

Key Expansion using the key: 1e0071c947d9e8591cb7add6af7f6798

Key Words Auxiliary Function

w0 = ['1e', '00', '71', 'c9'] RotWord = [['7f', '67', '98', 'af']]

w1 = ['47', 'd9', 'e8', '59'] SubWord = ['d2', '85', '46', '79']

w2 = ['1c', 'b7', 'ad', 'd6'] Rcon = ['01', '00', '00', '00']

w3 = ['af', '7f', '67', '98'] Z = ['d3', '85', '46', '79']

w4 = ['cd', '85', '37', 'b0'] RotWord = [['94', '15', 'a7', '39']]

w5 = ['8a', '5c', 'df', 'e9'] SubWord = ['22', '59', '5c', '12']

w6 = ['96', 'eb', '72', '3f'] Rcon = ['02', '00', '00', '00']

w7 = ['39', '94', '15', 'a7'] Z = ['20', '59', '5c', '12']

w8 = ['ed', 'dc', '6b', 'a2'] RotWord = [['ff', 'd3', 'd3', 'c8']]

w9 = ['67', '80', 'b4', '4b'] SubWord = ['16', '66', '66', 'e8']

w10 = ['f1', '6b', 'c6', '74'] Rcon = ['04', '00', '00', '00']

w11 = ['c8', 'ff', 'd3', 'd3'] Z = ['12', '66', '66', 'e8']

w12 = ['ff', 'ba', '0d', '4a'] RotWord = [['ae', 'ac', 'a6', 'a1']]

w13 = ['98', '3a', 'b9', '01'] SubWord = ['e4', '91', '24', '32']

w14 = ['69', '51', '7f', '75'] Rcon = ['08', '00', '00', '00']

w15 = ['a1', 'ae', 'ac', 'a6'] Z = ['ec', '91', '24', '32']

w16 = ['13', '2b', '29', '78'] RotWord = [['ee', '43', 'aa', '43']]

w17 = ['8b', '11', '90', '79'] SubWord = ['28', '1a', 'ac', '1a']

w18 = ['e2', '40', 'ef', '0c'] Rcon = ['10', '00', '00', '00']

w19 = ['43', 'ee', '43', 'aa'] Z = ['38', '1a', 'ac', '1a']

w20 = ['2b', '31', '85', '62'] RotWord = [['8e', 'b9', 'bd', '01']]

w21 = ['a0', '20', '15', '1b'] SubWord = ['19', '56', '7a', '7c']

w22 = ['42', '60', 'fa', '17'] Rcon = ['20', '00', '00', '00']

w23 = ['01', '8e', 'b9', 'bd'] Z = ['39', '56', '7a', '7c']

w24 = ['12', '67', 'ff', '1e'] RotWord = [['a9', 'a9', 'af', 'f1']]

w25 = ['b2', '47', 'ea', '05'] SubWord = ['d3', 'd3', '79', 'a1']

w26 = ['f0', '27', '10', '12'] Rcon = ['40', '00', '00', '00']

w27 = ['f1', 'a9', 'a9', 'af'] Z = ['93', 'd3', '79', 'a1']

w28 = ['81', 'b4', '86', 'bf'] RotWord = [['7d', 'd5', '07', '32']]

w29 = ['33', 'f3', '6c', 'ba'] SubWord = ['ff', '03', 'c5', '23']

w30 = ['c3', 'd4', '7c', 'a8'] Rcon = ['80', '00', '00', '00']

w31 = ['32', '7d', 'd5', '07'] Z = ['7f', '03', 'c5', '23']

w32 = ['fe', 'b7', '43', '9c'] RotWord = [['ed', '86', '89', '3c']]
w33 = ['cd', '44', '2f', '26'] SubWord = ['55', '44', 'a7', 'eb']
w34 = ['0e', '90', '53', '8e'] Rcon = ['1b', '00', '00', '00']
w35 = ['3c', 'ed', '86', '89'] Z = ['4e', '44', 'a7', 'eb']

w36 = ['b0', 'f3', 'e4', '77'] RotWord = [['ca', '1e', '56', '4f']]
w37 = ['7d', 'b7', 'cb', '51'] SubWord = ['74', '72', 'b1', '84']
w38 = ['73', '27', '98', 'df'] Rcon = ['36', '00', '00', '00']
w39 = ['4f', 'ca', '1e', '56'] Z = ['42', '72', 'b1', '84']

w40 = ['f2', '81', '55', 'f3']
w41 = ['8f', '36', '9e', 'a2']
w42 = ['fc', '11', '6', '7d']
w43 = ['b3', 'db', '18', '2b']

