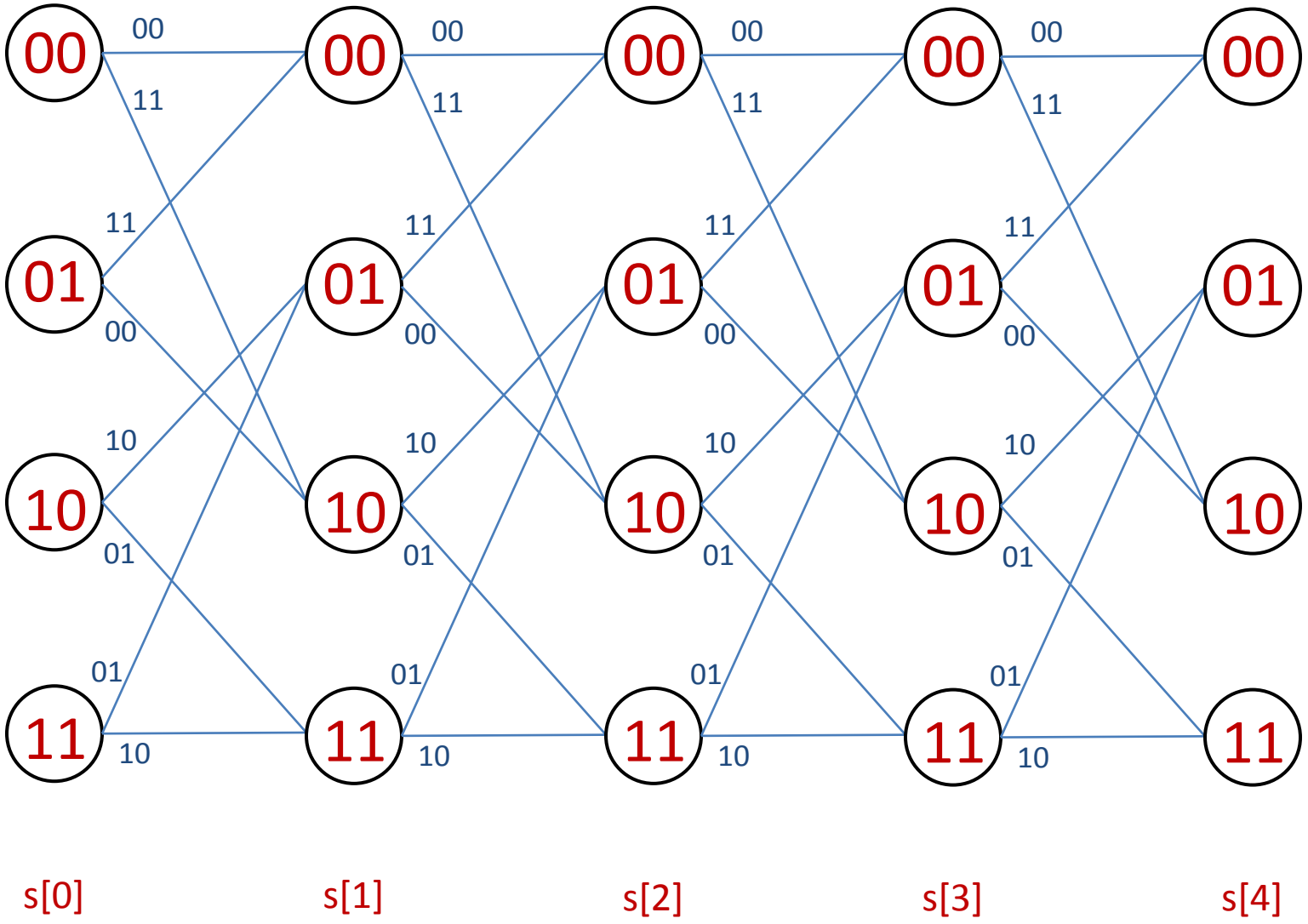
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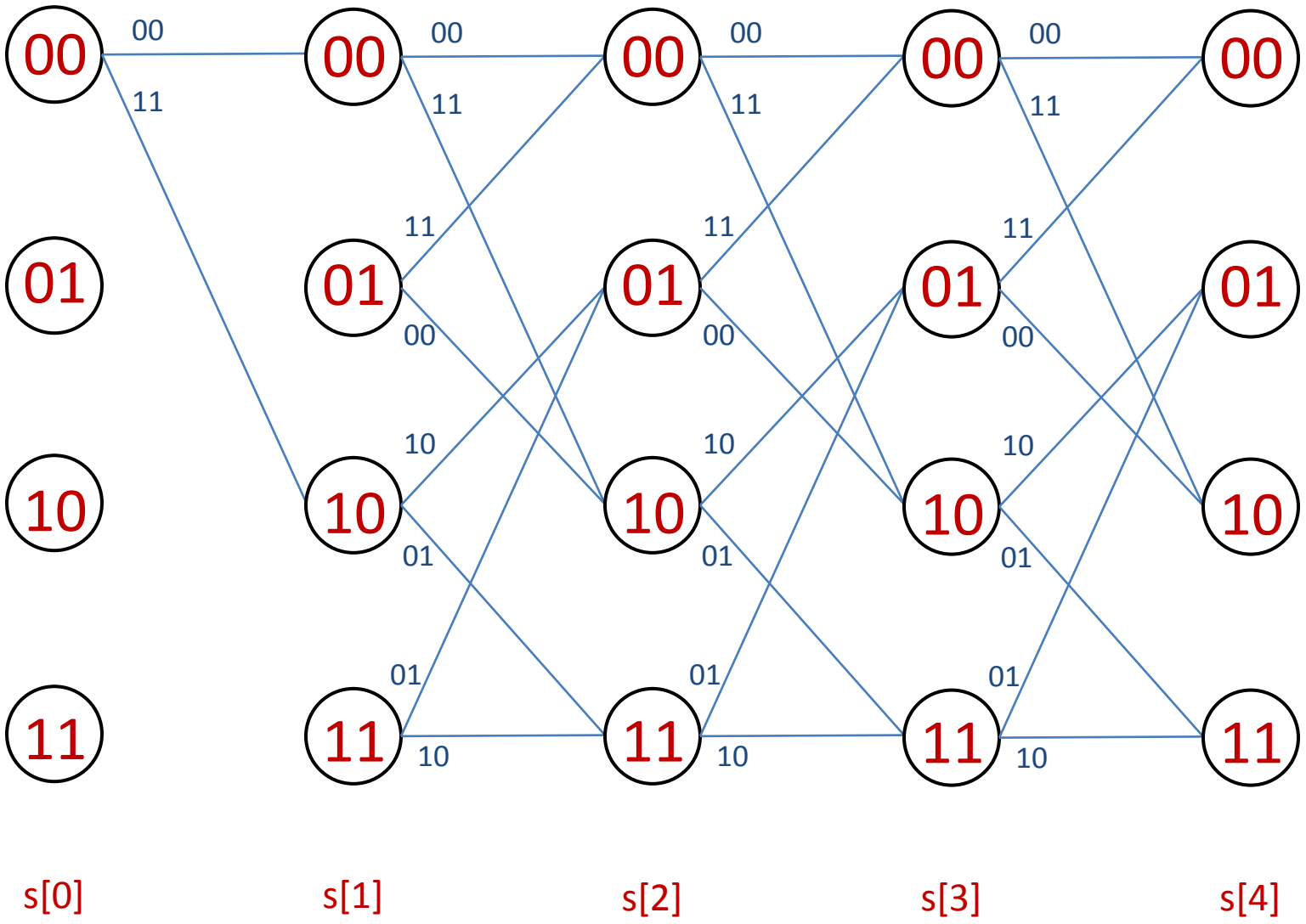
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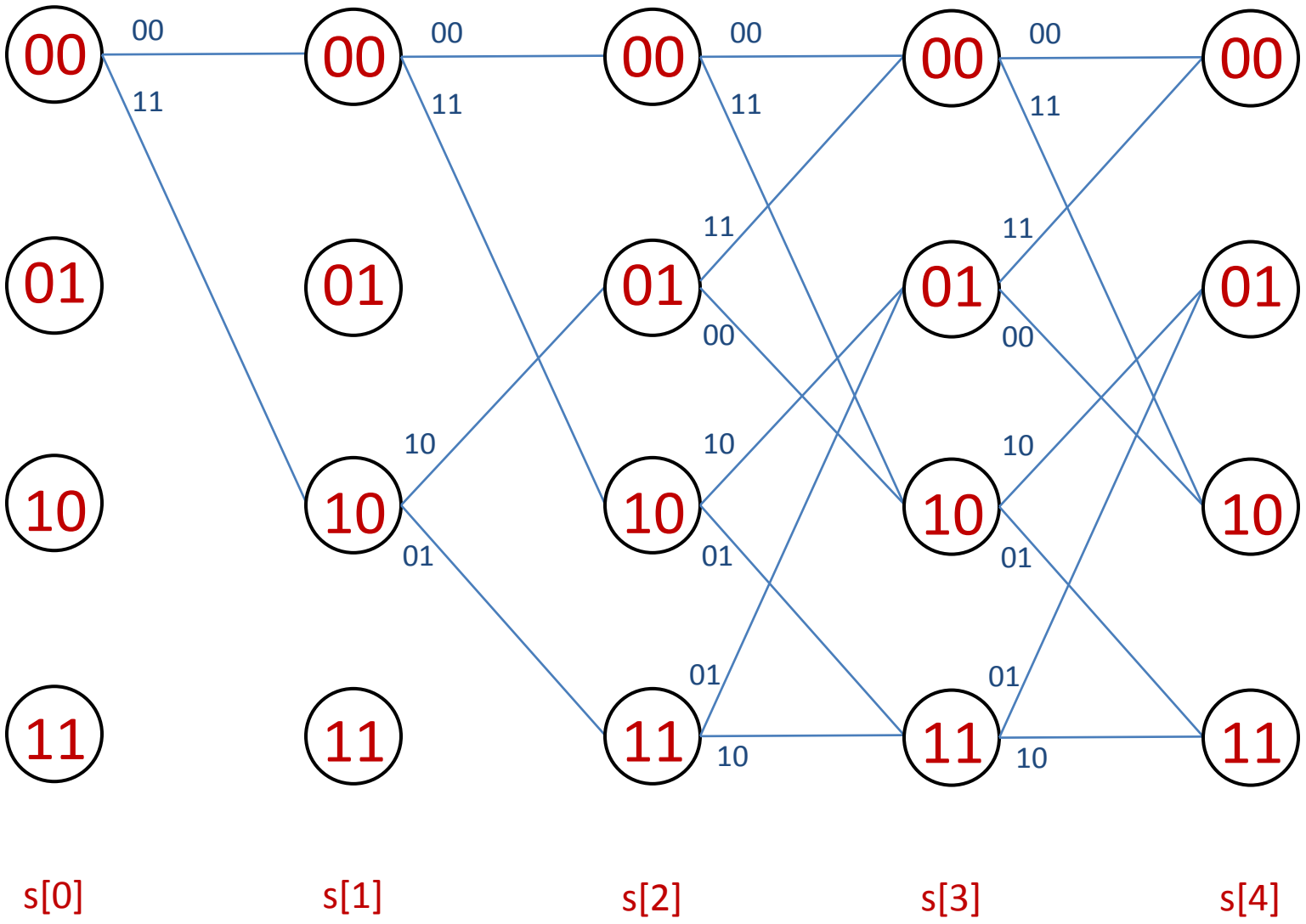
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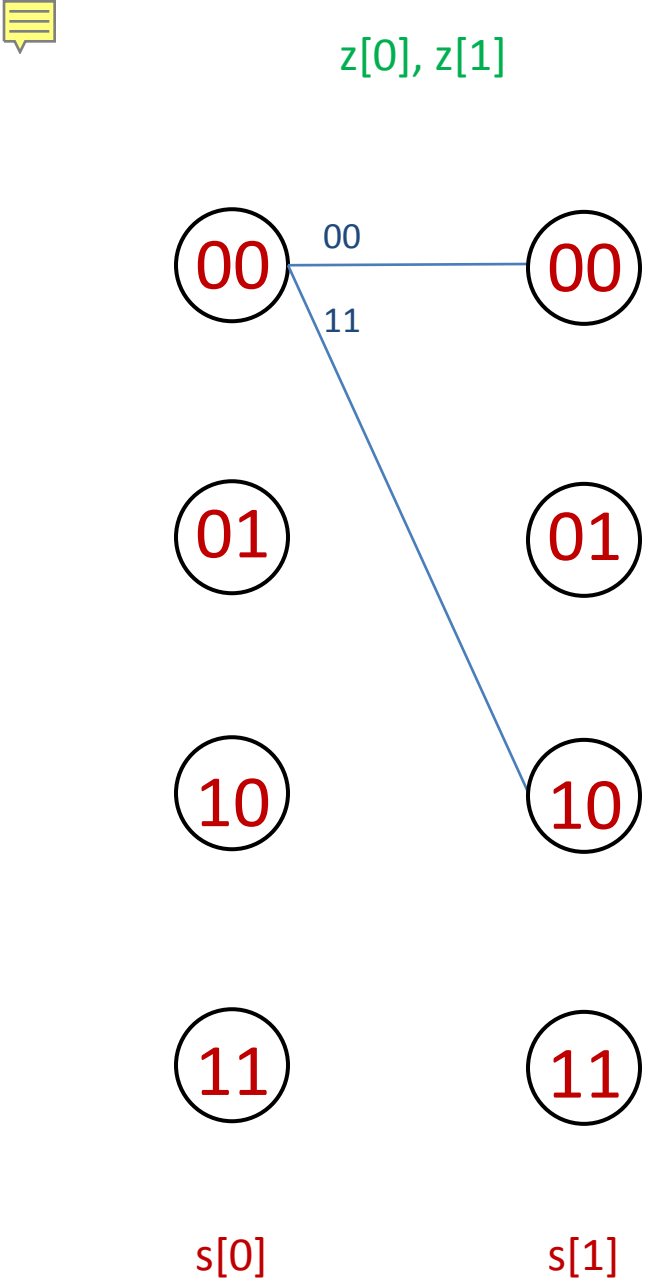
z[0], z[1]
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s[0]
s[1]

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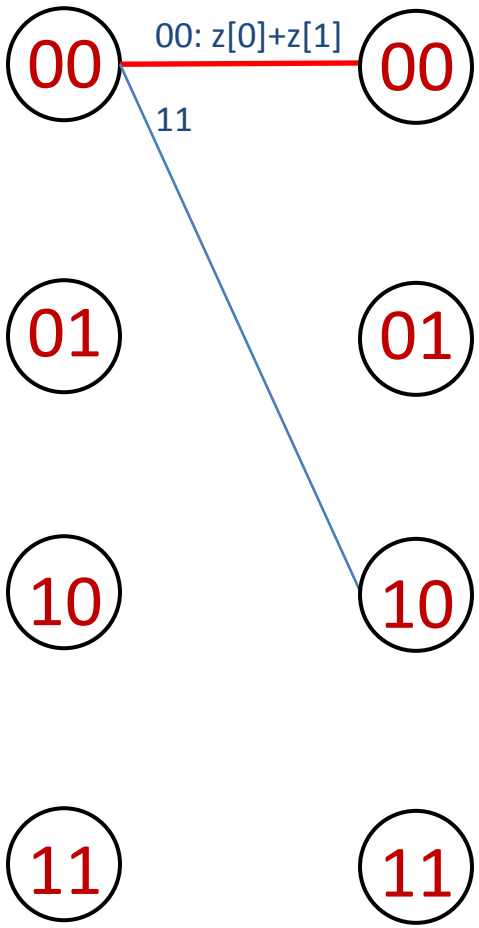

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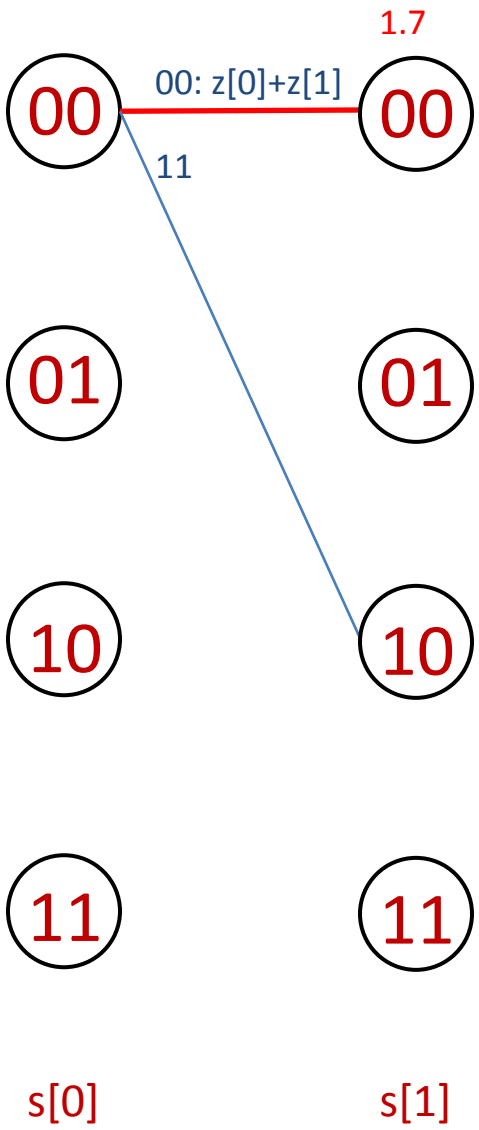
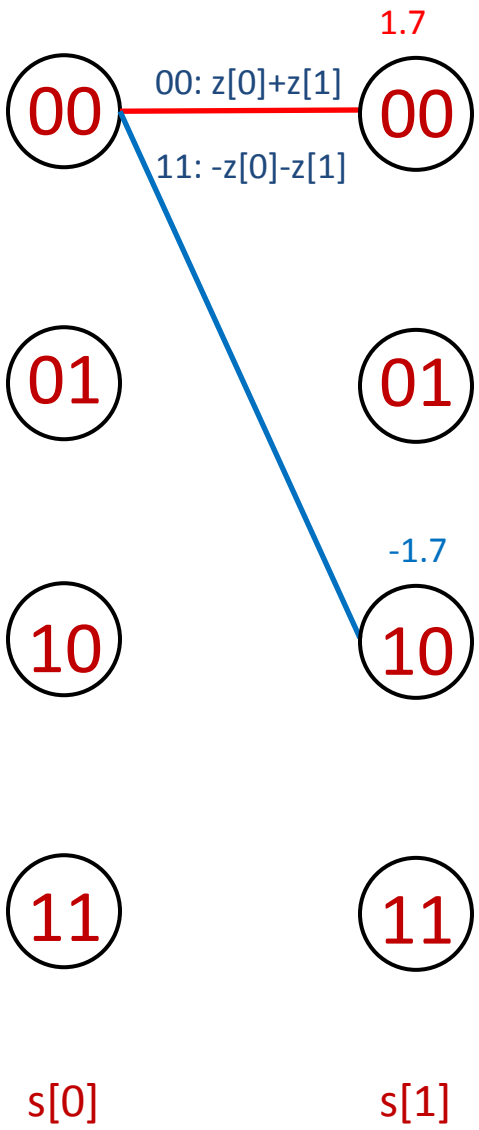
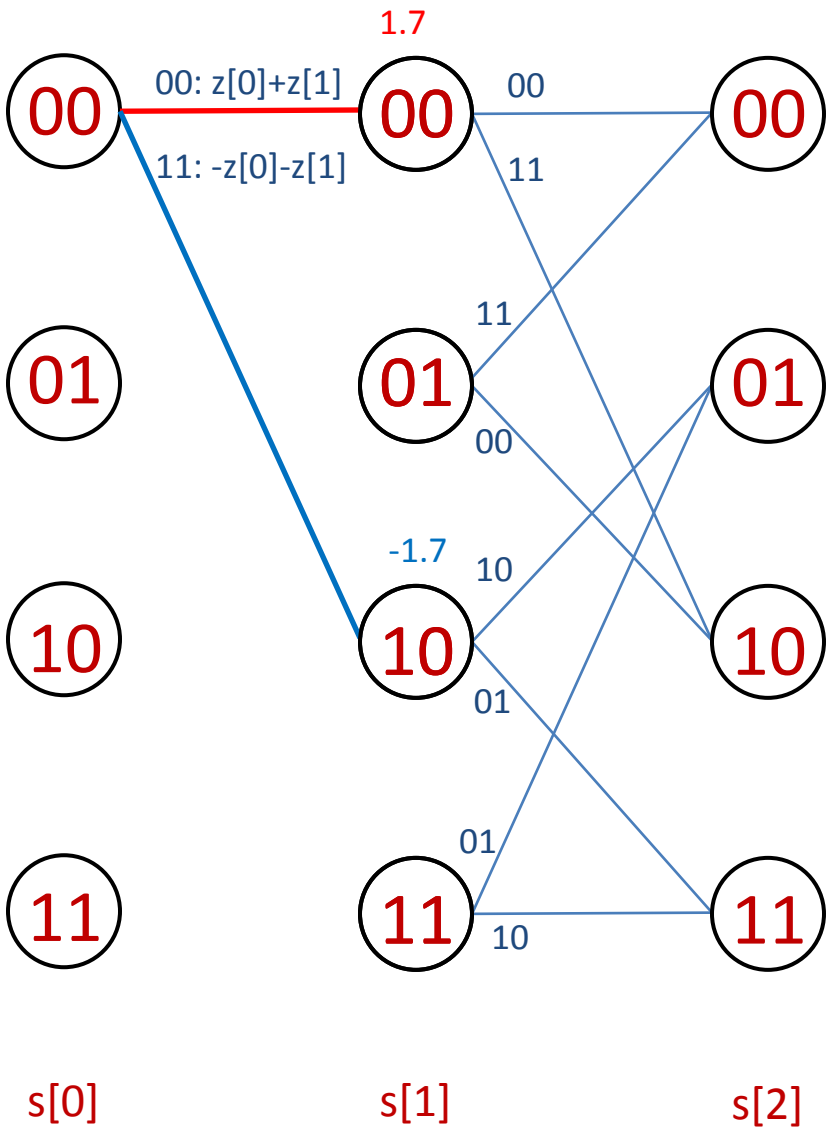


