25, 26, 27, 28, 29, 30, 32], [33, 34, 35, 36], [3, 4, 5, 9, 10, 11, 12], [0, 1, 6, 7, 8, 21, 22]]

bea\_val = 6

bea\_val\_list = [6, 6, 6, 6, 6, 6]

con\_swi = [[], [], [], [], [], []]

con\_dist = [[0.6209, 0.7281, 1.8088, 2.9581, 3.3516, 1.7530999999999999], [0.7944, 0.9016, 1.9823, 3.1315999999999997, 3.5251, 1.9265999999999999], [1.3005, 0.9939, 1.3969, 3.2239, 3.2727, 2.1458], [0.6705, 0.3639, 1.4445999999999999, 2.5939, 2.9874, 1.5158], [1.0796000000000001, 0.773, 1.0832000000000002, 3.003, 3.3965, 1.9249], [0.8619, 0.5553, 1.636, 2.7853, 3.1788, 1.3396], [1.1491, 0.435, 1.9232, 3.0725, 3.4659999999999997, 1.0524], [1.2469999999999999, 0.2126, 1.4724, 3.1704000000000003, 3.5639000000000003, 1.1881], [2.1277999999999997, 1.6977, 0.2957, 4.0512, 4.4447, 2.6731999999999996], [3.0705999999999998, 2.6405, 1.0537, 4.994, 5.3875, 3.6159999999999997], [2.5509, 1.674, 0.5257, 4.4742999999999995, 4.8678, 2.6494999999999997], [2.3968999999999996, 1.3624999999999998, 2.6223, 4.3203000000000005, 4.7138, 2.338], [2.2888, 1.8587, 0.1737, 4.2122, 4.605700000000001, 2.8342], [2.121, 1.6909, 1.3877000000000002, 4.0444, 4.4379, 2.6664000000000003], [1.4844, 1.0543, 0.6307, 3.4078, 3.8013, 2.0298], [1.323, 0.8928999999999999, 0.7921, 3.2464, 3.6399, 1.8683999999999998], [2.5633, 1.6542, 3.1628, 4.612, 5.0055, 0.5023], [1.8034, 1.3733, 0.9497, 3.7268, 4.1203, 2.3487999999999998], [1.6634, 1.2333, 0.9301, 3.5868, 3.9802999999999997, 2.2088], [1.5465, 1.1164, 1.0470000000000002, 3.4699, 3.8634, 2.0919], [1.2681, 0.838, 0.847, 3.1915, 3.585, 1.8135], [1.3444, 1.5274, 1.9304000000000001, 3.7574, 2.7392, 2.6793], [1.5606, 2.3845, 3.4652, 4.6145, 5.008, 3.5364], [2.1042, 2.6658999999999997, 4.0528, 5.1052, 5.5956, 3.2832999999999997], [1.4413, 1.2423, 2.6292, 3.6816000000000004, 4.172, 1.8597], [0.9778, 0.7787999999999999, 2.1657, 3.2181, 3.7085, 1.3961999999999999], [0.7184, 1.7528000000000001, 2.8335, 3.9828, 4.3763000000000005, 2.9047], [0.5224, 1.5568, 2.6375, 3.7868000000000004, 4.1803, 2.7087000000000003], [0.7878000000000001, 1.8222, 2.9029000000000003, 4.0522, 4.4456999999999995, 2.9741000000000004], [0.8369, 1.8713, 2.4379, 4.1013, 3.2466999999999997, 3.0232], [1.1165, 1.7553, 2.1583, 3.9853, 2.9671, 2.9072]]

con\_swi = [[0, 1, 16, 20, 23, 24], [3, 4, 5, 6, 7, 9], [11, 12, 13, 17, 18, 19], [25, 26, 27, 28, 29, 30], [31, 32, 33, 34, 35, 36], [21]]

switches\_assigned = [[[0, 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19], [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36]], [[0, 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12], [13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26], [27, 28, 29, 30, 31, 32, 33, 34, 35, 36]], [[1, 2, 4, 6, 7, 8, 9, 16, 21], [3, 10, 11, 12, 13, 17, 18, 19, 20], [22, 23, 24, 25, 26, 27, 28, 29, 30], [31, 32, 33, 34, 35, 36]], [[13, 16, 17, 18, 19, 23, 24], [25, 26, 27, 28, 29, 30, 32], [33, 34, 35, 36], [3, 4, 5, 9, 10, 11, 12], [0, 1, 6, 7, 8, 21, 22]], [[0, 1, 16, 20, 23, 24], [3, 4, 5, 6, 7, 9], [11, 12, 13, 17, 18, 19], [25, 26, 27, 28, 29, 30], [31, 32, 33, 34, 35, 36], [21]]]