Final Expanded key: f28155f38f369ea2fc1167db3db182b

Performing AES on plaintext: 0321456789abcdeffedcba9876543210
With the key: 1e0071c947d9e8591cb7add6af7f6798

Start of Round	After SubBytes	After ShiftRows	After MixColumns
Round Key			
['03', '89', 'fe', '76']			['1e', '47', '1c', 'af']
['21', 'ab', 'dc', '54']			['00', 'd9', 'b7', '7f']
['45', 'cd', 'ba', '32']			['71', 'e8', 'ad', '67']
['67', 'ef', '98', '10']			['c9', '59', 'd6', '98']
['1d', 'ce', 'e2', 'd9']	['a4', '8b', '98', '35']	['a4', '8b', '98', '35']	['a7', '94', '75', '66'] ('cd', '8a', '96', '39')
['21', '72', '6b', '2b']	['fd', '40', '7f', 'f1']	['40', '7f', 'f1', 'fd']	['eb', '8e', '07', 'ba'] ('85', '5c', 'eb', '94')
['34', '25', '17', '55']	['18', '3f', 'f0', 'fc']	['f0', 'fc', '18', '3f']	['48', '20', '8b', 'c7'] ('37', 'df', '72', '15')
['ae', 'b6', '4e', '88']	['e4', '4e', '2f', 'c4']	['c4', 'e4', '4e', '2f']	['d4', 'd6', 'c6', 'c3'] ('b0', 'e9', '3f', 'a7')
['6a', '1e', 'e3', '5f']	['02', '72', '11', 'cf']	['02', '72', '11', 'cf']	['1a', '5b', 'd6', 'b0'] ('ed', '67', 'f1', 'c8')
['6e', 'd2', 'ec', '2e']	['9f', 'b5', 'ce', '31']	['b5', 'ce', '31', '9f']	['80', '72', '6b', '49'] ('dc', '80', '6b', 'ff')
['7f', 'ff', 'f9', 'd2']	['d2', '16', '99', 'b5']	['99', 'b5', 'd2', '16']	['5b', '08', '00', 'cc'] ('6b', 'b4', 'c6', 'd3')
['64', '3f', 'f9', '64']	['43', '75', '99', '43']	['43', '43', '75', '99']	['ac', '6b', '3a', 'ea'] ('a2', '4b', '74', 'd3')
['f7', '3c', '27', '78']	['68', 'eb', 'cc', 'bc']	['68', 'eb', 'cc', 'bc']	['f6', '03', 'e2', 'f7'] ('ff', '98', '69', 'a1')
['5c', 'f2', '00', 'b6']	['4a', '89', '63', '4e']	['89', '63', '4e', '4a']	['b4', 'dd', 'eb', 'a8'] ('ba', '3a', '51', 'ae')
['30', 'bc', 'c6', '1f']	['04', '65', 'b4', 'c0']	['b4', 'c0', '04', '65']	['a4', 'f5', '48', '4d'] ('0d', 'b9', '7f', 'ac')
['0e', '20', '4e', '39']	['ab', 'b7', '2f', '12']	['12', 'ab', 'b7', '2f']	['a1', 'c8', '70', 'ae'] ('4a', '01', '75', 'a6')
['09', '9b', '8b', '56']	['01', '14', '3d', 'b1']	['01', '14', '3d', 'b1']	['0f', '3e', 'c5', 'dd'] ('13', '8b', 'e2', '43')