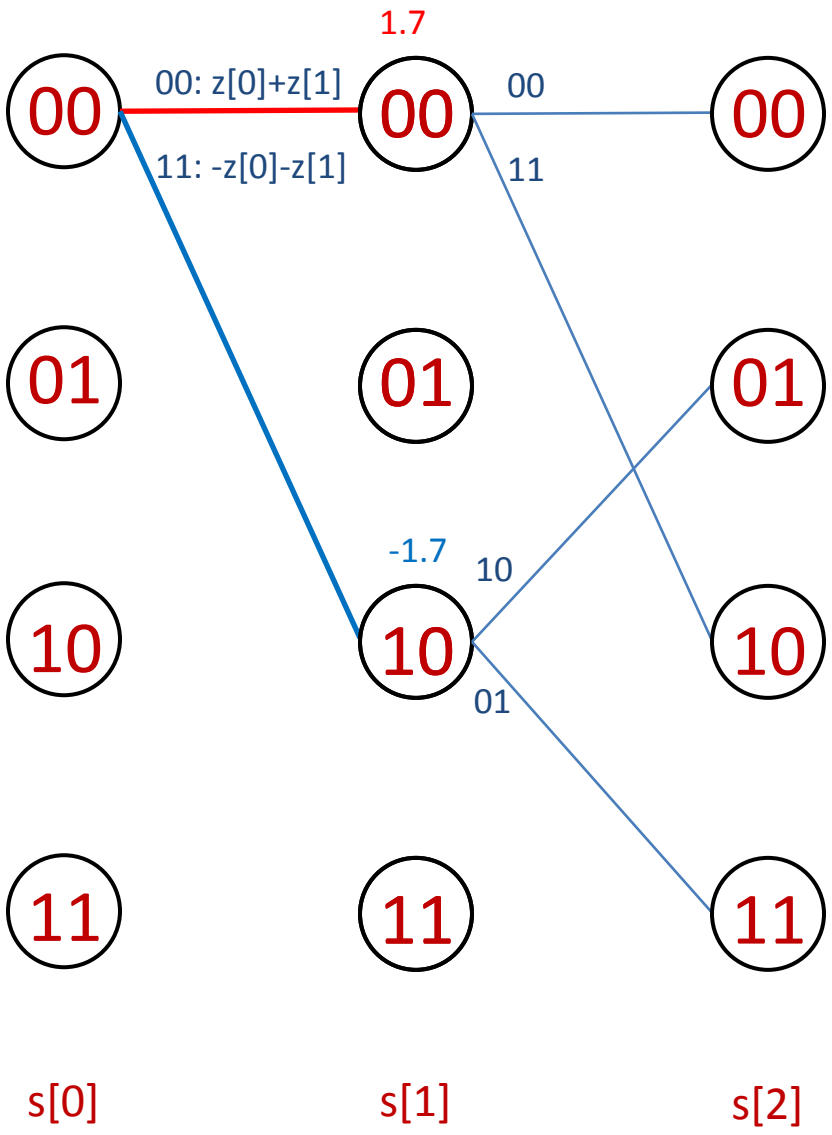
z[0], z[1]=0.9,0.8



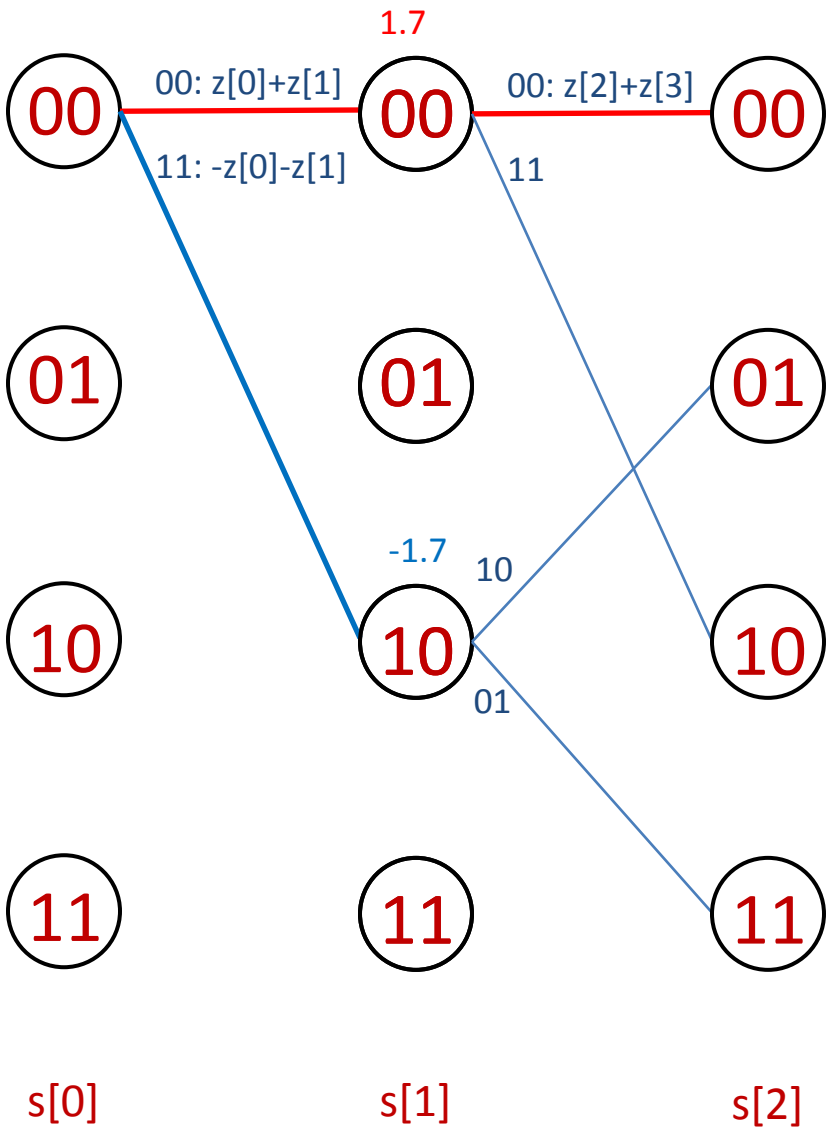
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5



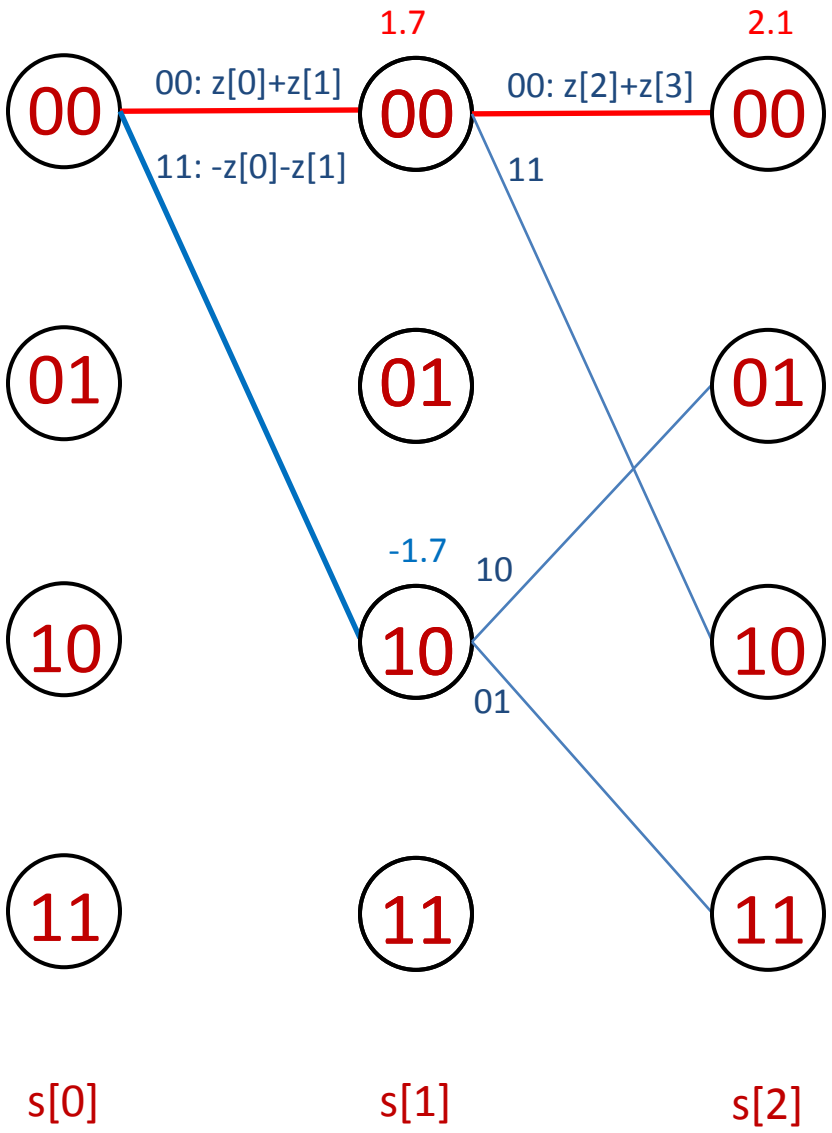
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5



z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5



z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5



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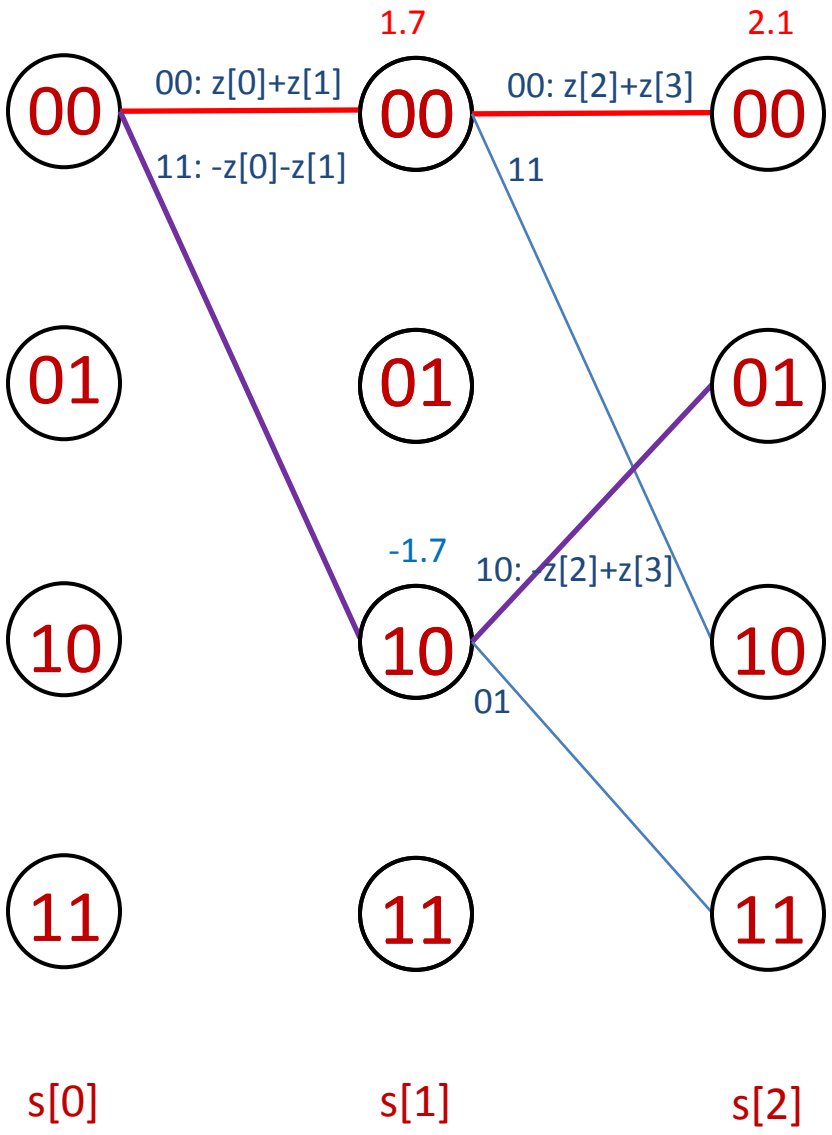
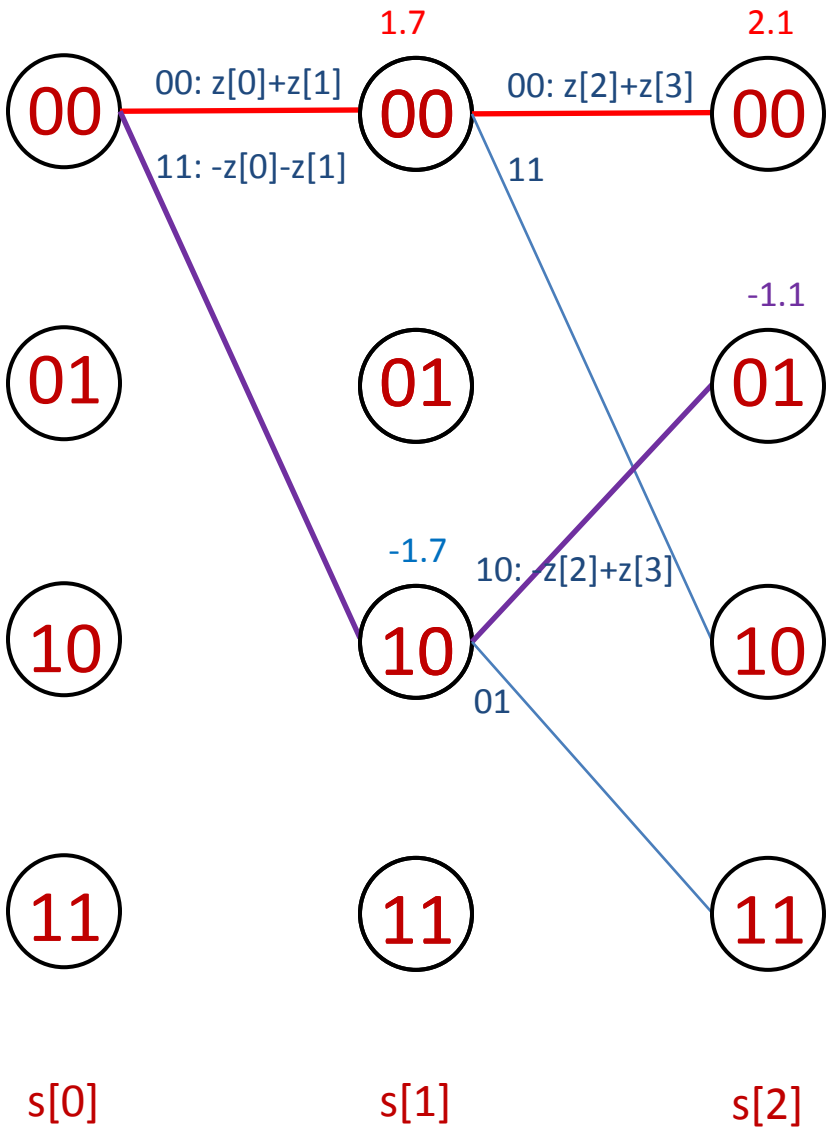
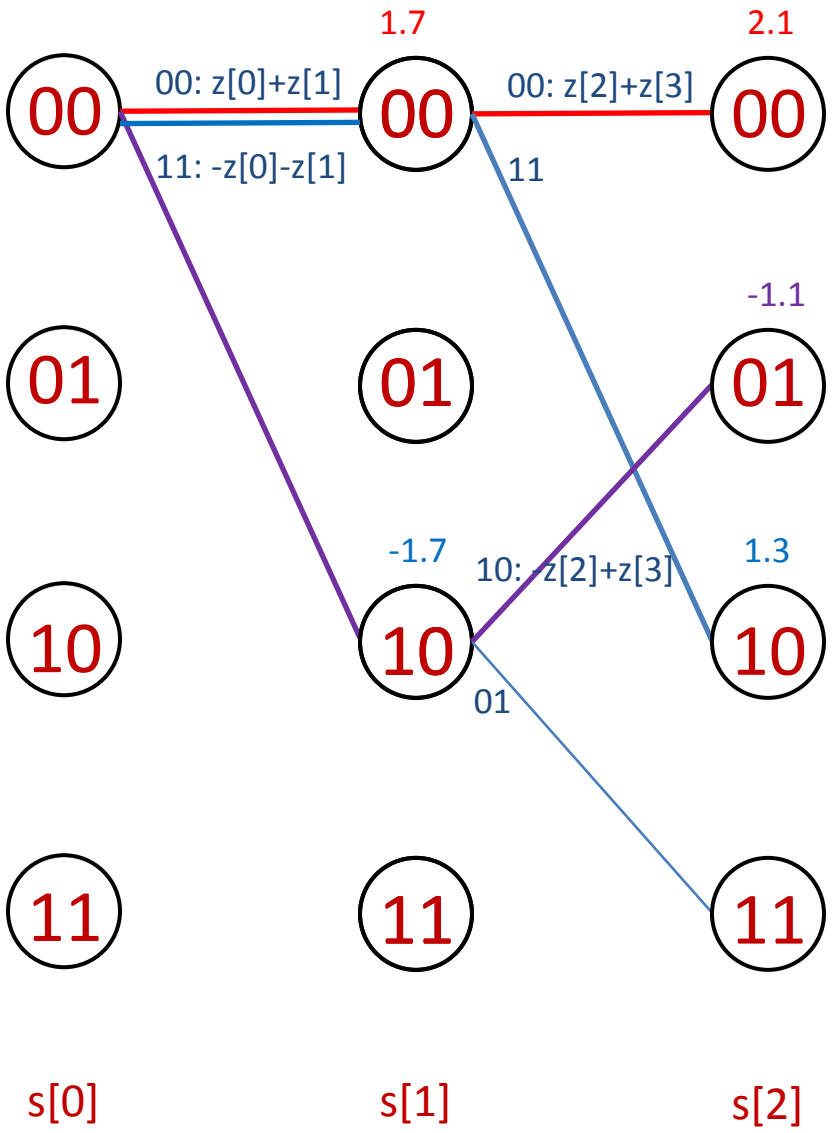