all\_pairs\_2 = [[4, 0], [4, 1], [4, 2], [4, 3], [4, 5], [4, 6], [4, 7], [4, 8], [4, 9], [4, 10], [4, 11], [4, 12], [4, 13], [4, 14], [4, 16], [4, 17], [4, 18], [4, 19], [15, 20], [15, 21], [15, 22], [15, 23], [15, 24], [15, 25], [15, 26], [15, 27], [15, 28], [15, 29], [15, 30], [15, 31], [15, 32], [15, 33], [15, 34], [15, 35], [15, 36]]

Length of all\_pairs\_2 = 35

all\_pairs\_3 = [[6, 0], [6, 1], [6, 2], [6, 3], [6, 4], [6, 5], [6, 7], [6, 8], [6, 9], [6, 10], [6, 11], [6, 12], [14, 13], [14, 16], [14, 17], [14, 18], [14, 19], [14, 20], [14, 21], [14, 22], [14, 23], [14, 24], [14, 25], [14, 26], [15, 27], [15, 28], [15, 29], [15, 30], [15, 31], [15, 32], [15, 33], [15, 34], [15, 35], [15, 36]]

all\_pairs\_4 = [[0, 1], [0, 2], [0, 4], [0, 6], [0, 7], [0, 8], [0, 9], [0, 16], [0, 21], [5, 3], [5, 10], [5, 11], [5, 12], [5, 13], [5, 17], [5, 18], [5, 19], [5, 20], [14, 22], [14, 23], [14, 24], [14, 25], [14, 26], [14, 27], [14, 28], [14, 29], [14, 30], [15, 31], [15, 32], [15, 33], [15, 34], [15, 35], [15, 36]]

all\_pairs\_5 = [[2, 13], [2, 16], [2, 17], [2, 18], [2, 19], [2, 23], [2, 24], [14, 25], [14, 26], [14, 27], [14, 28], [14, 29], [14, 30], [14, 32], [15, 33], [15, 34], [15, 35], [15, 36], [20, 3], [20, 4], [20, 5], [20, 9], [20, 10], [20, 11], [20, 12], [31, 0], [31, 1], [31, 6], [31, 7], [31, 8], [31, 21], [31, 22]]

all\_pairs\_6 = [[2, 0], [2, 1], [2, 16], [2, 20], [2, 23], [2, 24], [8, 3], [8, 4], [8, 5], [8, 6], [8, 7], [8, 9], [10, 11], [10, 12], [10, 13], [10, 17], [10, 18], [10, 19], [14, 25], [14, 26], [14, 27], [14, 28], [14, 29], [14, 30], [15, 31], [15, 32], [15, 33], [15, 34], [15, 35], [15, 36], [22, 21]]