['0e', 'e7', 'ba', '06'] ['ab', '94', 'f4', '6f'] ['94', 'f4', '6f', 'ab'] ['b7', '1d', '50', 'ec'] ('2b', '11', '40', 'ee')
['a9', '4c', '37', 'e1'] ['d3', '29', '9a', 'f8'] ['9a', 'f8', 'd3', '29'] ['ea', '2b', '93', 'f5'] ('29', '90', 'ef', '43')
['eb', 'c9', '05', '08'] ['e9', 'dd', '6b', '30'] ['30', 'e9', 'dd', '6b'] ['6d', 'f9', '5a', '9c'] ('78', '79', '0c', 'aa')

['1c', 'b5', '27', '9e'] ['9c', 'd5', 'cc', '0b'] ['9c', 'd5', 'cc', '0b'] ['2f', 'e3', 'f9', '34'] ('2b', 'a0', '42', '01')
['9c', '0c', '10', '02'] ['de', 'fe', 'ca', '77'] ['fe', 'ca', '77', 'de'] ['4e', 'd1', '9d', '38'] ('31', '20', '60', '8e')
['c3', 'bb', '7c', 'b6'] ['2e', 'ea', '10', '4e'] ['10', '4e', '2e', 'ea'] ['4d', '68', 'ab', 'd2'] ('85', '15', 'fa', 'b9')
['15', '80', '56', '36'] ['59', 'cd', 'b1', '05'] ['05', '59', 'cd', 'b1'] ['5b', '52', '97', '50'] ('62', '1b', '17', 'bd')

['04', '43', 'bb', '35'] ['f2', '1a', 'ea', '96'] ['f2', '1a', 'ea', '96'] ['83', 'a5', 'ce', '68'] ('12', 'b2', 'f0', 'f1')
['7f', 'f1', 'fd', 'b6'] ['d2', 'a1', '54', '4e'] ['a1', '54', '4e', 'd2'] ['96', '21', '6e', 'fe'] ('67', '47', '27', 'a9')
['c8', '7d', '51', '6b'] ['e8', 'ff', 'd1', '7f'] ['d1', '7f', 'e8', 'ff'] ['15', '86', '22', 'ed'] ('ff', 'ea', '10', 'a9')
['39', '49', '80', 'ed'] ['12', '3b', 'cd', '55'] ['55', '12', '3b', 'cd'] ['d7', '21', 'f5', '0d'] ('1e', '05', '12', 'af')

['91', '17', '3e', '99'] ['81', 'f0', 'b2', 'ee'] ['81', 'f0', 'b2', 'ee'] ['55', '70', '23', 'fb'] ('81', '33', 'c3', '32')
['f1', '66', '49', '57'] ['a1', '33', '3b', '5b'] ['33', '3b', '5b', 'a1'] ['b8', '76', 'a0', 'd3'] ('b4', 'f3', 'd4', '7d')
['ea', '6c', '32', '44'] ['87', '50', '23', '1b'] ['23', '1b', '87', '50'] ['ba', '81', 'a6', '48'] ('86', '6c', '7c', 'd5')
['c9', '24', 'e7', 'a2'] ['dd', '36', '94', '3a'] ['3a', 'dd', '36', '94'] ['fc', '8a', '7d', 'eb'] ('bf', 'ba', 'a8', '07')

['d4', '43', 'e0', 'c9'] ['48', '1a', 'e1', 'dd'] ['48', '1a', 'e1', 'dd'] ['ab', 'dd', '01', 'ee'] ('fe', 'cd', '0e', '3c')
['0c', '85', '74', 'ae'] ['fe', '97', '92', 'e4'] ['97', '92', 'e4', 'fe'] ['4a', 'dd', '10', 'c6'] ('b7', '44', '90', 'ed')
['3c', 'ed', 'da', '9d'] ['eb', '55', '57', '5e'] ['57', '5e', 'eb', '55'] ['38', '1a', 'c4', '8c'] ('43', '2f', '53', '86')
['43', '30', 'd5', 'ec'] ['1a', '04', '03', 'ce'] ['ce', '1a', '04', '03'] ['9f', 'd6', '3f', 'd1'] ('9c', '26', '8e', '89')