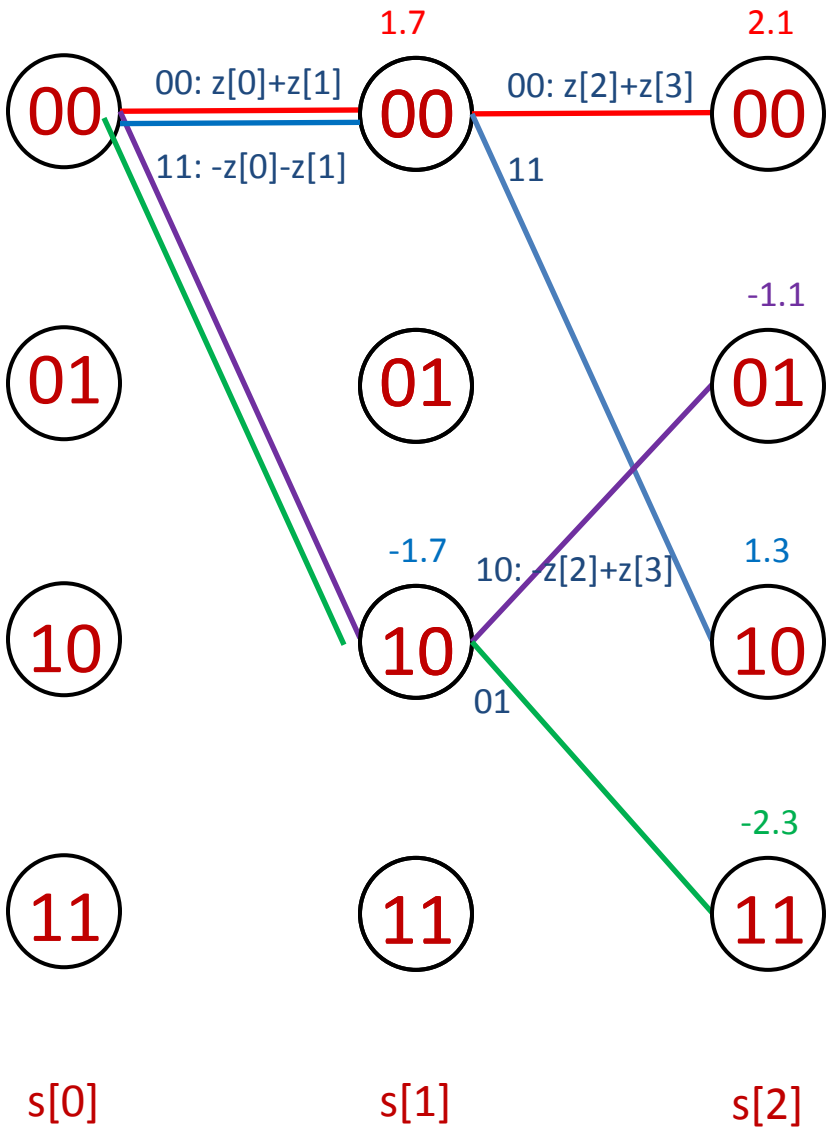
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5



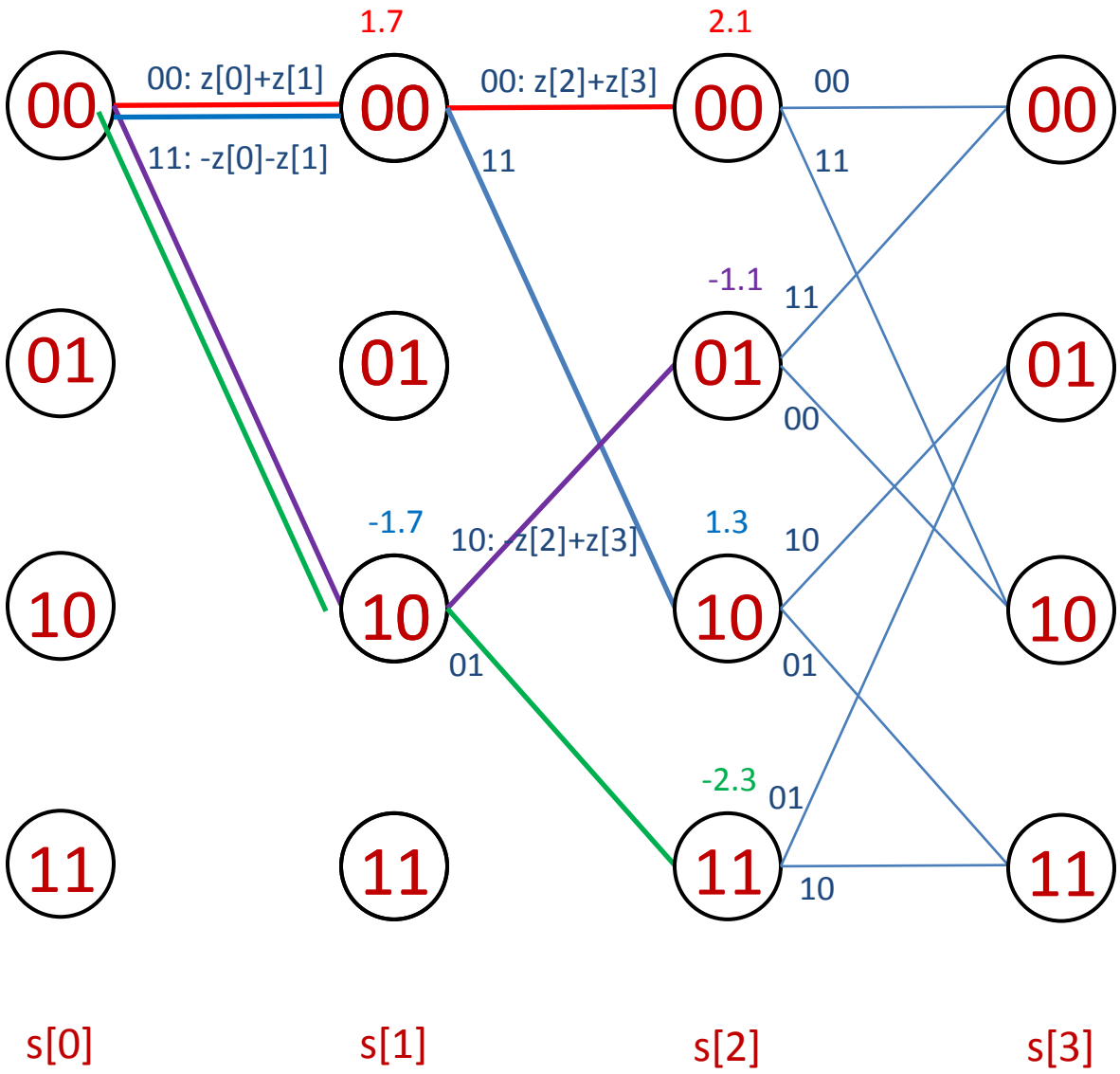
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5



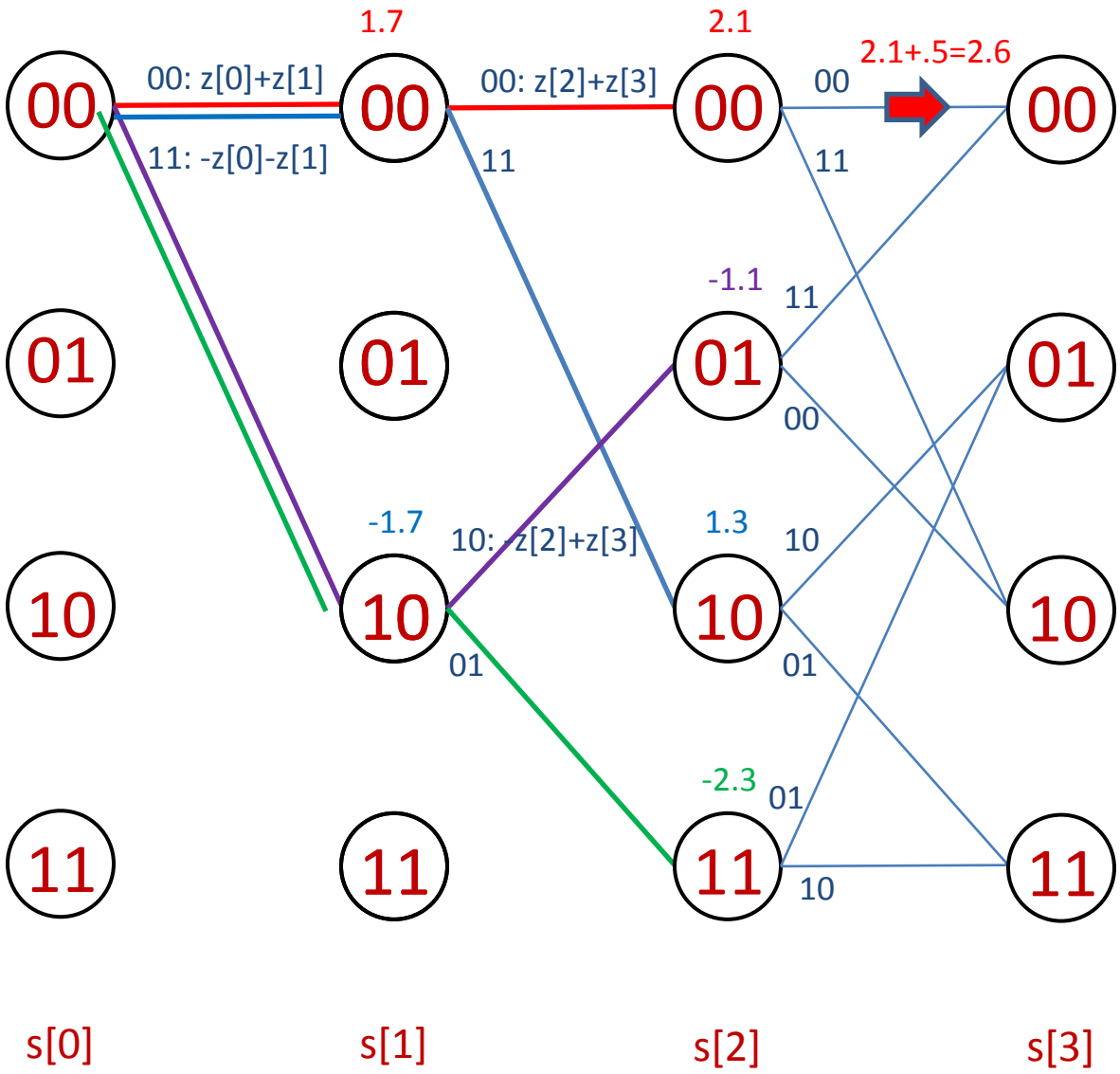
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5



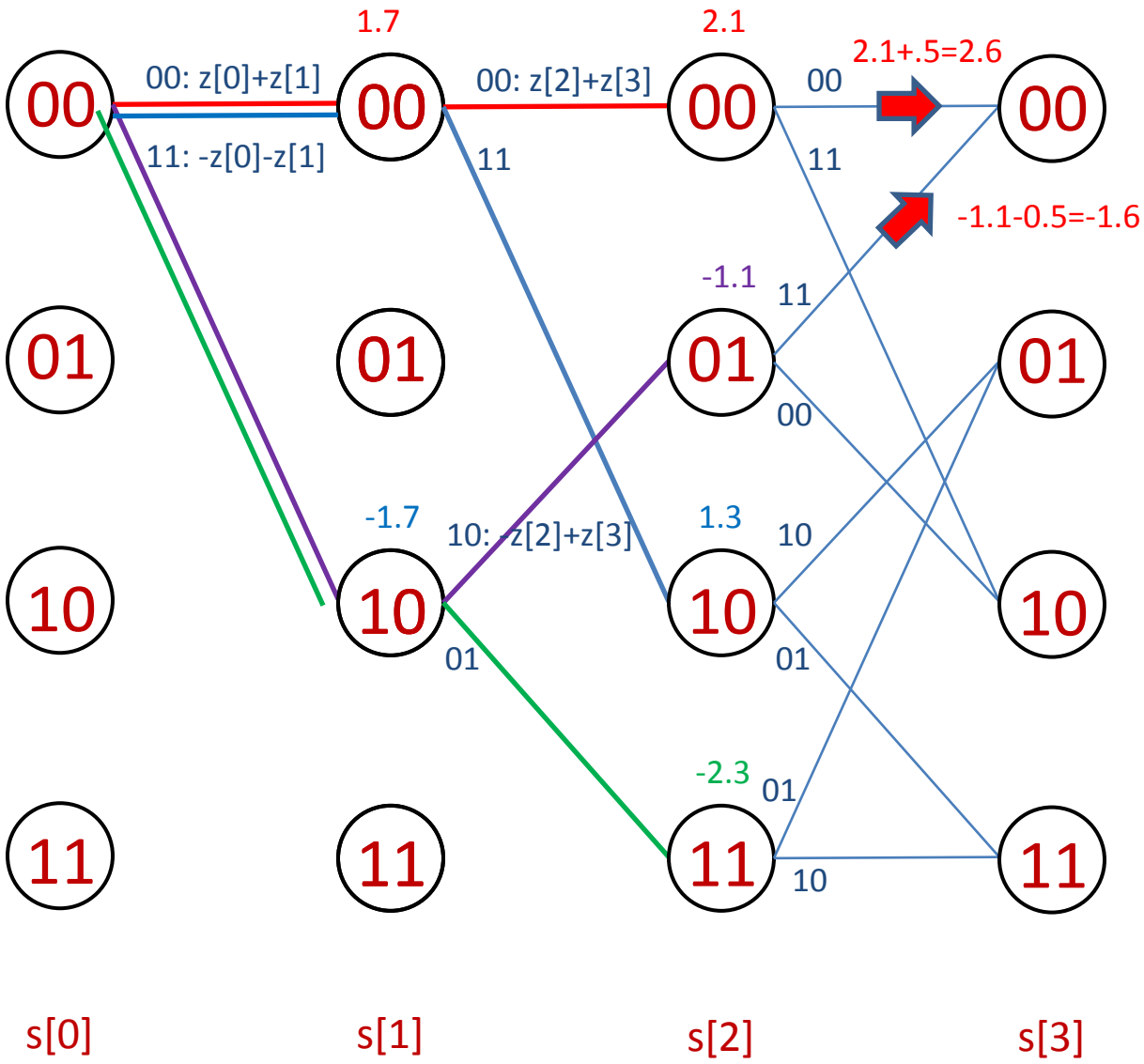
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



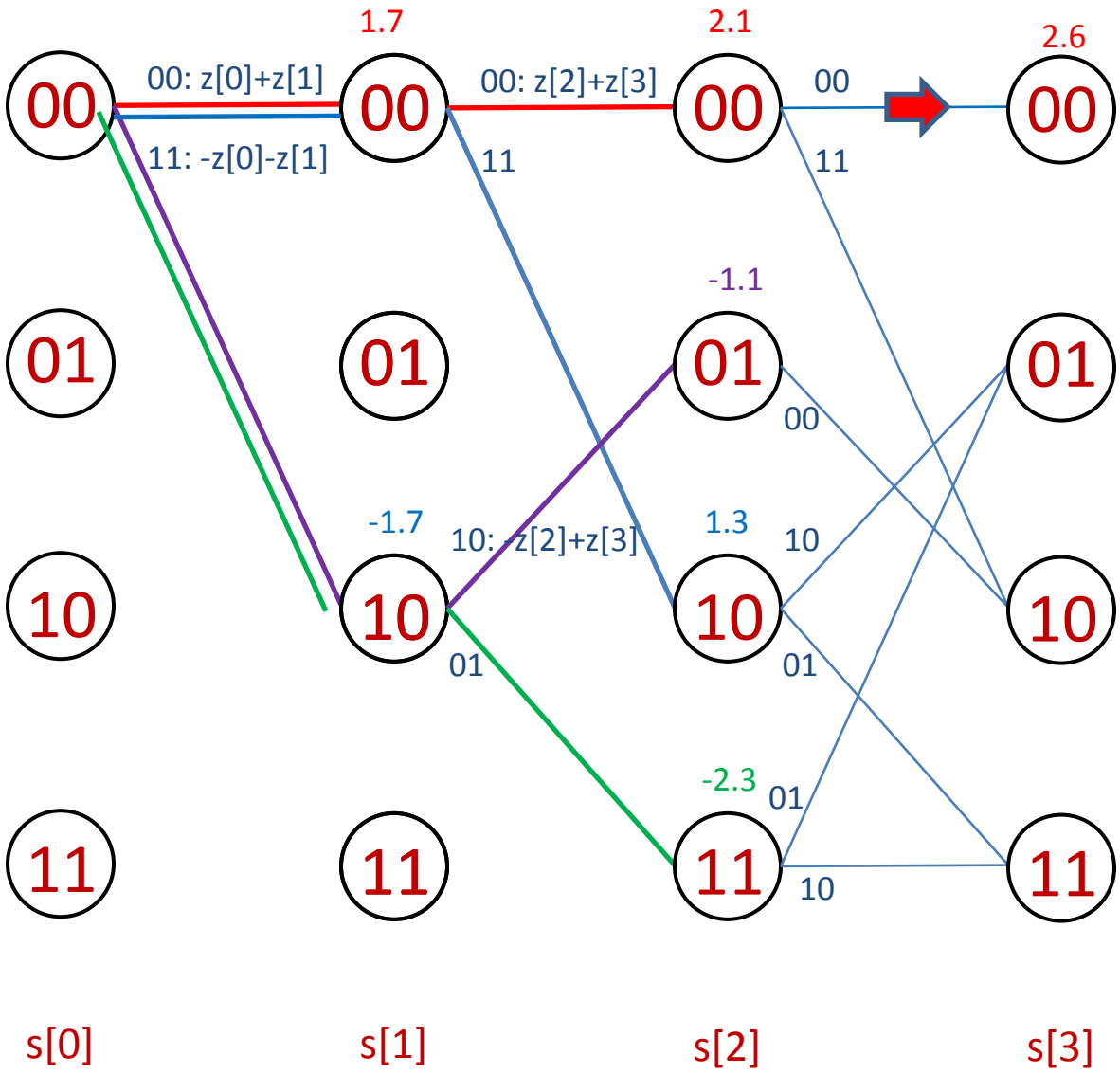
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