population = [[8, 374, 770, 385, 956, 1062, 744, 155, 1041, 843, 756, 1124, 920, 379, 772, 1042, 850, 121, 658, 74, 706, 49, 381, 396, 295, 1160, 333, 735, 164, 958, 383, 31, 842, 848, 344, 1011, 618, 96, 787, 948, 991, 572, 556, 60, 622, 922, 490, 520, 743, 134, 429, 186, 917, 459, 734, 153, 214, 1119], [915, 812, 1098, 718, 155, 1158, 784, 449, 840, 382, 1197, 1133, 127, 61, 225, 944, 1025, 99, 526, 49, 241, 455, 752, 487, 310, 1130, 223, 501, 705, 401, 788, 651, 1101, 380, 486, 1047, 94, 769, 263, 1000, 886, 62, 1013, 966, 185, 508, 505, 360, 655, 467, 558, 116, 719, 179, 660, 700, 685, 966], [1150, 736, 483, 851, 1164, 385, 357, 911, 165, 463, 911, 263, 722, 752, 268, 1044, 178, 873, 1157, 1168, 433, 195, 1020, 84, 376, 772, 639, 510, 1000, 899, 213, 697, 266, 740, 1066, 847, 805, 526, 240, 611, 375, 717, 934, 953, 189, 310, 666, 613, 16, 273, 887, 491, 146, 124, 40, 998, 739, 1165], [666, 404, 129, 483, 202, 405, 493, 507, 1132, 448, 1063, 924, 392, 323, 853, 842, 1035, 62, 774, 286, 457, 1106, 351, 1162, 429, 406, 489, 998, 184, 934, 152, 851, 85, 403, 450, 543, 1060, 880, 714, 609, 167, 1006, 1105, 7, 781, 231, 30, 13, 1078, 662, 1052, 980, 381, 1195, 621, 415, 144, 837], [849, 163, 575, 417, 159, 981, 589, 428, 850, 95, 620, 1070, 1139, 719, 689, 903, 410, 222, 683, 507, 619, 961, 315, 846, 103, 830, 910, 806, 91, 411, 995, 742, 71, 729, 916, 520, 113, 275, 46, 309, 874, 430, 367, 316, 1193, 806, 366, 1064, 747, 274, 188, 24, 865, 21, 1185, 361, 797, 1133], [1172, 841, 407, 226, 441, 958, 100, 736, 133, 820, 239, 1168, 526, 590, 258, 141, 613, 709, 616, 1118, 699, 351, 918, 454, 1066, 721, 394, 677, 343, 843, 927, 1008, 625, 685, 719, 925, 174, 191, 1061, 681, 128, 1131, 885, 624, 966, 953, 478, 290, 825, 742, 540, 239, 356, 562, 908, 10, 1189, 533], [824, 321, 766, 855, 274, 894, 792, 134, 27, 36, 733, 764, 731, 398, 269, 464, 397, 478, 1101, 484, 920, 582, 685, 337, 1055, 166, 474, 14, 932, 104, 1171, 684, 397, 522, 519, 475, 895, 817, 349, 585, 856, 121, 1109, 462, 311, 1008, 1110, 52, 374, 366, 53, 205, 270, 1017, 543, 458, 1149, 1194], [1017, 1177, 1054, 1156, 321, 93, 1154, 997, 314, 91, 671, 201, 440, 644, 492, 911, 71, 333, 889, 498, 28, 59, 1004, 668, 710, 148, 419, 1132, 158, 601, 683, 754, 560, 638, 559, 437, 871, 705, 266, 908, 198, 846, 357, 799, 987, 804, 894, 111, 681, 1156, 1116, 312, 678, 936, 219, 1073, 714, 866], [4, 526, 1191, 33, 922, 241, 879, 867, 975, 8, 909, 82, 1184, 181, 637, 699, 1019, 1134, 191, 952, 713, 219, 589, 940, 755, 267, 474, 419, 1081, 1148, 652, 536, 742, 243, 49, 200, 663, 1070, 1164, 648, 1066, 323, 543, 715, 353, 644, 778, 874, 714, 189, 186, 883, 493, 1059, 937, 750, 280, 209], [584, 708, 703, 629, 420, 30, 152, 887, 599, 1004, 852, 402, 961, 1143, 106, 110, 227, 717, 468, 932, 311, 600, 318, 1077, 1131, 420, 777, 877, 487, 672, 529, 741, 1160, 36, 488, 1089, 679, 616, 323, 1177, 252, 239, 70, 926, 776, 228, 1089, 646, 274, 660, 1057, 554, 175, 226, 669, 401, 467, 962]]