['55', '10', '0f', 'd2'] ['fc', 'ca', '76', 'b5'] ['fc', 'ca', '76', 'b5'] ['28', 'df', '49', 'd3'] ('b0', '7d', '73', '4f')
['fd', '99', '80', '2b'] ['54', 'ee', 'cd', 'f1'] ['ee', 'cd', 'f1', '54'] ['d2', '99', '60', '74'] ('f3', 'b7', '27', 'ca')
['7b', '35', '97', '0a'] ['21', '96', '88', '67'] ['88', '67', '21', '96'] ['a7', '44', '4a', '95'] ('e4', 'cb', '98', '1e')
['03', 'f0', 'b1', '58'] ['7b', '8c', 'c8', '6a'] ['6a', '7b', '8c', 'c8'] ['ad', '19', '49', '8d'] ('77', '51', 'df', '56')

['98', 'a2', '3a', '9c'] ['46', '3a', '80', 'de'] ['46', '3a', '80', 'de'] ['d3', 'e5', 'ba', '58'] ('f2', '8f', 'fc', 'b3')
['21', '2e', '47', 'be'] ['fd', '31', 'a0', 'ae'] ['31', 'a0', 'ae', 'fd'] ['59', '71', 'bb', '3a'] ('81', '36', '11', 'db')
['43', '8f', 'd2', '8b'] ['1a', '73', 'b5', '3d'] ['b5', '3d', '1a', '73'] ['d6', '19', 'ec', '6e'] ('55', '9e', '06', '18')
['da', '48', '96', 'db'] ['57', '52', '90', 'b9'] ['b9', '57', '52', '90'] ['27', '7d', '8b', 'cc'] ('f3', 'a2', '7d', '2b')

['b4', 'b5', '7c', '6d']
['b0', '96', 'bf', '26']
['e0', 'a3', '1c', '6b']
['4a', 'f5', '2f', 'bb']

Final Ciphertext: b4b0e04ab596a3f57cbf1c2f6d266bbb

BEGIN SELF GENERATED KEY AND PLAINTEXT HERE:

Key Expansion using the key: 6525cc8e81fa3701b59d255dd43f8938

Key Words	Auxiliary Function
w0 = ['65', '25', 'cc', '8e']	RotWord = [['3f', '89', '38', 'd4']]
w1 = ['81', 'fa', '37', '01']	SubWord = ['75', 'a7', '07', '48']
w2 = ['b5', '9d', '25', '5d']	Rcon = ['01', '00', '00', '00']
w3 = ['d4', '3f', '89', '38']	Z = ['74', 'a7', '07', '48']
w4 = ['11', '82', 'cb', 'c6']	RotWord = [['da', '50', 'a2', 'f1']]
w5 = ['90', '78', 'fc', 'c7']	SubWord = ['57', '53', '3a', 'a1']
w6 = ['25', 'e5', 'd9', '9a']	Rcon = ['02', '00', '00', '00']
w7 = ['f1', 'da', '50', 'a2']	Z = ['55', '53', '3a', 'a1']
w8 = ['44', 'd1', 'f1', '67']	RotWord = [['96', '84', '98', '00']]
w9 = ['d4', 'a9', '0d', 'a0']	SubWord = ['90', '5f', '46', '63']
w10 = ['f1', '4c', 'd4', '3a']	Rcon = ['04', '00', '00', '00']
w11 = ['00', '96', '84', '98']	Z = ['94', '5f', '46', '63']
w12 = ['d0', '8e', 'b7', '04']	RotWord = [['fd', 'ea', '06', 'f5']]
w13 = ['04', '27', 'ba', 'a4']	SubWord = ['54', '87', '6f', 'e6']
w14 = ['f5', '6b', '6e', '9e']	Rcon = ['08', '00', '00', '00']
w15 = ['f5', 'fd', 'ea', '06']	Z = ['5c', '87', '6f', 'e6']
w16 = ['8c', '09', 'd8', 'e2']	RotWord = [['b8', 'e6', 'de', '88']]
w17 = ['88', '2e', '62', '46']	SubWord = ['6c', '8e', '1d', 'c4']
w18 = ['7d', '45', '0c', 'd8']	Rcon = ['10', '00', '00', '00']
w19 = ['88', 'b8', 'e6', 'de']	Z = ['7c', '8e', '1d', 'c4']
w20 = ['f0', '87', 'c5', '26']	RotWord = [['54', '4d', '66', '8d']]
w21 = ['78', 'a9', 'a7', '60']	SubWord = ['20', 'e3', '33', '5d']
w22 = ['05', 'ec', 'ab', 'b8']	Rcon = ['20', '00', '00', '00']
w23 = ['8d', '54', '4d', '66']	Z = ['00', 'e3', '33', '5d']
w24 = ['f0', '64', 'f6', '7b']	RotWord = [['75', 'b7', 'c5', '00']]
w25 = ['88', 'cd', '51', '1b']	SubWord = ['9d', 'a9', 'a6', '63']
w26 = ['8d', '21', 'fa', 'a3']	Rcon = ['40', '00', '00', '00']
w27 = ['00', '75', 'b7', 'c5']	Z = ['dd', 'a9', 'a6', '63']
w28 = ['2d', 'cd', '50', '18']	RotWord = [['54', '4c', '65', '28']]
w29 = ['a5', '00', '01', '03']	SubWord = ['20', '29', '4d', '34']
w30 = ['28', '21', 'fb', 'a0']	Rcon = ['80', '00', '00', '00']
w31 = ['28', '54', '4c', '65']	Z = ['a0', '29', '4d', '34']
w32 = ['8d', 'e4', '1d', '2c']	RotWord = [['91', 'ab', 'ea', '28']]