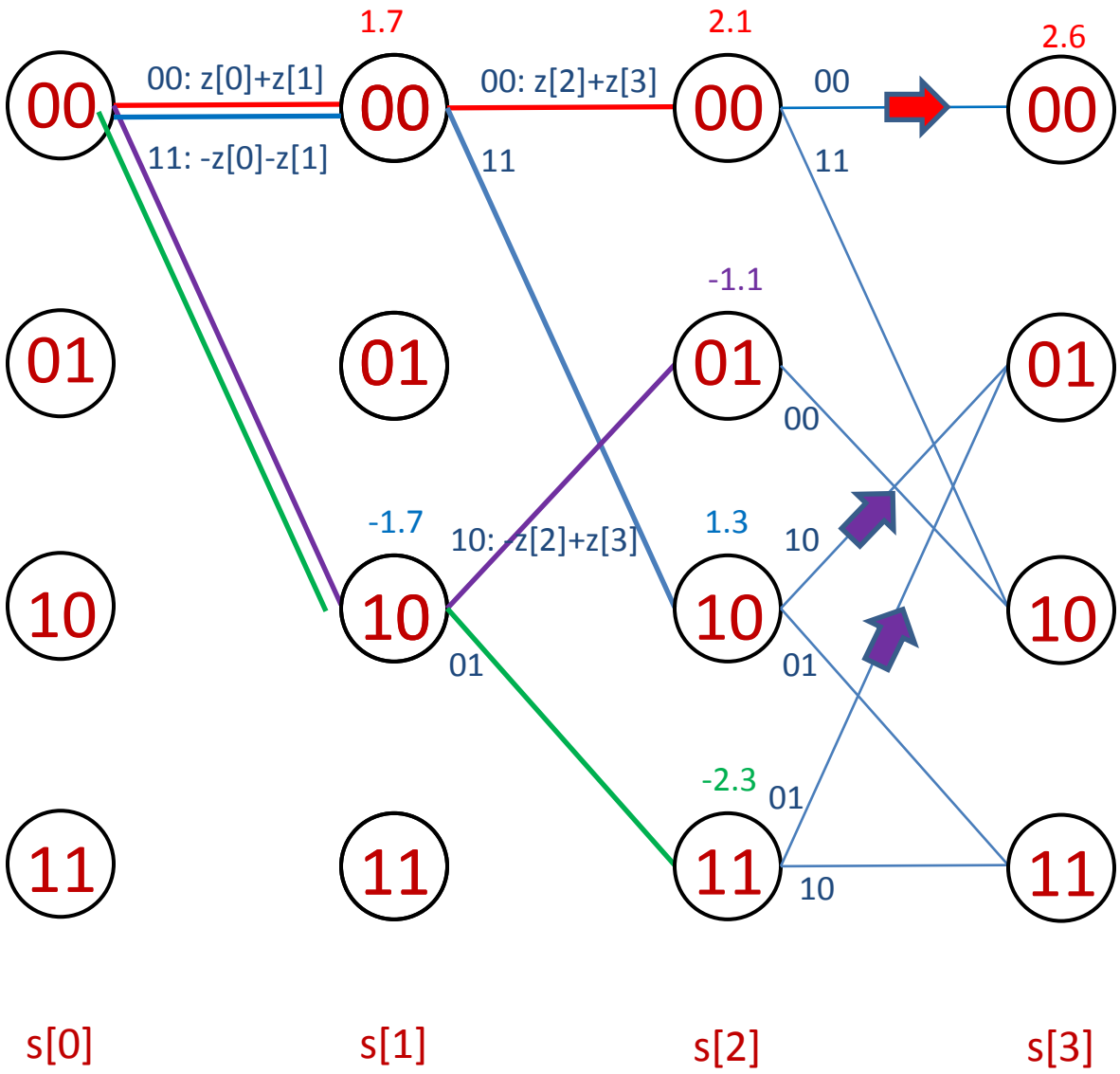
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



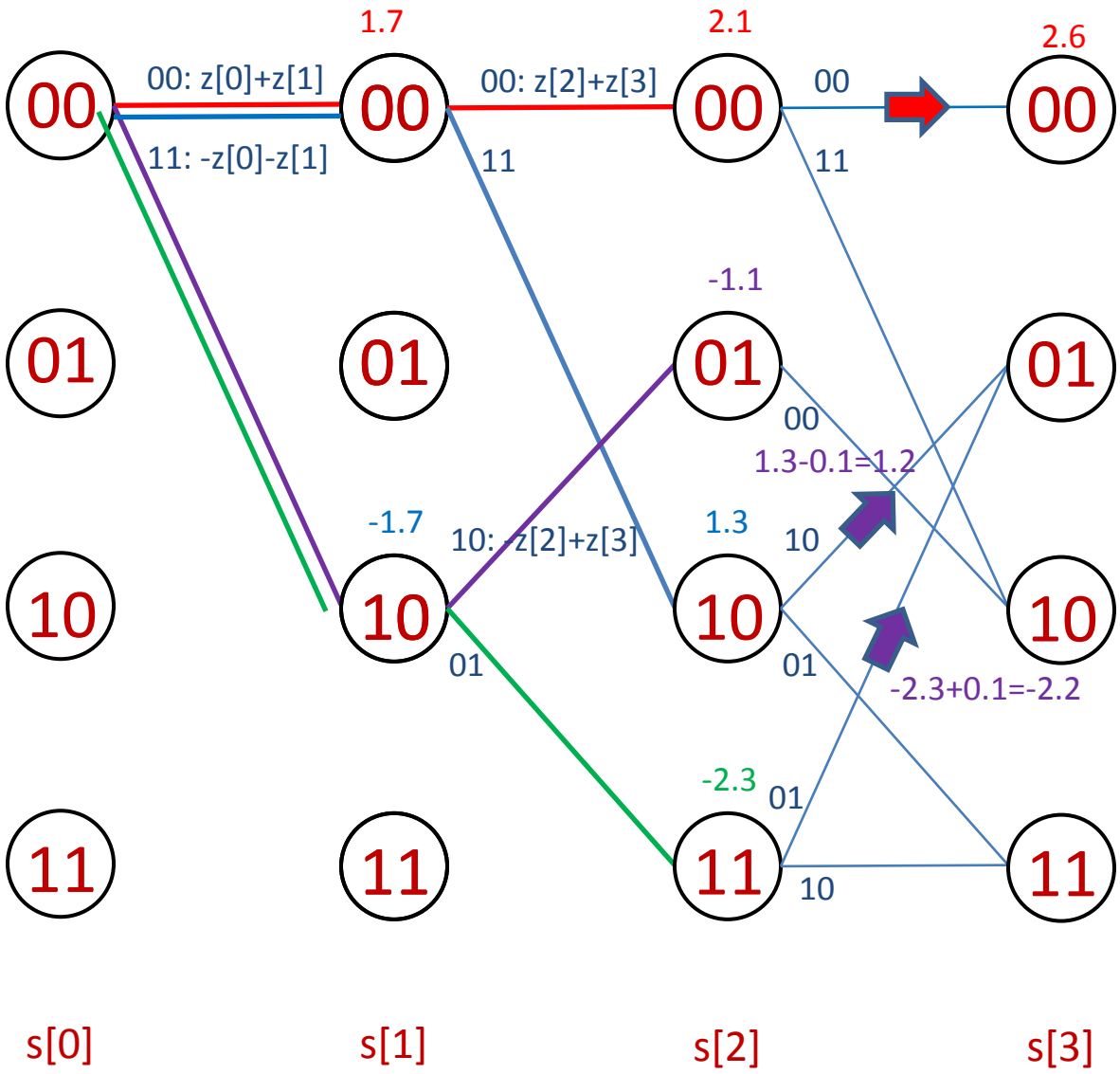
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



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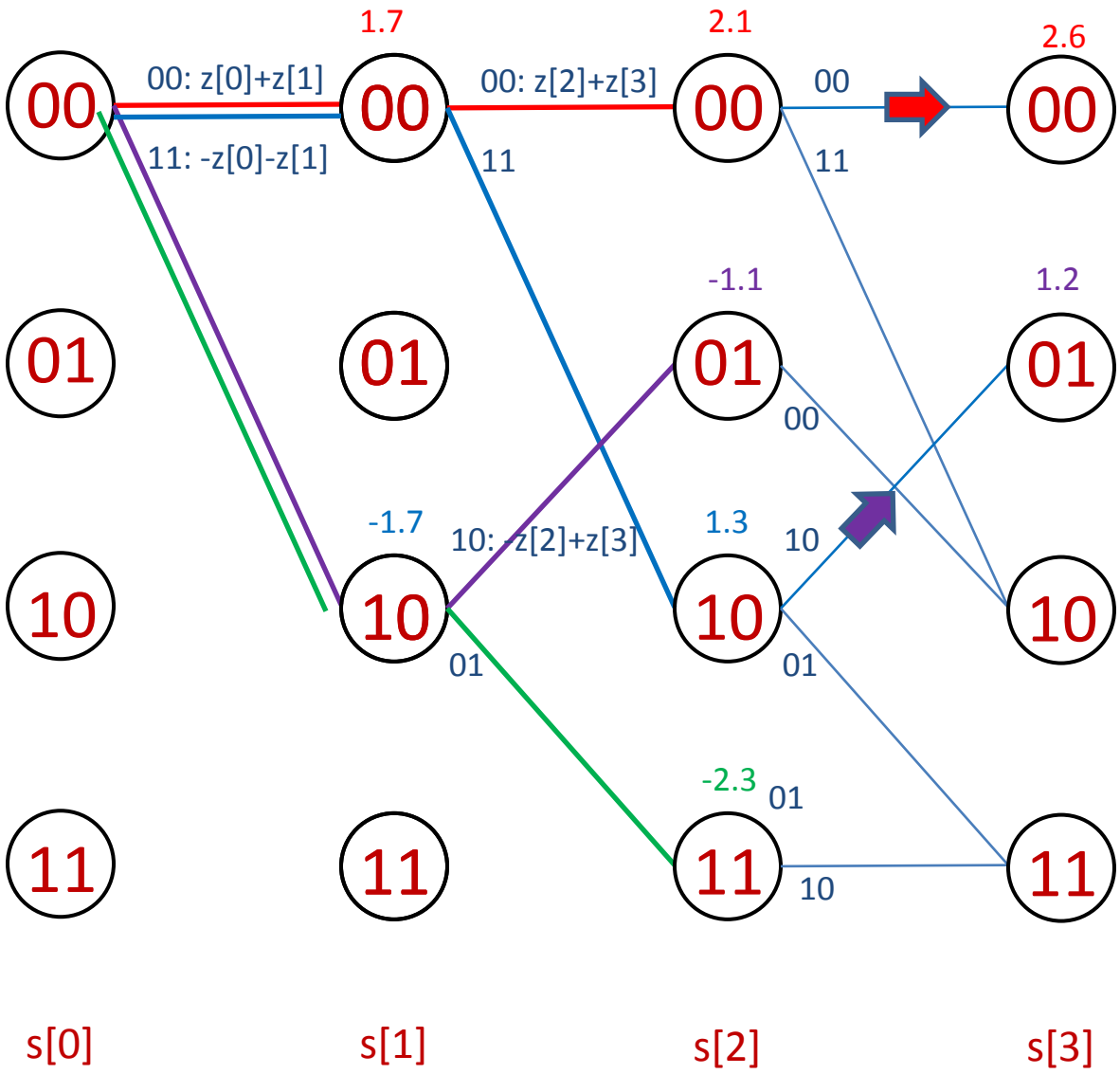
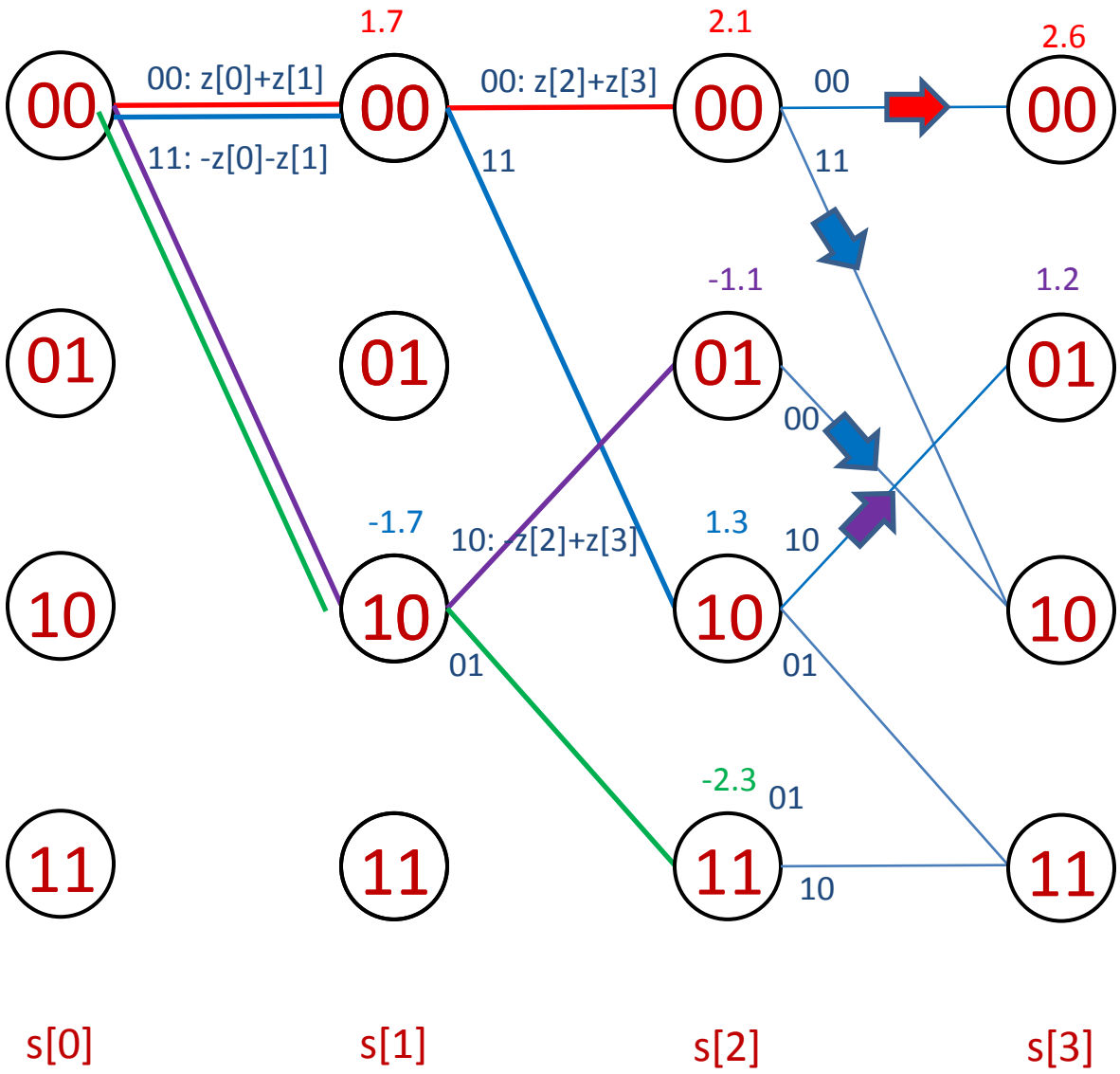


z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



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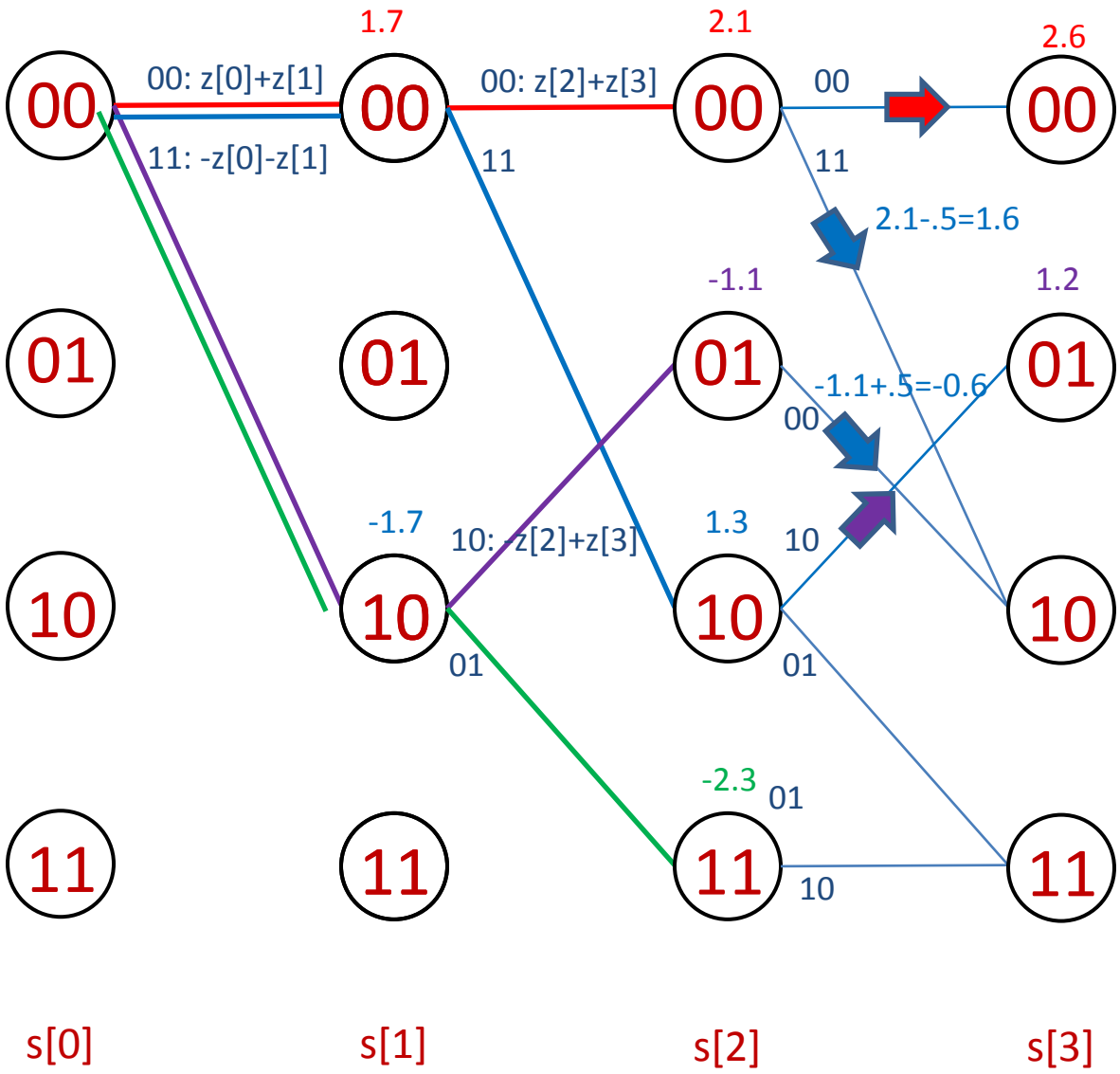