0

no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

1

no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

2

no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

3

no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

4

no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

5

no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

6

no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

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graded\_population = [[648, 1171, 901, 251, 886, 617, 515, 183, 132, 278, 14, 364, 1142, 864, 39, 1142, 553, 837, 358, 1147, 650, 557, 732, 634, 630, 1071, 1011, 304, 1146, 944, 677, 445, 395, 348, 262, 980, 238, 331, 1052, 703, 596, 612, 1169, 649, 23, 771, 535, 312, 1066, 873, 109, 602, 115, 549, 681, 893, 2, 67], [176, 537, 1191, 528, 466, 173, 161, 859, 668, 115, 835, 888, 1101, 780, 565, 887, 601, 12, 958, 894, 1011, 541, 357, 605, 1108, 326, 669, 305, 1140, 264, 461, 1129, 784, 560, 585, 726, 850, 779, 1059, 181, 91, 182, 1015, 1130, 1176, 200, 703, 790, 1009, 332, 425, 300, 495, 635, 507, 1069, 626, 523], [176, 537, 1191, 528, 466, 173, 161, 859, 668, 115, 835, 888, 1101, 780, 565, 887, 601, 12, 958, 894, 1011, 541, 357, 605, 1108, 326, 669, 305, 1140, 264, 461, 1129, 784, 560, 585, 726, 850, 779, 1059, 181, 91, 182, 1015, 1130, 1176, 200, 703, 790, 1009, 332, 425, 300, 495, 635, 507, 1069, 626, 523], [460, 694, 1127, 482, 39, 293, 608, 19, 99, 982, 56, 627, 971, 62, 1010, 737, 99, 1166, 274, 703, 757, 322, 987, 184, 205, 296, 732, 1184, 482, 136, 959, 847, 1059, 1012, 414, 586, 583, 937, 746, 796, 1093, 648, 962, 667, 463, 1123, 235, 1012, 389, 1112, 624, 1058, 436, 965, 980, 569, 283, 361], [22, 142, 1032, 434, 72, 39, 64, 1094, 844, 184, 986, 169, 44, 592, 93, 368, 313, 1075, 1013, 405, 268, 278, 867, 612, 800, 381, 571, 707, 639, 103, 1131, 1144, 733, 30, 1069, 465, 1110, 311, 1017, 129, 745, 1153, 57, 1193, 5, 832, 1194, 750, 259, 1130, 783, 528, 918, 888, 1047, 590, 679, 35], [22, 142, 1032, 434, 72, 39, 64, 1094, 844, 184, 986, 169, 44, 592, 93, 368, 313, 1075, 1013, 405, 268, 278, 867, 612, 800, 381, 571, 707, 639, 103, 1131, 1144, 733, 30, 1069, 465, 1110, 311, 1017, 129, 745, 1153, 57, 1193, 5, 832, 1194, 750, 259, 1130, 783, 528, 918, 888, 1047, 590, 679, 35], [22, 142, 1032, 434, 72, 39, 64, 1094, 844, 184, 986, 169, 44, 592, 93, 368, 313, 1075, 1013, 405, 268, 278, 867, 612, 800, 381, 571, 707, 639, 103, 1131, 1144, 733, 30, 1069, 465, 1110, 311, 1017, 129, 745, 1153, 57, 1193, 5, 832, 1194, 750, 259, 1130, 783, 528, 918, 888, 1047, 590, 679, 35], [22, 142, 1032, 434, 72, 39, 64, 1094, 844, 184, 986, 169, 44, 592, 93, 368, 313, 1075, 1013, 405, 268, 278, 867, 612, 800, 381, 571, 707, 639, 103, 1131, 1144, 733, 30, 1069, 465, 1110, 311, 1017, 129, 745, 1153, 57, 1193, 5, 832, 1194, 750, 259, 1130, 783, 528, 918, 888, 1047, 590, 679, 35], [22, 142, 1032, 434, 72, 39, 64, 1094, 844, 184, 986, 169, 44, 592, 93, 368, 313, 1075, 1013, 405, 268, 278, 867, 612, 800, 381, 571, 707, 639, 103, 1131, 1144, 733, 30, 1069, 465, 1110, 311, 1017, 129, 745, 1153, 57, 1193, 5, 832, 1194, 750, 259, 1130, 783, 528, 918, 888, 1047, 590, 679, 35], [22, 142, 1032, 434, 72, 39, 64, 1094, 844, 184, 986, 169, 44, 592, 93, 368, 313, 1075, 1013, 405, 268, 278, 867, 612, 800, 381, 571, 707, 639, 103, 1131, 1144, 733, 30, 1069, 465, 1110, 311, 1017, 129, 745, 1153, 57, 1193, 5, 832, 1194, 750, 259, 1130, 783, 528, 918, 888, 1047, 590, 679, 35]]

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total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

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no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

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no\_of\_active\_edges = 36.0

total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

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total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