w33 = ['28', 'e4', '1c', '2f'] SubWord = ['81', '62', '87', '34']
w34 = ['00', 'c5', 'e7', '8f'] Rcon = ['1b', '00', '00', '00']
w35 = ['28', '91', 'ab', 'ea'] Z = ['9a', '62', '87', '34']

w36 = ['17', '86', '9a', '18'] RotWord = [['36', 'ca', '52', '17']]
w37 = ['3f', '62', '86', '37'] SubWord = ['05', '74', '00', 'f0']
w38 = ['3f', 'a7', '61', 'b8'] Rcon = ['36', '00', '00', '00']
w39 = ['17', '36', 'ca', '52'] Z = ['33', '74', '00', 'f0']

w40 = ['24', 'f2', '9a', 'e8']
w41 = ['1b', '90', '1c', 'df']
w42 = ['24', '37', '7d', '67']
w43 = ['33', '1', 'b7', '35']

Final Expanded key: 24f29ae81b901cdf24377d67331b735

Performing AES on plaintext: 989ce8c4ea33d4ade005b0fccb9578d6
With the key: 6525cc8e81fa3701b59d255dd43f8938

Start of Round	After SubBytes	After ShiftRows	After MixColumns
Round Key			
['98', 'ea', 'e0', 'cb']			['65', '81', 'b5', 'd4']
['9c', '33', '05', '95']			['25', 'fa', '9d', '3f']
['e8', 'd4', 'b0', '78']			['cc', '37', '25', '89']
['c4', 'ad', 'fc', 'd6']			['8e', '01', '5d', '38']
['fd', '6b', '55', '1f']	['54', '7f', 'fc', 'c0']	['54', '7f', 'fc', 'c0']	['d6', '43', 'ab', '42'] ('11', '90', '25', 'f1')
['b9', 'c9', '98', 'aa']	['56', 'dd', '46', 'ac']	['dd', '46', 'ac', '56']	['a3', 'dd', '74', '6d'] ('82', '78', 'e5', 'da')
['24', 'e3', '95', 'f1']	['36', '11', '2a', 'a1']	['2a', 'a1', '36', '11']	['a5', '01', '94', 'e2'] ('cb', 'fc', 'd9', '50')
['4a', 'ac', 'a1', 'ee']	['d6', '91', '32', '28']	['28', 'd6', '91', '32']	['5b', 'd1', 'bc', '78'] ('c6', 'c7', '9a', 'a2')
['c7', 'd3', '8e', 'b3']	['c6', '66', '19', '6d']	['c6', '66', '19', '6d']	['29', '3d', '0a', '65'] ('44', 'd4', 'f1', '00')
['21', 'a5', '91', 'b7']	['fd', '06', '81', 'a9']	['06', '81', 'a9', 'fd']	['a3', '78', 'ad', '87'] ('d1', 'a9', '4c', '96')
['6e', 'fd', '4d', 'b2']	['9f', '54', 'e3', '37']	['e3', '37', '9f', '54']	['e4', '6b', '5c', '3a'] ('f1', '0d', 'd4', '84')
['9d', '16', '26', 'da']	['5e', '47', 'f7', '57']	['57', '5e', '47', 'f7']	['1a', 'a0', '93', 'eb'] ('67', 'a0', '3a', '98')