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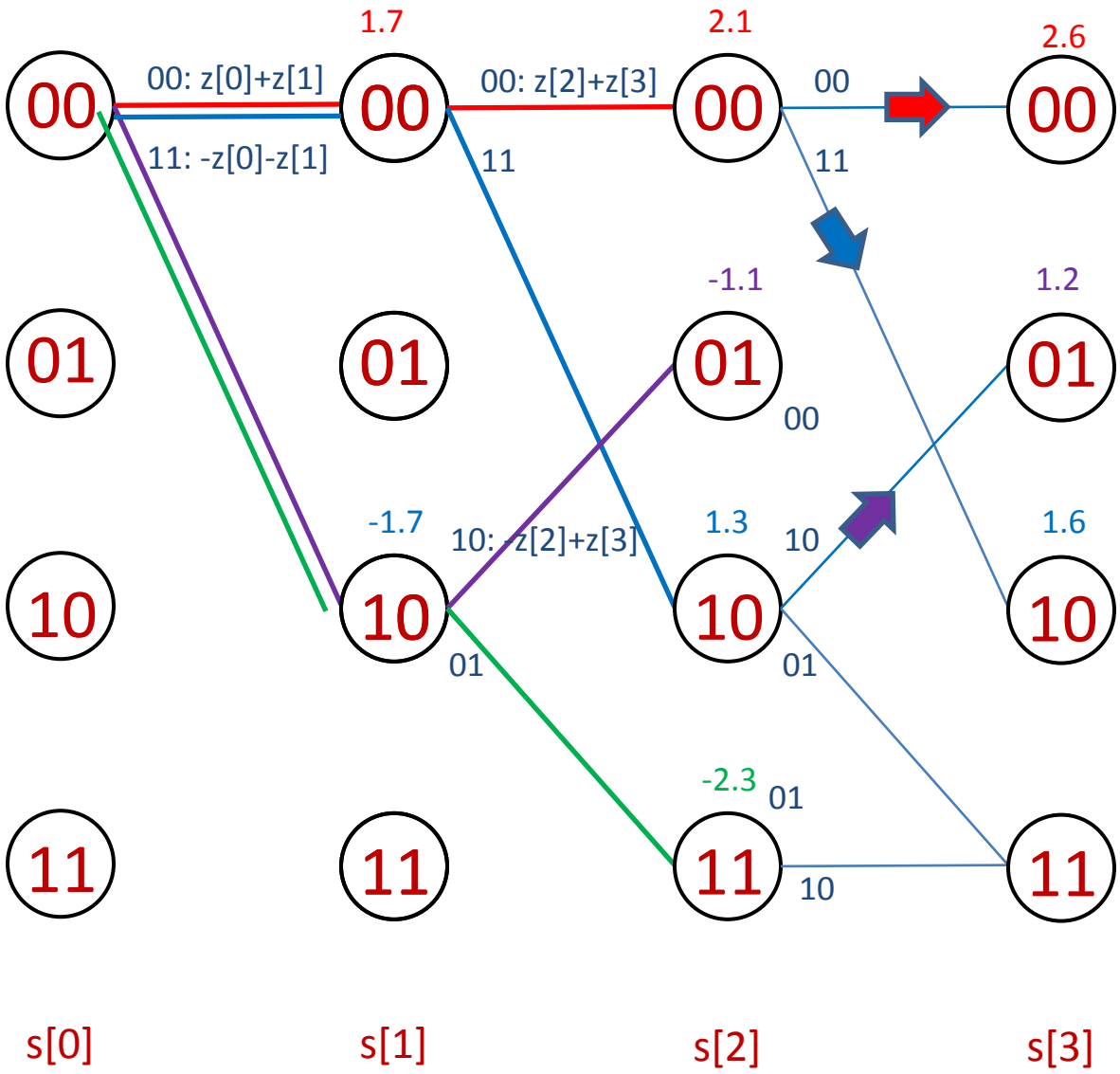
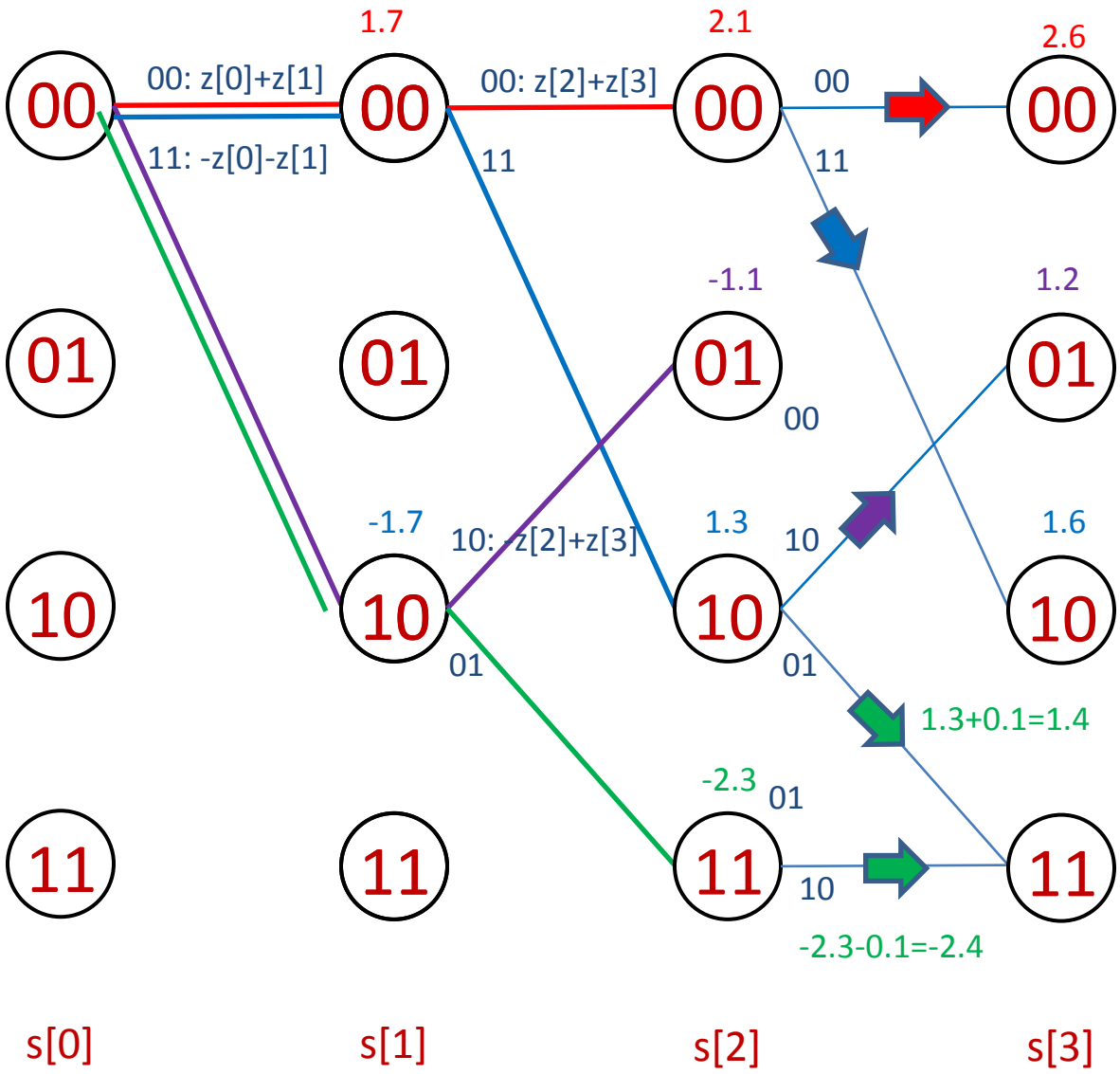
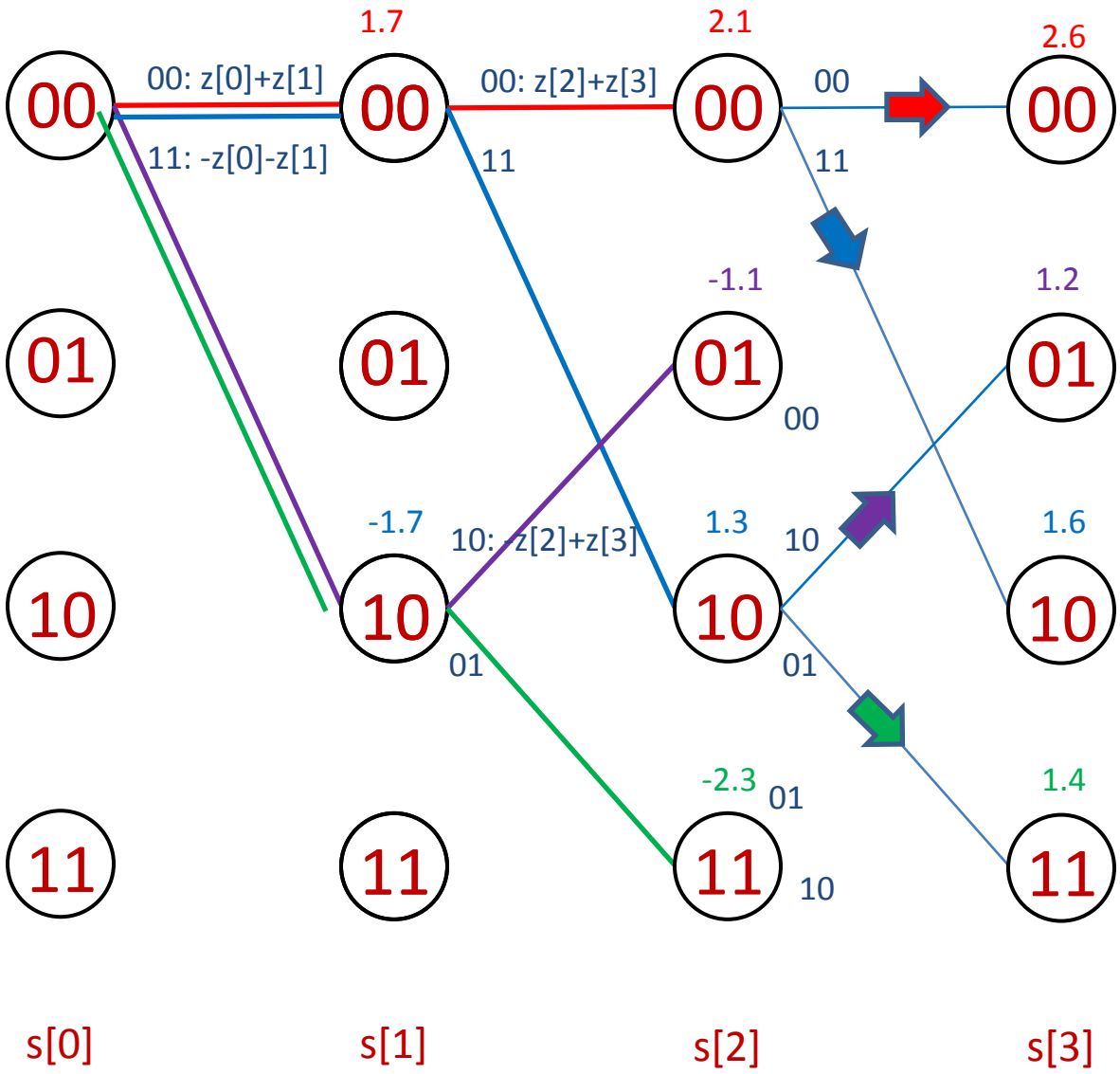


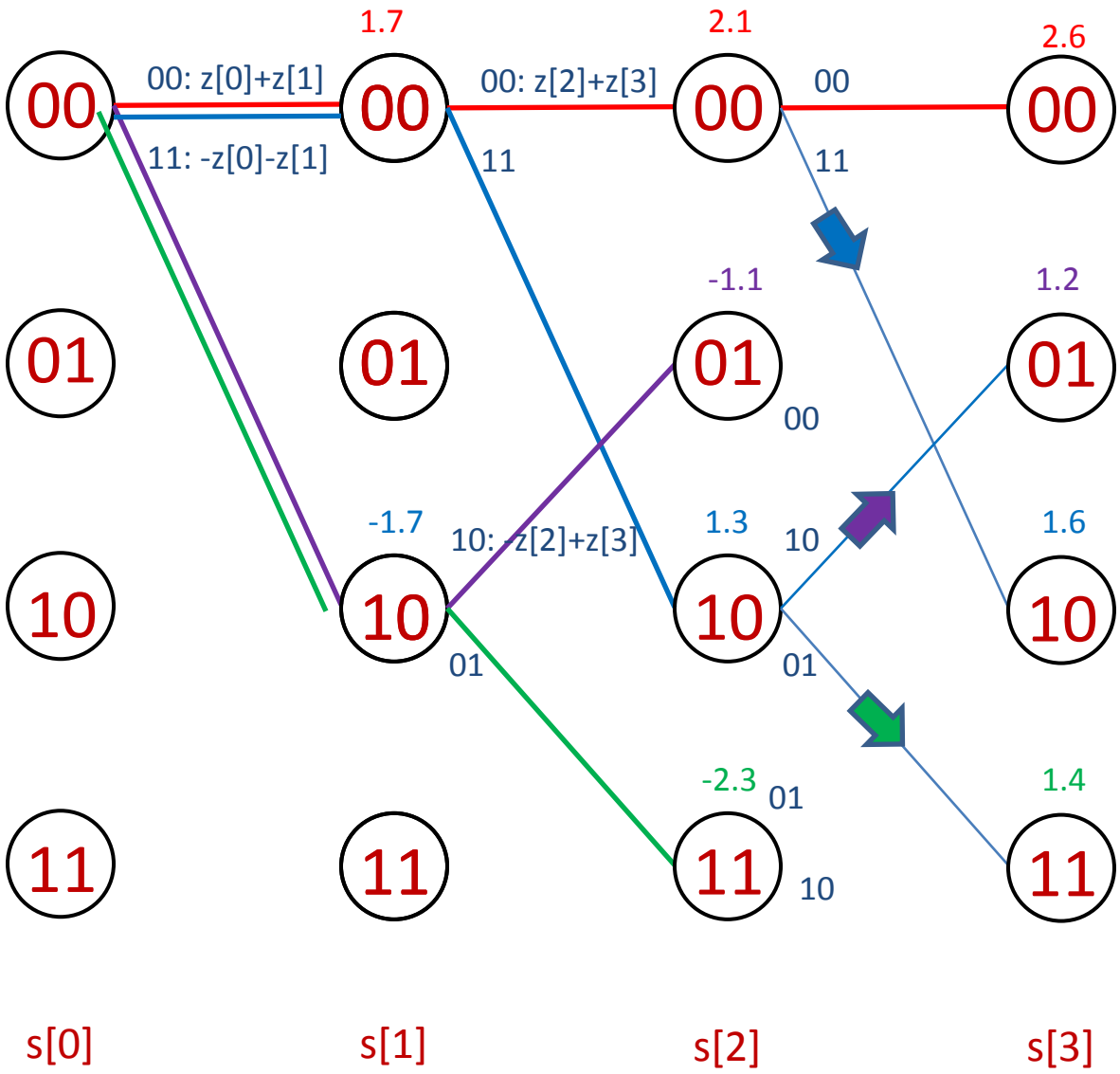
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



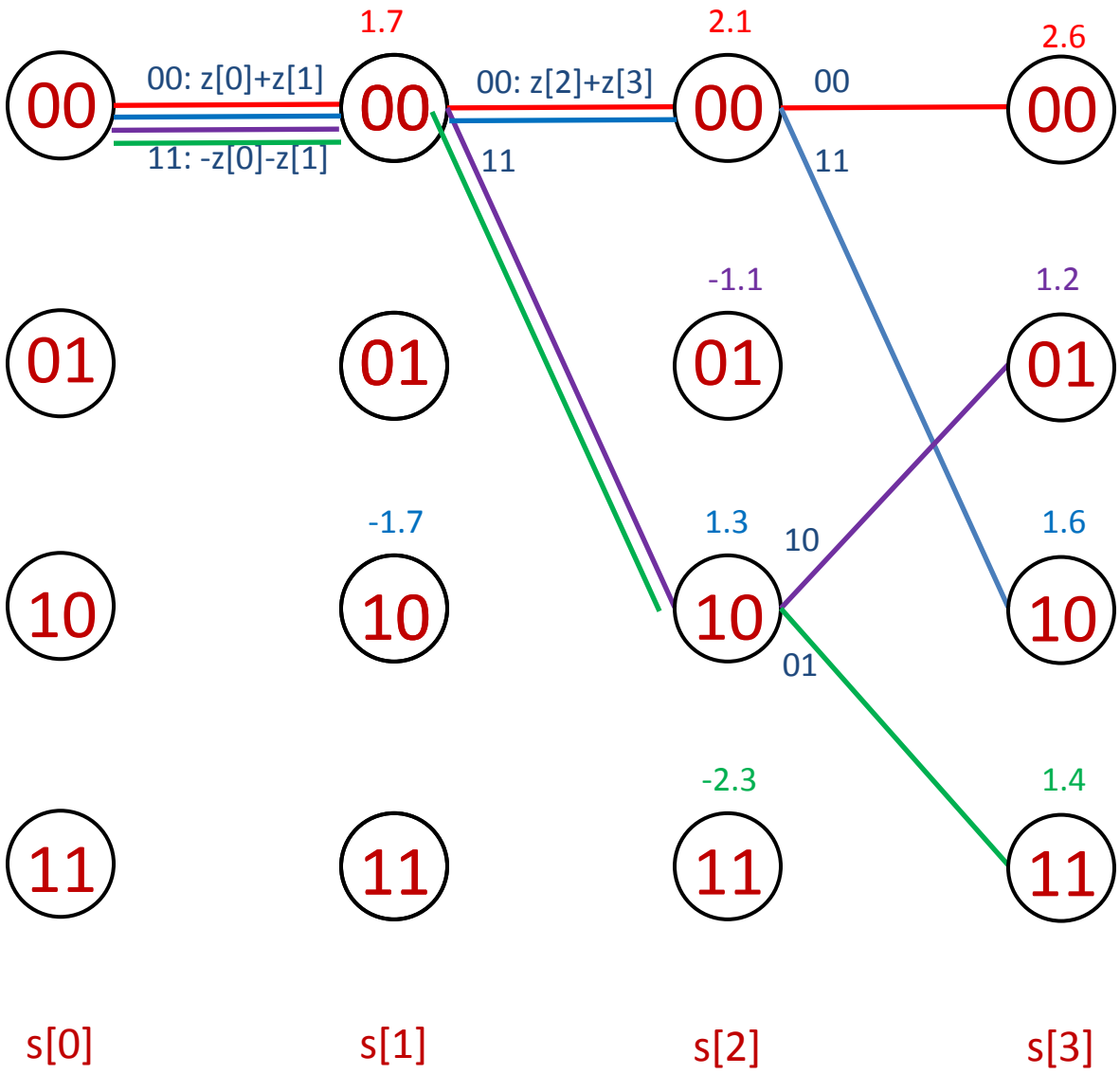
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



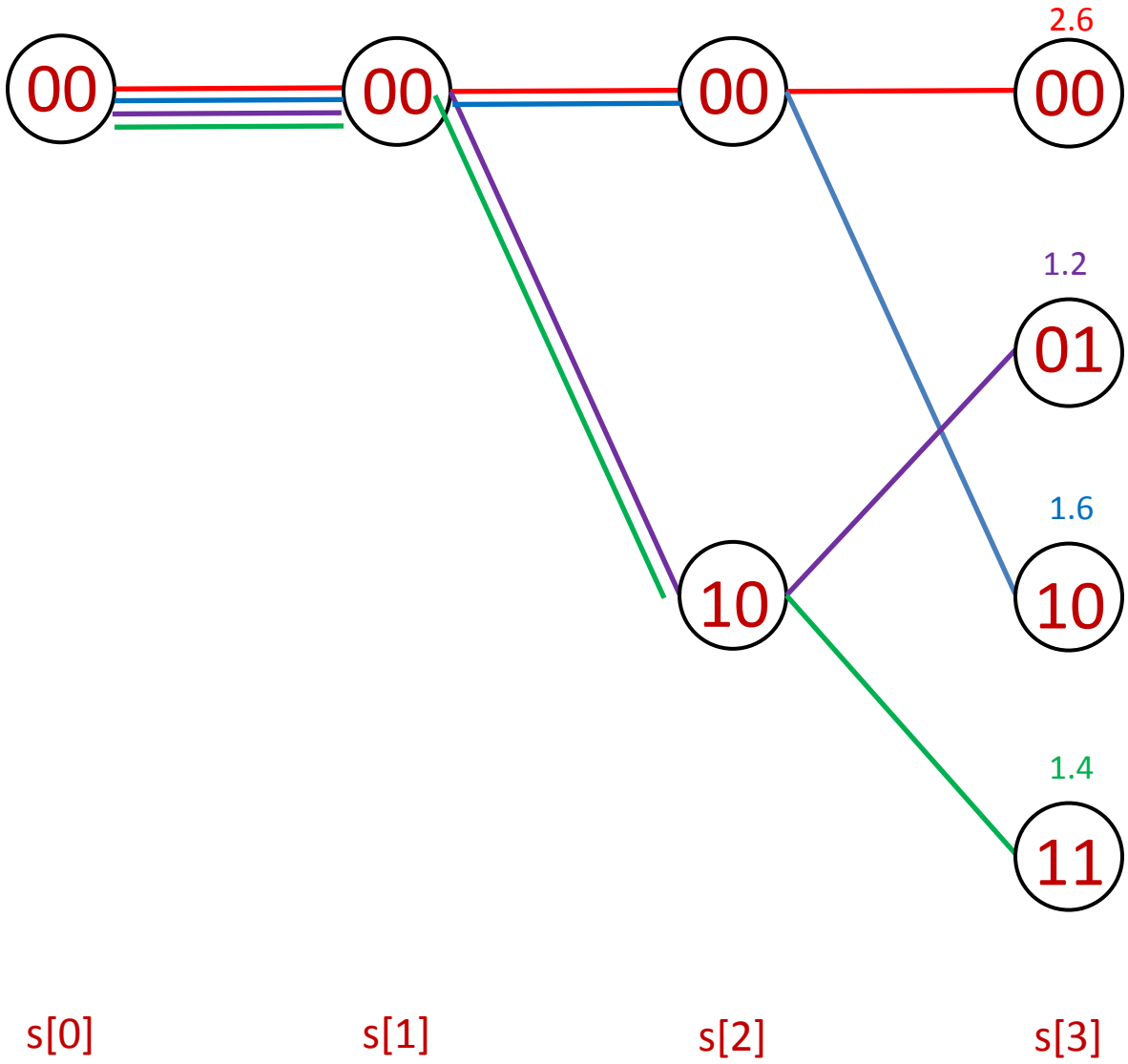
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