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graded\_population = [[689, 517, 653, 820, 920, 1193, 959, 1094, 1074, 328, 859, 351, 359, 842, 236, 368, 897, 368, 1070, 423, 945, 240, 644, 743, 800, 94, 288, 876, 1053, 103, 341, 163, 4, 352, 780, 972, 1087, 1118, 1017, 129, 745, 52, 866, 1018, 12, 189, 944, 750, 1152, 559, 481, 400, 918, 888, 686, 304, 136, 253], [689, 517, 653, 820, 920, 1193, 959, 1094, 1074, 328, 859, 351, 359, 842, 236, 368, 897, 368, 1070, 423, 945, 240, 644, 743, 800, 94, 288, 876, 1053, 103, 341, 163, 4, 352, 780, 972, 1087, 1118, 1017, 129, 745, 52, 866, 1018, 12, 189, 944, 750, 1152, 559, 481, 400, 918, 888, 686, 304, 136, 253], [592, 631, 965, 1015, 411, 638, 770, 282, 303, 1150, 1005, 364, 506, 414, 200, 365, 128, 210, 774, 531, 65, 1098, 404, 784, 545, 739, 245, 1020, 315, 541, 1003, 275, 999, 863, 961, 390, 5, 1112, 246, 1114, 540, 618, 56, 1006, 7, 802, 114, 1104, 594, 715, 325, 10, 739, 673, 375, 1195, 433, 278], [540, 307, 771, 361, 830, 277, 30, 41, 618, 12, 538, 476, 68, 679, 1171, 917, 4, 742, 742, 613, 693, 467, 826, 234, 700, 364, 534, 361, 704, 744, 646, 1120, 796, 258, 55, 413, 1199, 918, 723, 235, 260, 280, 1147, 435, 842, 999, 1145, 374, 796, 262, 626, 496, 240, 1026, 225, 680, 440, 1116], [1061, 1166, 1127, 482, 39, 293, 608, 19, 99, 982, 1104, 627, 347, 62, 938, 737, 824, 336, 274, 703, 757, 118, 987, 802, 205, 296, 732, 1184, 386, 136, 959, 847, 1092, 1012, 527, 480, 833, 611, 435, 136, 58, 987, 1169, 799, 434, 832, 535, 312, 816, 873, 109, 157, 115, 117, 658, 253, 290, 849], [766, 76, 1191, 661, 466, 1164, 499, 859, 255, 529, 71, 888, 1101, 725, 608, 887, 601, 12, 699, 716, 742, 665, 1139, 971, 88, 183, 669, 305, 1140, 264, 340, 674, 784, 560, 762, 726, 621, 779, 933, 407, 91, 182, 1015, 244, 1176, 200, 703, 1044, 1009, 332, 74, 300, 495, 212, 305, 960, 618, 855], [766, 76, 1191, 661, 466, 1164, 499, 859, 255, 529, 71, 888, 1101, 725, 608, 887, 601, 12, 699, 716, 742, 665, 1139, 971, 88, 183, 669, 305, 1140, 264, 340, 674, 784, 560, 762, 726, 621, 779, 933, 407, 91, 182, 1015, 244, 1176, 200, 703, 1044, 1009, 332, 74, 300, 495, 212, 305, 960, 618, 855], [849, 329, 29, 251, 381, 314, 613, 450, 238, 450, 14, 593, 968, 978, 672, 338, 553, 837, 358, 429, 650, 630, 701, 677, 1053, 1071, 423, 817, 680, 835, 677, 445, 393, 1030, 852, 586, 583, 726, 1163, 763, 1093, 925, 416, 546, 110, 307, 235, 677, 389, 16, 441, 817, 75, 1, 980, 788, 461, 69], [849, 329, 29, 251, 381, 314, 613, 450, 238, 450, 14, 593, 968, 978, 672, 338, 553, 837, 358, 429, 650, 630, 701, 677, 1053, 1071, 423, 817, 680, 835, 677, 445, 393, 1030, 852, 586, 583, 726, 1163, 763, 1093, 925, 416, 546, 110, 307, 235, 677, 389, 16, 441, 817, 75, 1, 980, 788, 461, 69], [849, 329, 29, 251, 381, 314, 613, 450, 238, 450, 14, 593, 968, 978, 672, 338, 553, 837, 358, 429, 650, 630, 701, 677, 1053, 1071, 423, 817, 680, 835, 677, 445, 393, 1030, 852, 586, 583, 726, 1163, 763, 1093, 925, 416, 546, 110, 307, 235, 677, 389, 16, 441, 817, 75, 1, 980, 788, 461, 69]]

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total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

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no\_of\_inactive\_edges = 22.0

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no\_of\_inactive\_edges = 22.0

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total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

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no\_of\_inactive\_edges = 22.0

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6

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no\_of\_inactive\_edges = 22.0

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total\_no\_of\_edges = 58

no\_of\_inactive\_edges = 22.0

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Best Solution = [507, 76, 525, 846, 248, 479, 499, 377, 255, 1015, 1168, 888, 379, 725, 608, 887, 192, 12, 699, 716, 742, 280, 881, 971, 1113, 785, 671, 305, 1140, 423, 1069, 674, 784, 1159, 762, 726, 560, 1137, 933, 168, 91, 660, 640, 342, 1176, 426, 703, 300, 339, 1112, 109, 20, 115, 117, 589, 253, 290, 849]

Maximum Energy Saving = 0.38304084943223715