['6d', 'e9', 'fb', '65']	['3c', '1e', '0f', '4d']	['3c', '1e', '0f', '4d']	['71', '7e', 'b9', 'ba'] ('d0', '04', 'f5', 'f5')
['72', 'd1', 'e1', '11']	['40', '3e', 'f8', '82']	['3e', 'f8', '82', '40']	['98', 'e3', '98', '4b'] ('8e', '27', '6b', 'fd')
['15', '66', '88', 'be']	['59', '33', 'c4', 'ae']	['c4', 'ae', '59', '33']	['1b', 'bb', '9a', '05'] ('b7', 'ba', '6e', 'ea')
['7d', '00', 'a9', '73']	['ff', '63', 'd3', '8f']	['8f', 'ff', '63', 'd3']	['bb', '91', '0c', '19'] ('04', 'a4', '9e', '06')
['a1', '7a', '4c', '4f']	['32', 'da', '29', '84']	['32', 'da', '29', '84']	['3f', '6f', '87', 'e9'] ('8c', '88', '7d', '88')
['16', 'c4', 'f3', 'b6']	['47', '1c', '0d', '4e']	['1c', '0d', '4e', '47']	['10', 'b2', '8b', 'c1'] ('09', '2e', '45', 'b8')

['ac', '01', 'f4', 'ef'] ['91', '7c', 'bf', 'df'] ['bf', 'df', '91', '7c'] ['10', '6a', 'ff', 'ea'] ('d8', '62', '0c', 'e6')
['bf', '35', '92', '1f'] ['08', '96', '4f', 'c0'] ['c0', '08', '96', '4f'] ['6e', 'b7', '93', '32'] ('e2', '46', 'd8', 'de')

['b3', 'e7', 'fa', '61'] ['6d', '94', '2d', 'ef'] ['6d', '94', '2d', 'ef'] ['60', '2f', 'd2', '21'] ('f0', '78', '05', '8d')
['19', '9c', 'ce', '79'] ['d4', 'de', '8b', 'b6'] ['de', '8b', 'b6', 'd4'] ['13', 'e4', 'd8', 'bf'] ('87', 'a9', 'ec', '54')
['c8', '08', 'f3', '0c'] ['e8', '30', '0d', 'fe'] ['0d', 'fe', 'e8', '30'] ['e0', '54', 'a8', '95'] ('c5', 'a7', 'ab', '4d')
['8c', 'f1', '4b', 'ec'] ['64', 'a1', 'b3', 'ce'] ['ce', '64', 'a1', 'b3'] ['e3', '1a', '70', 'b3'] ('26', '60', 'b8', '66')

['90', '57', 'd7', 'ac'] ['60', '5b', '0e', '91'] ['60', '5b', '0e', '91'] ['86', '59', 'd9', 'ba'] ('f0', '88', '8d', '00')
['94', '4d', '34', 'eb'] ['22', 'e3', '18', 'e9'] ['e3', '18', 'e9', '22'] ['33', '6e', '5c', '2a'] ('64', 'cd', '21', '75')
['25', 'f3', '03', 'd8'] ['3f', '0d', '7b', '61'] ['7b', '61', '3f', '0d'] ['70', '70', 'ec', '8a'] ('f6', '51', 'fa', 'b7')
['c5', '7a', 'c8', 'd5'] ['a6', 'da', 'e8', '03'] ['03', 'a6', 'da', 'e8'] ['3e', 'c3', '6b', '4c'] ('7b', '1b', 'a3', 'c5')