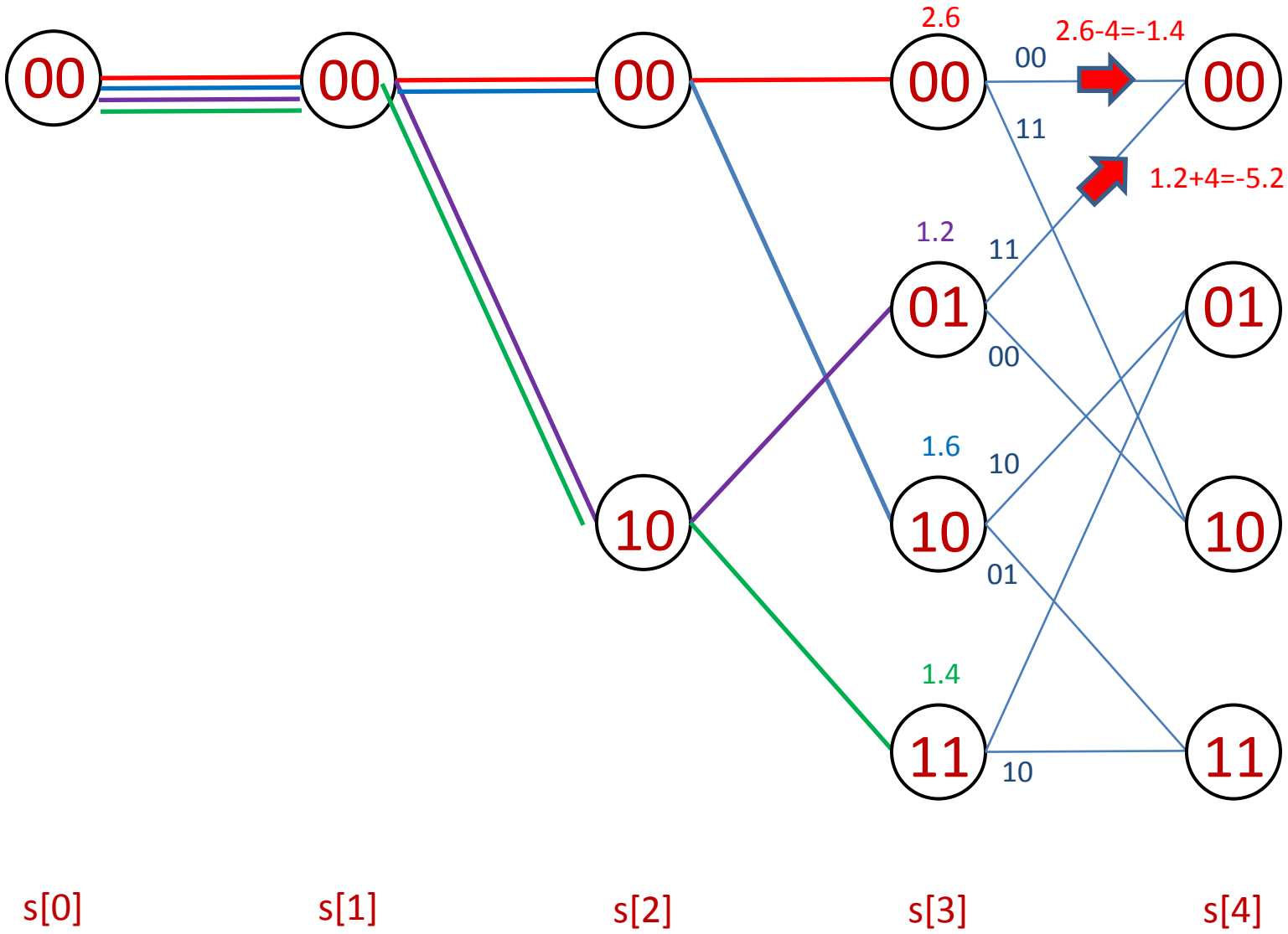
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



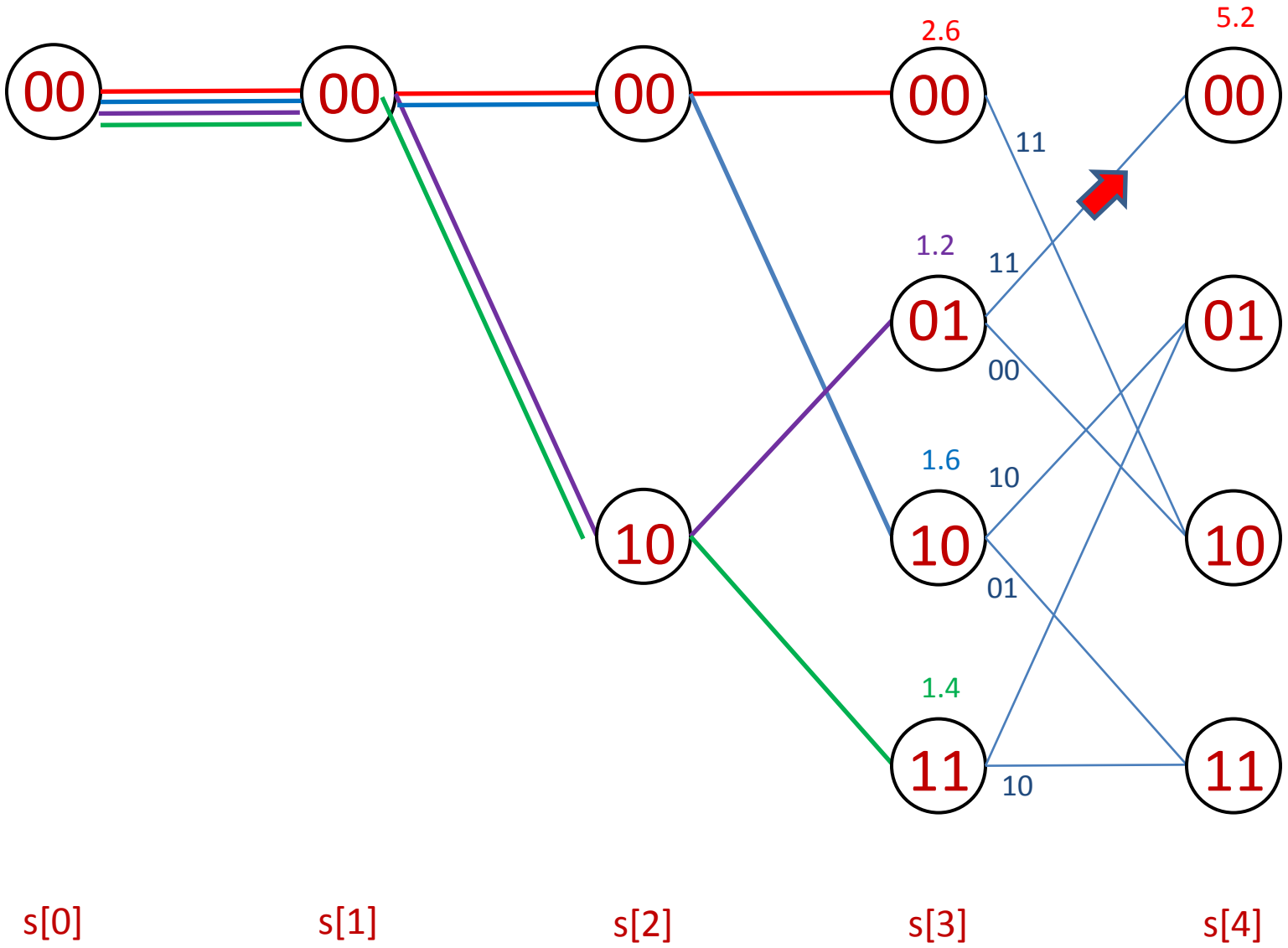
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2



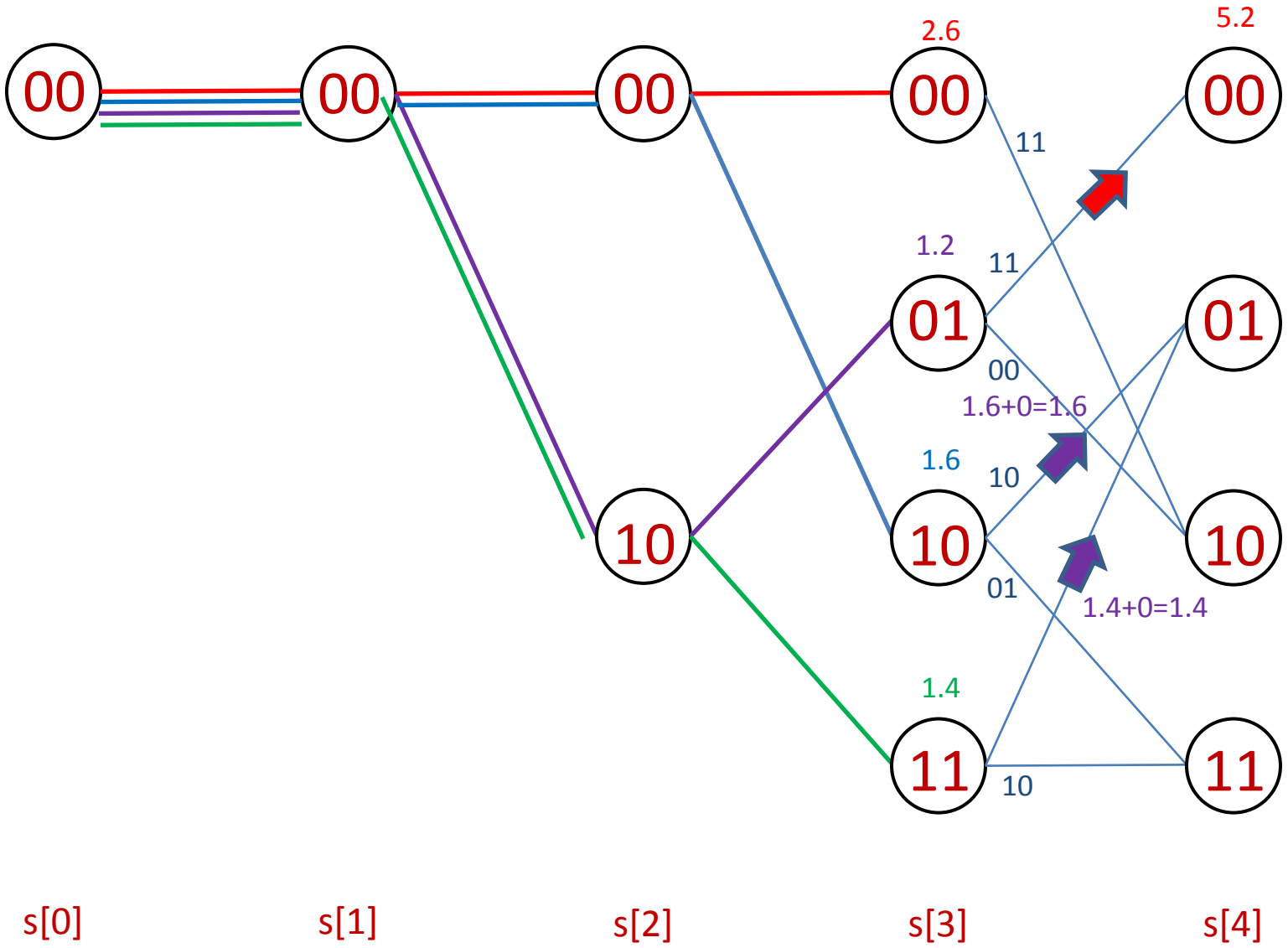
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2

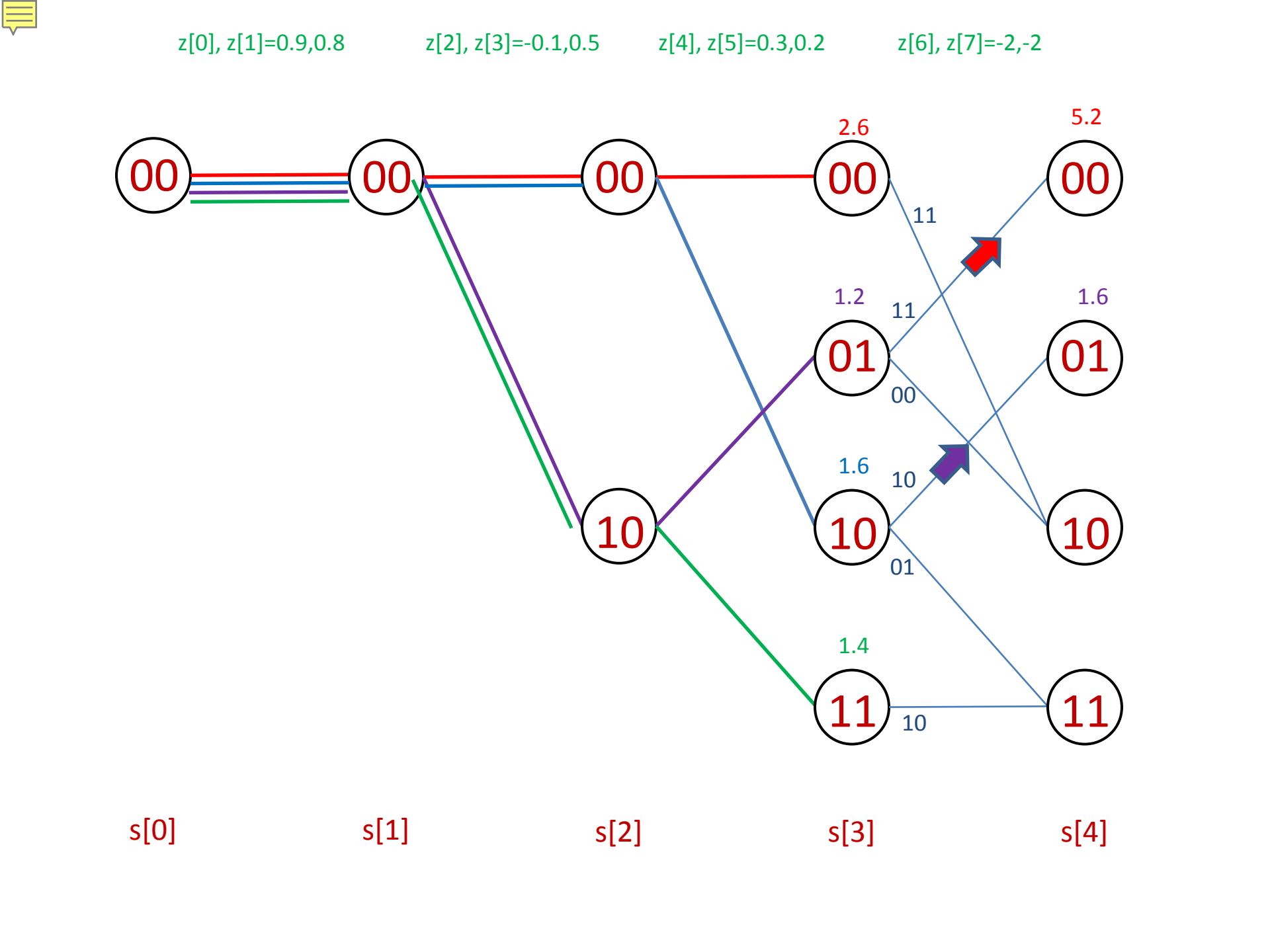


z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2



z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2




z[0], z[1]=0.9,0.8
z[2], z[3]=-0.1,0.5
z[4], z[5]=0.3,0.2
z[6], z[7]=-2,-2
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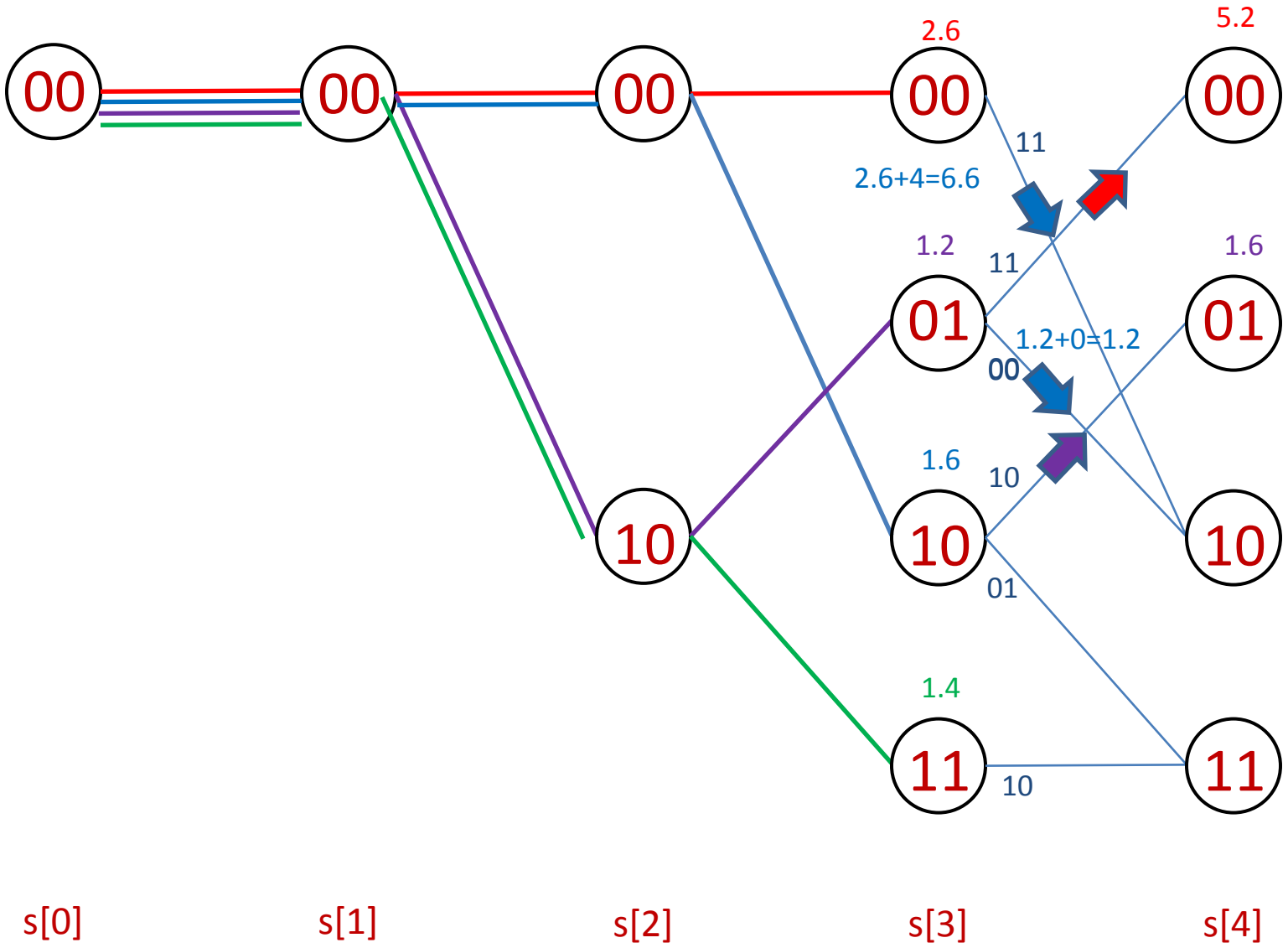
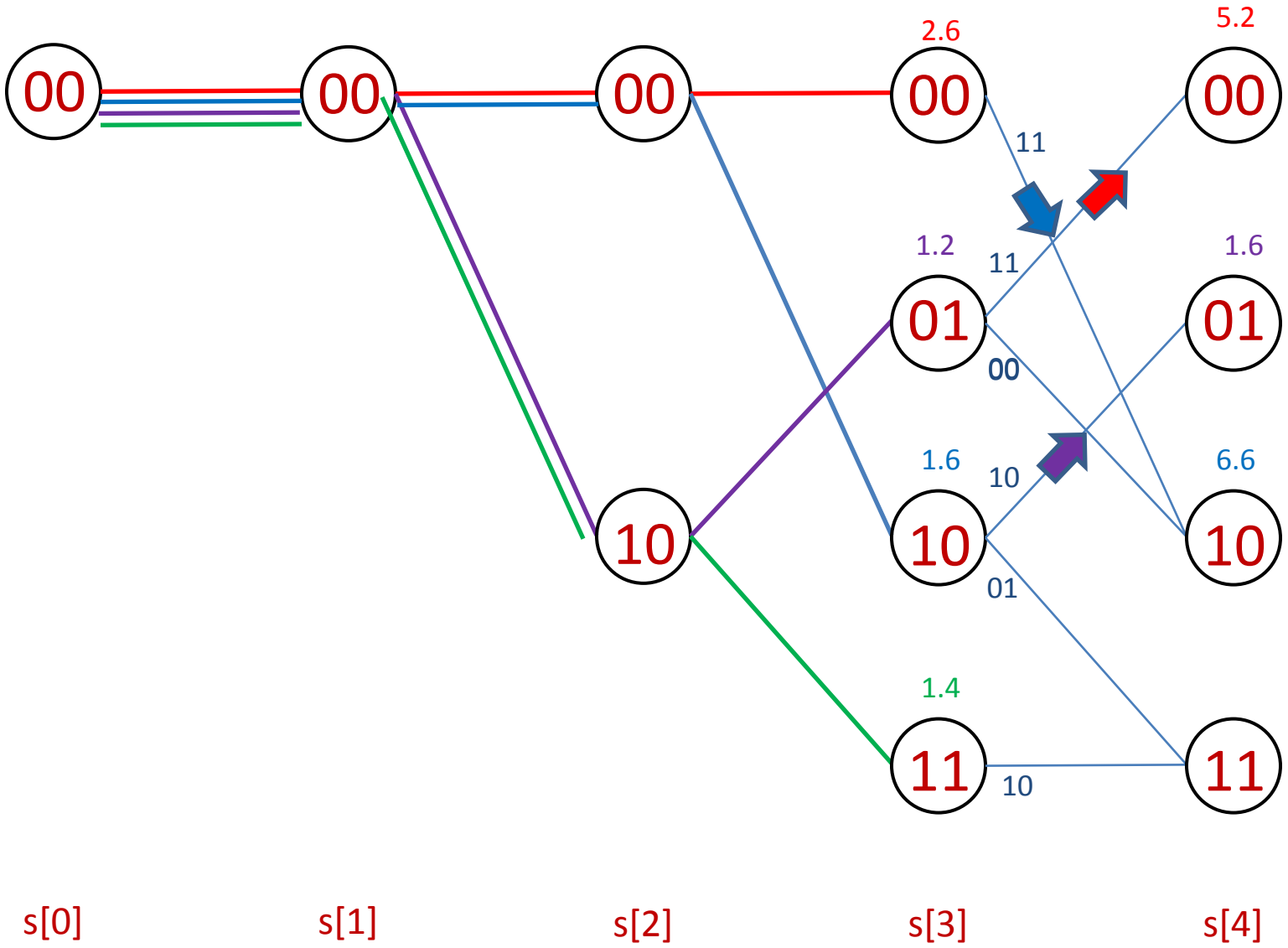
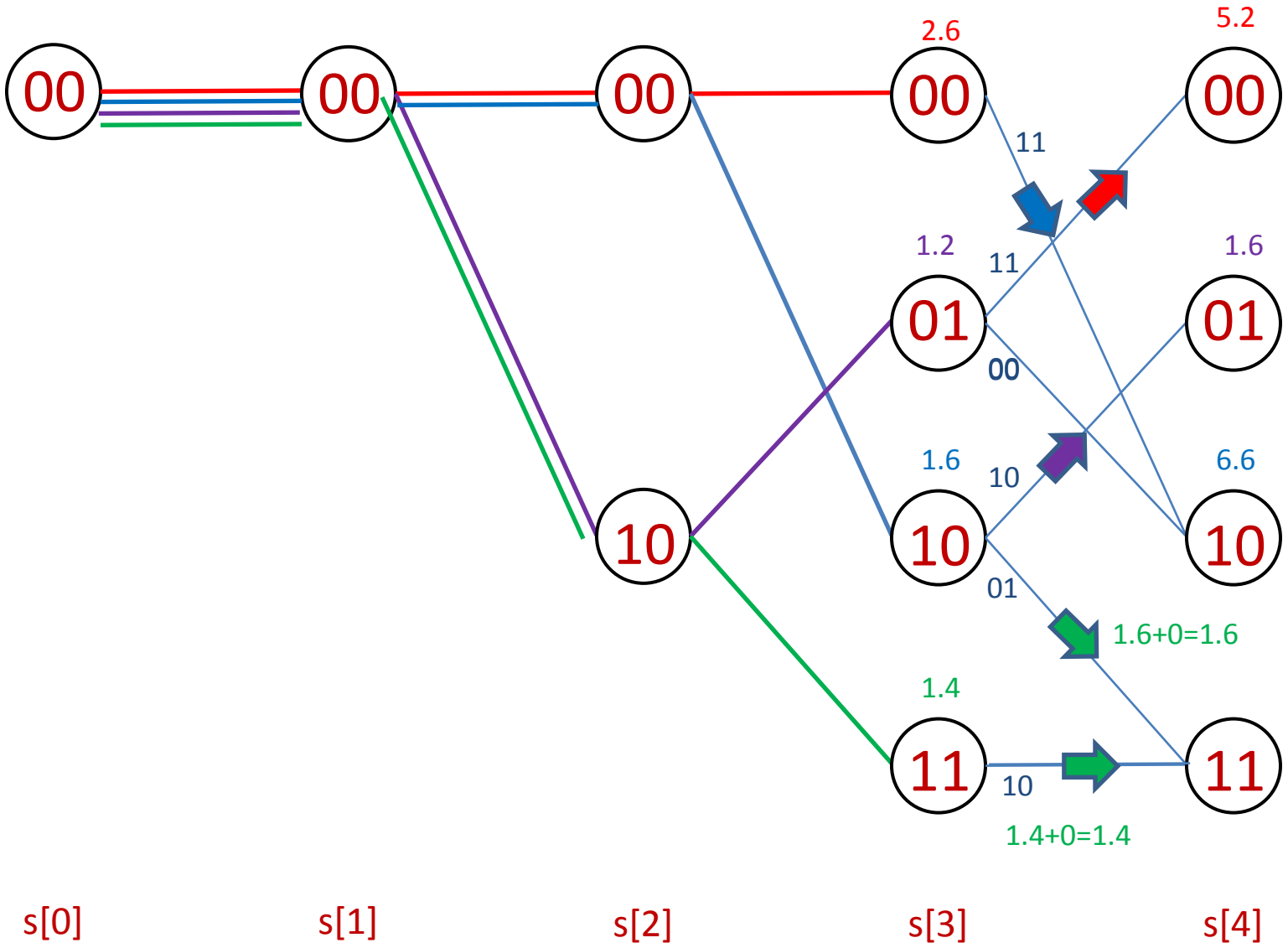
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2



z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2



z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2



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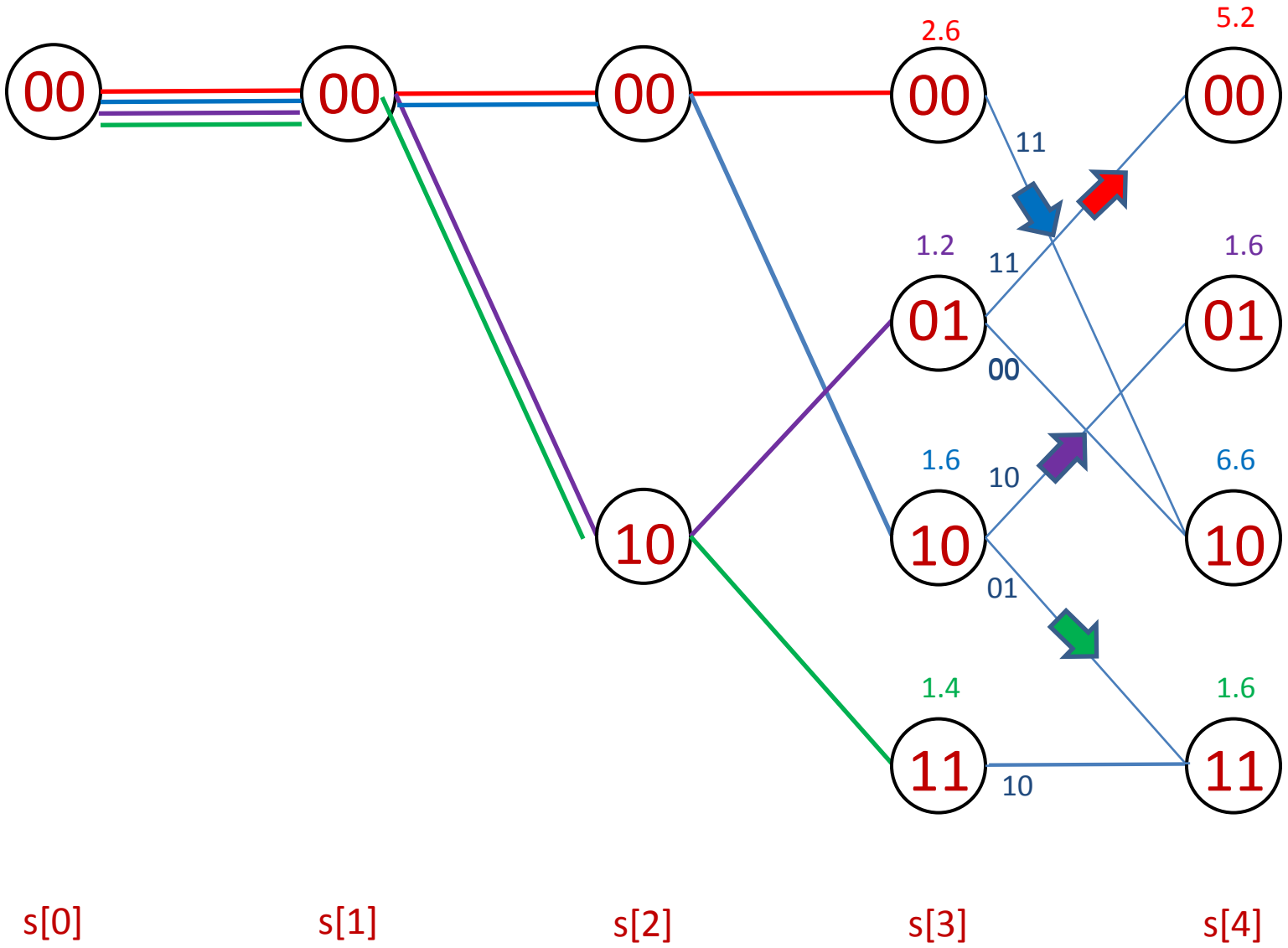
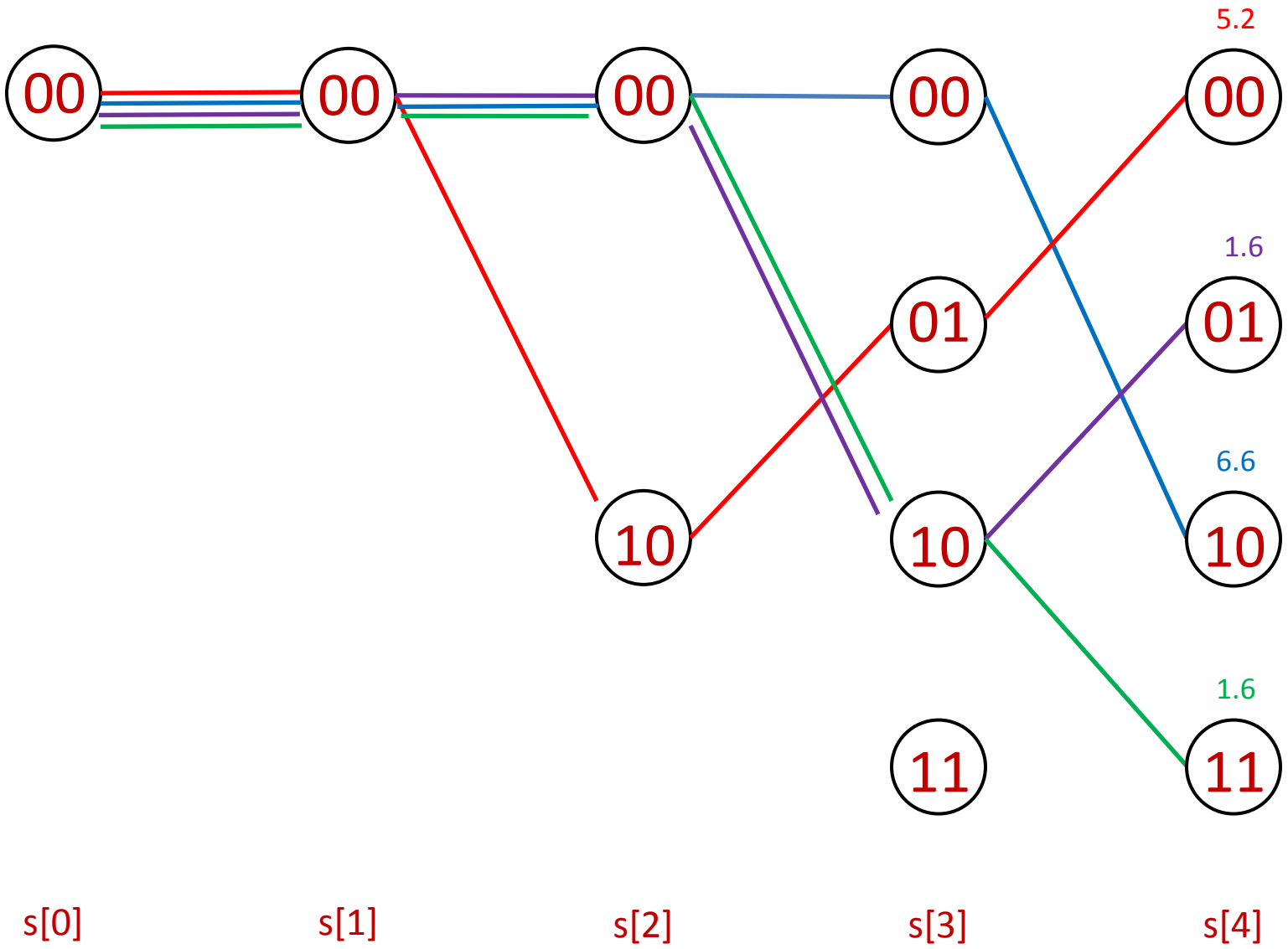
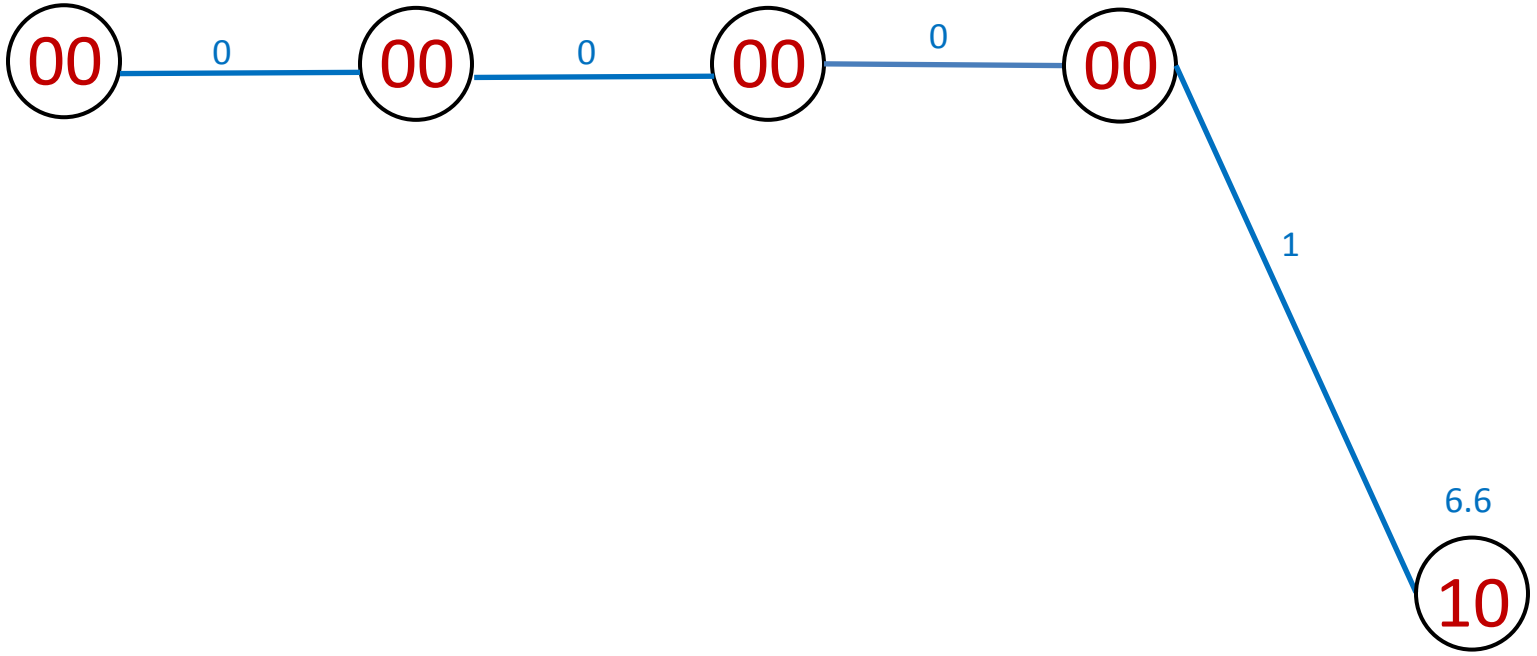
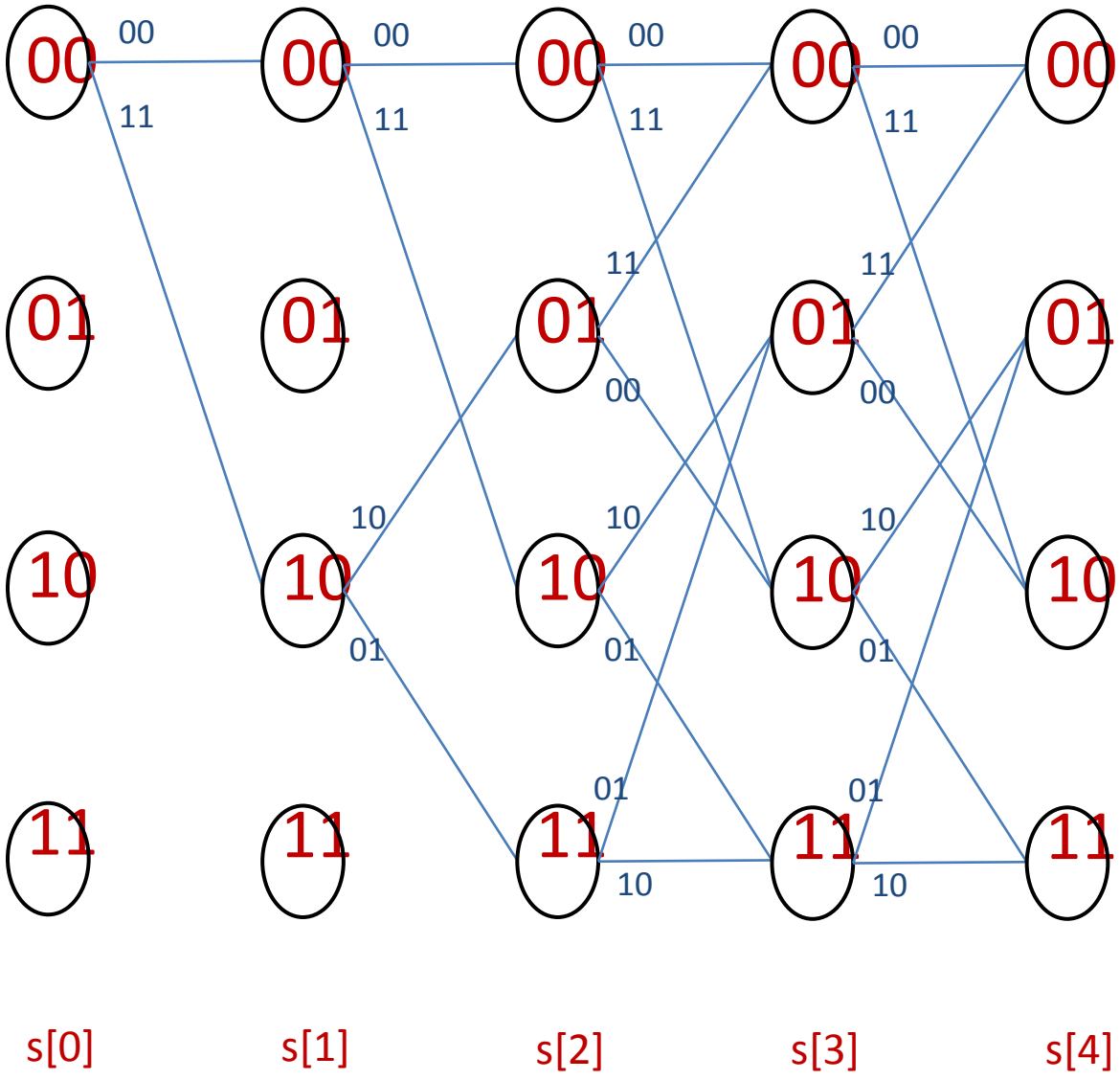