['76', 'd1', '54', 'ba'] ['38', '3e', '20', 'f4'] ['38', '3e', '20', 'f4'] ['8e', '2f', '2f', '0b'] ('2d', 'a5', '28', '28')
['57', 'a3', '7d', '5f'] ['5b', '0a', 'ff', 'cf'] ['0a', 'ff', 'cf', '5b'] ['42', 'dc', '08', 'b6'] ('cd', '00', '21', '54')
['86', '21', '16', '3d'] ['44', 'fd', '47', '27'] ['47', '27', '44', 'fd'] ['4e', '3d', 'c4', '6d'] ('50', '01', 'fb', '4c')
['45', 'd8', 'c8', '89'] ['6e', '61', 'e8', 'a7'] ['a7', '6e', '61', 'e8'] ['50', '46', '29', '6a'] ('18', '03', 'a0', '65')

['a3', '8a', '07', '23'] ['0a', '7e', 'c5', '26'] ['0a', '7e', 'c5', '26'] ['86', 'a7', '3e', '95'] ('8d', '28', '00', '28')
['8f', 'dc', '29', 'e2'] ['73', '86', 'a5', '98'] ['86', 'a5', '98', '73'] ['f4', '61', '16', '41'] ('e4', 'e4', 'c5', '91')
['1e', '3c', '3f', '21'] ['72', 'eb', '75', 'fd'] ['75', 'fd', '72', 'eb'] ['fc', 'cc', '0b', '6a'] ('1d', '1c', 'e7', 'ab')
['48', '45', '89', '0f'] ['52', '6e', 'a7', '76'] ['76', '52', '6e', 'a7'] ['01', '7e', '62', 'a7'] ('2c', '2f', '8f', 'ea')

['0b', '8f', '3e', 'bd'] ['2b', '73', 'b2', '7a'] ['2b', '73', 'b2', '7a'] ['d9', 'ec', 'c6', '94'] ('17', '3f', '3f', '17')
['10', '85', 'd3', 'd0'] ['ca', '97', '66', '70'] ['97', '66', '70', 'ca'] ['b4', 'ef', '90', '30'] ('86', '62', 'a7', '36')
['e1', 'd0', 'ec', 'c1'] ['f8', '70', 'ce', '78'] ['ce', '78', 'f8', '70'] ['05', '96', '41', 'af'] ('9a', '86', '61', 'ca')
['2d', '51', 'ed', '4d'] ['d8', 'd1', '55', 'e3'] ['e3', 'd8', 'd1', '55'] ['f9', '20', 'fc', '9e'] ('18', '37', 'b8', '52')

['ce', 'd3', 'f9', '83'] ['8b', '66', '99', 'ec'] ['8b', '66', '99', 'ec'] ['16', 'cc', 'b3', '77'] ('24', '1b', '24', '33')
['32', '8d', '37', '06'] ['23', '5d', '9a', '6f'] ['5d', '9a', '6f', '23'] ['b8', '66', 'c1', 'f4'] ('f2', '90', '37', '01')
['9f', '10', '20', '65'] ['db', 'ca', 'b7', '4d'] ['b7', '4d', 'db', 'ca'] ['7e', '75', '50', '6d'] ('9a', '1c', '7d', 'b7')
['e1', '17', '44', 'cc'] ['f8', 'f0', '1b', '4b'] ['4b', 'f8', 'f0', '1b'] ['fa', '96', 'ff', 'f0'] ('e8', 'df', '67', '35')

['af', '7d', 'bd', 'df']
['af', '0a', '58', '22']
['2d', '51', 'a6', '7d']
['a3', '27', '97', '2e']

Final Ciphertext: afaf2da37d0a5127bd58a697df227d2e

Process finished with exit code 0