z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2





Viterbi estimate of info bits: 0001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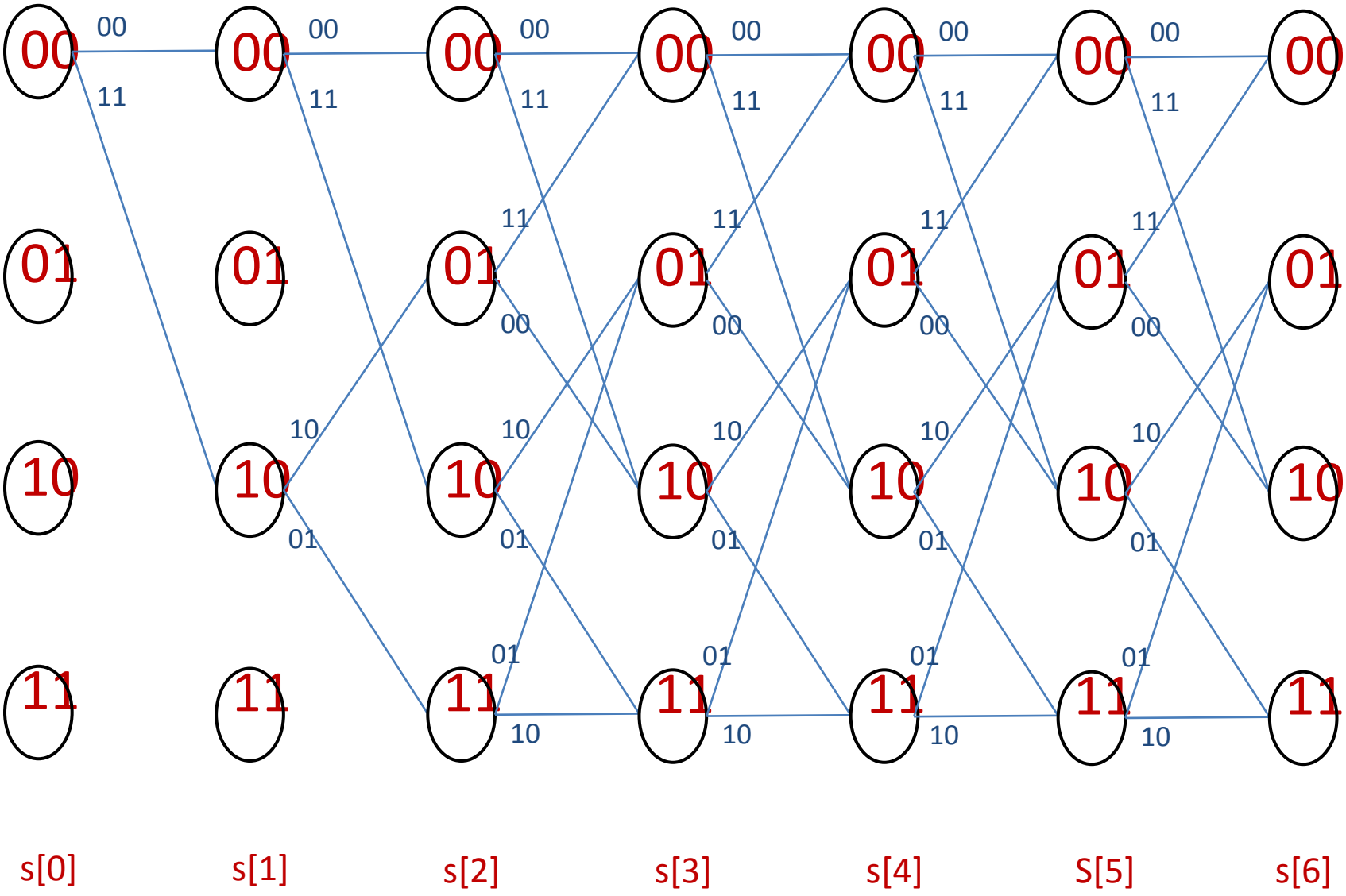
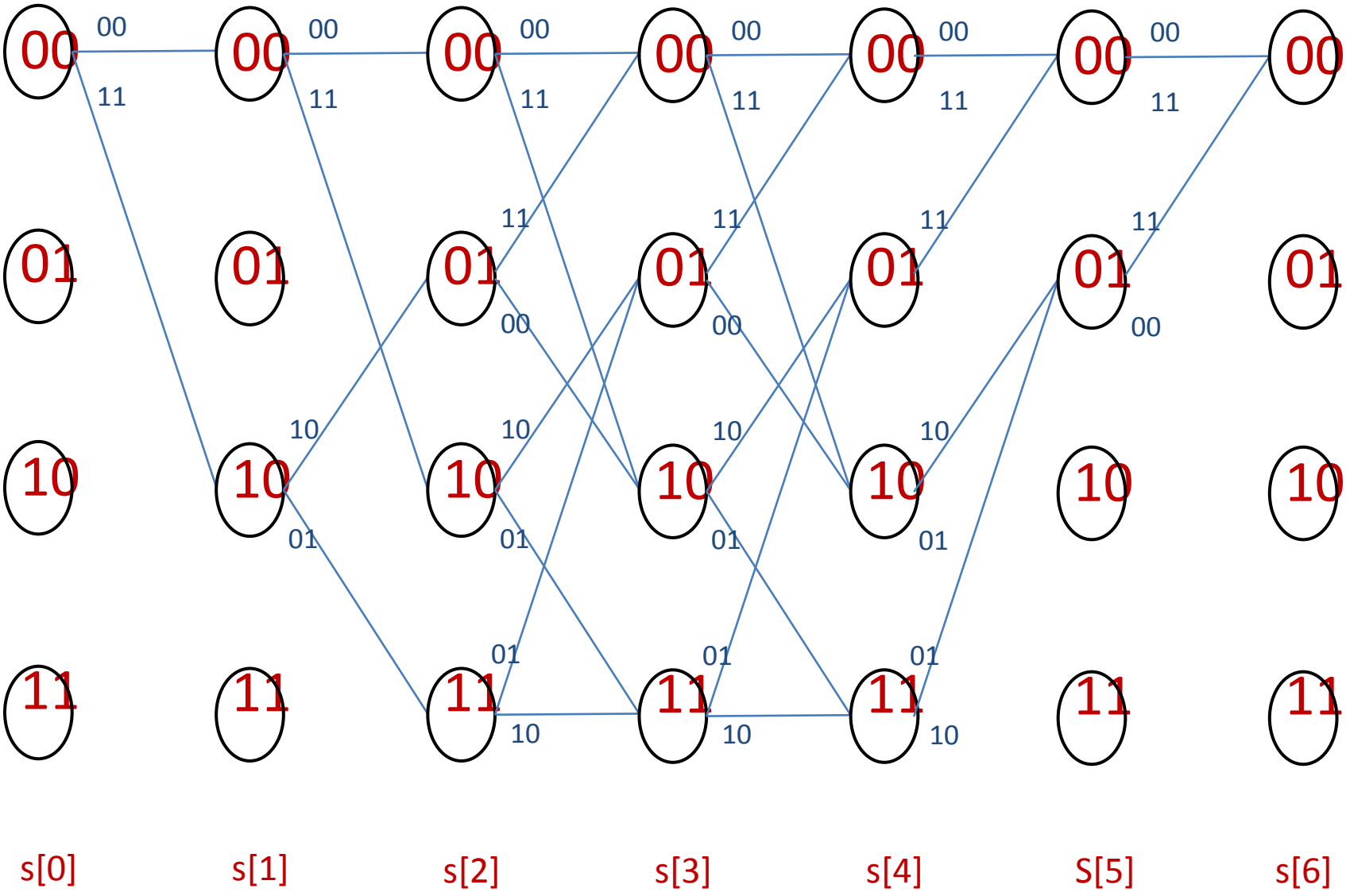
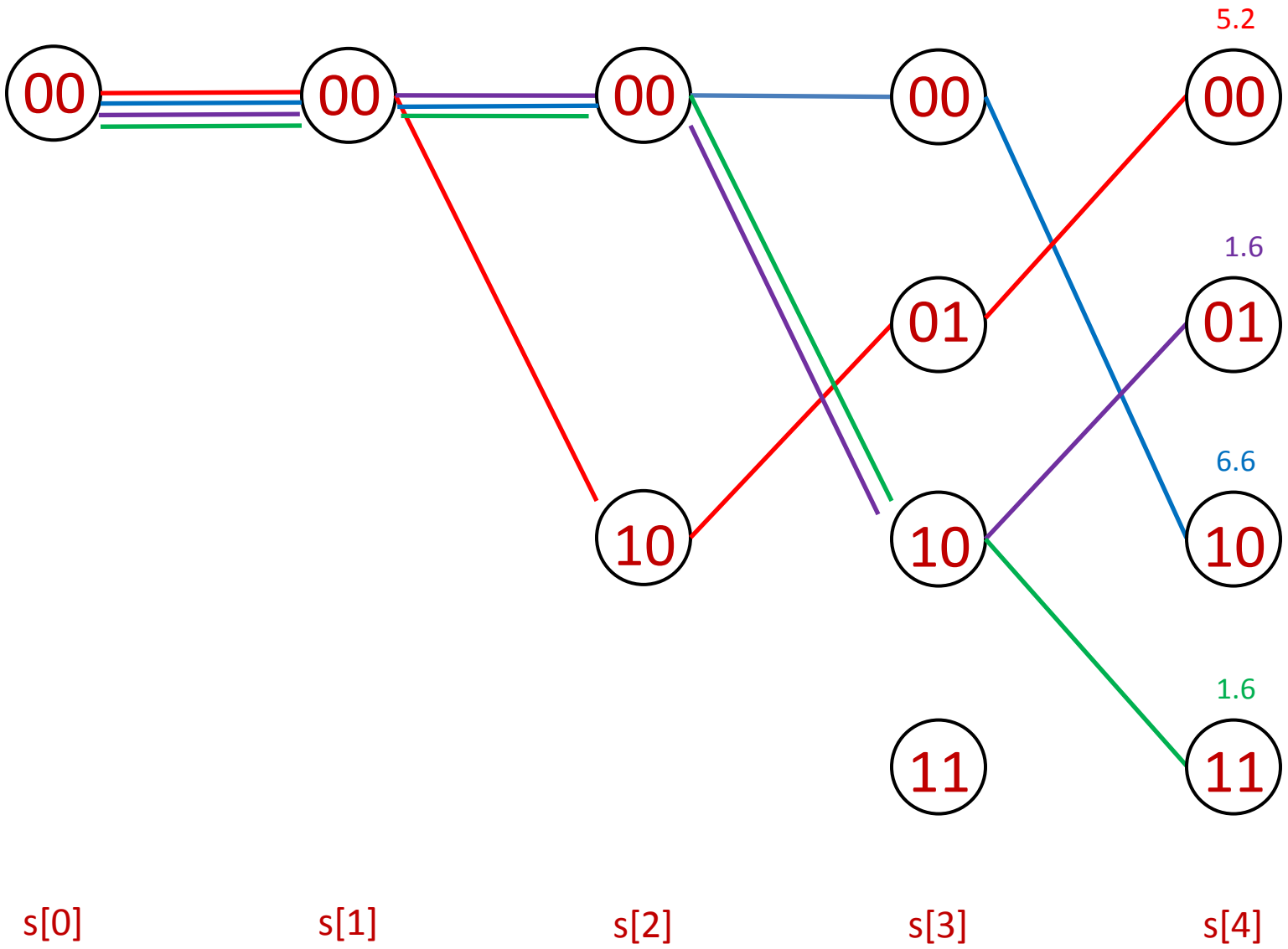


Extend by two states

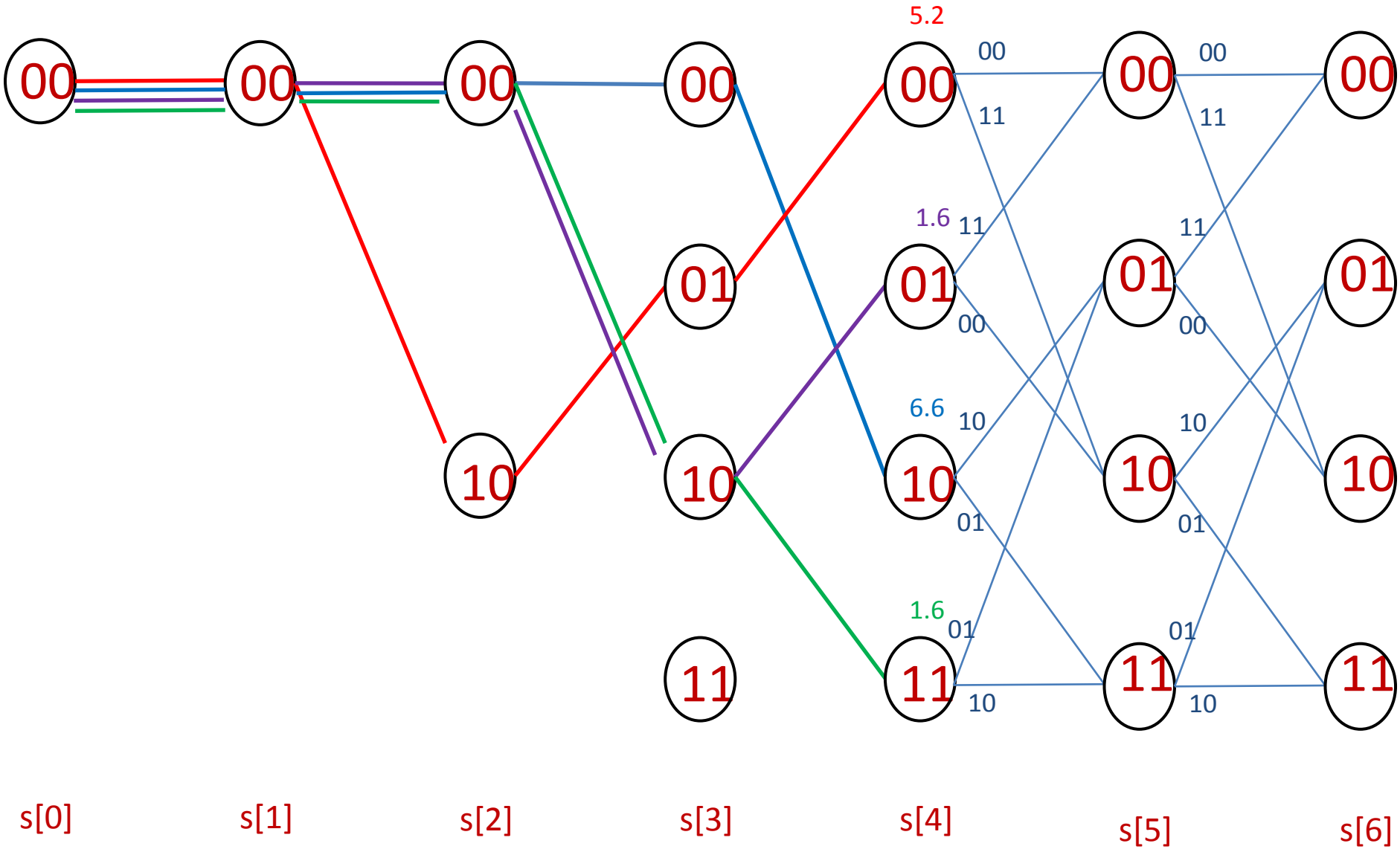


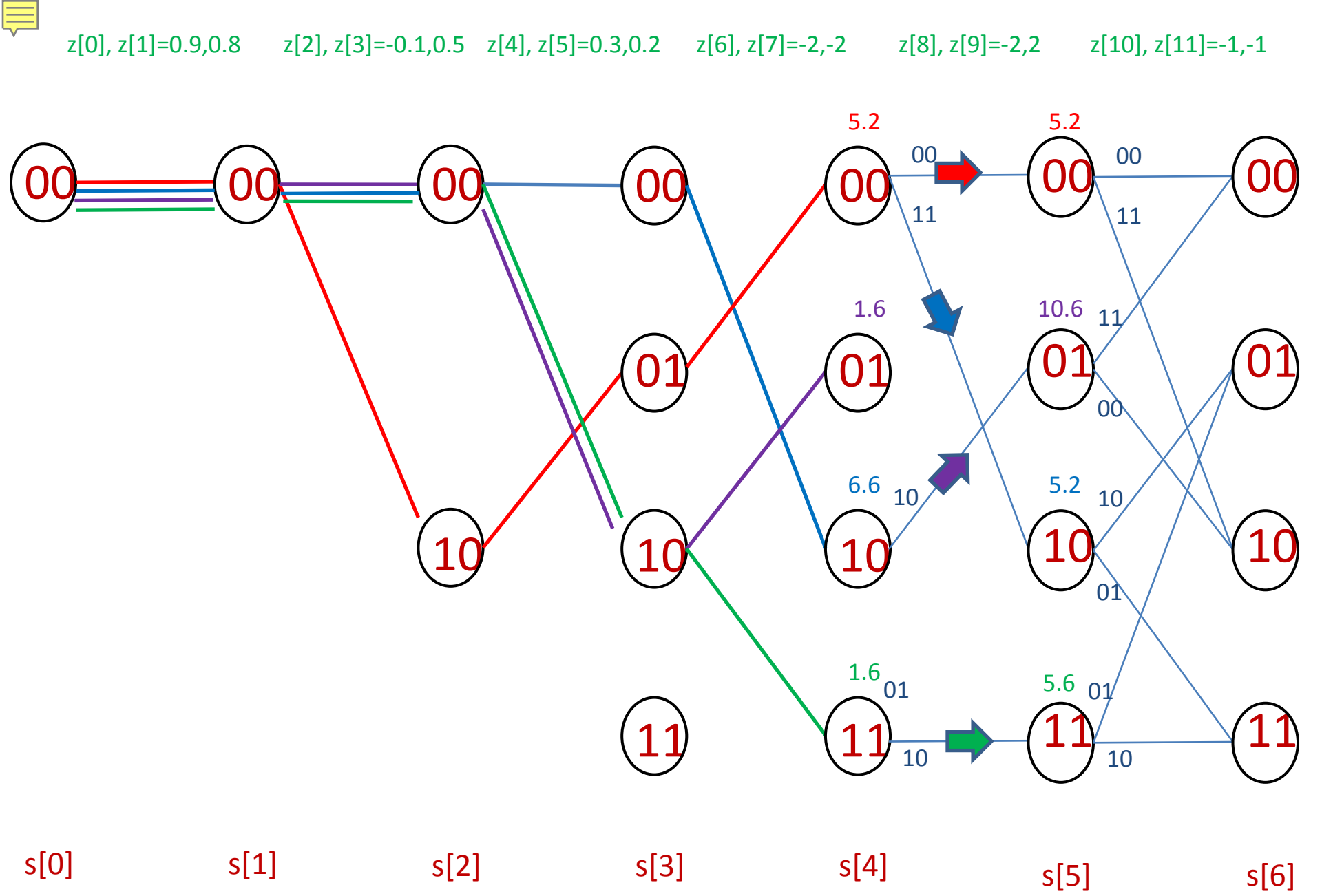
With termination at 00

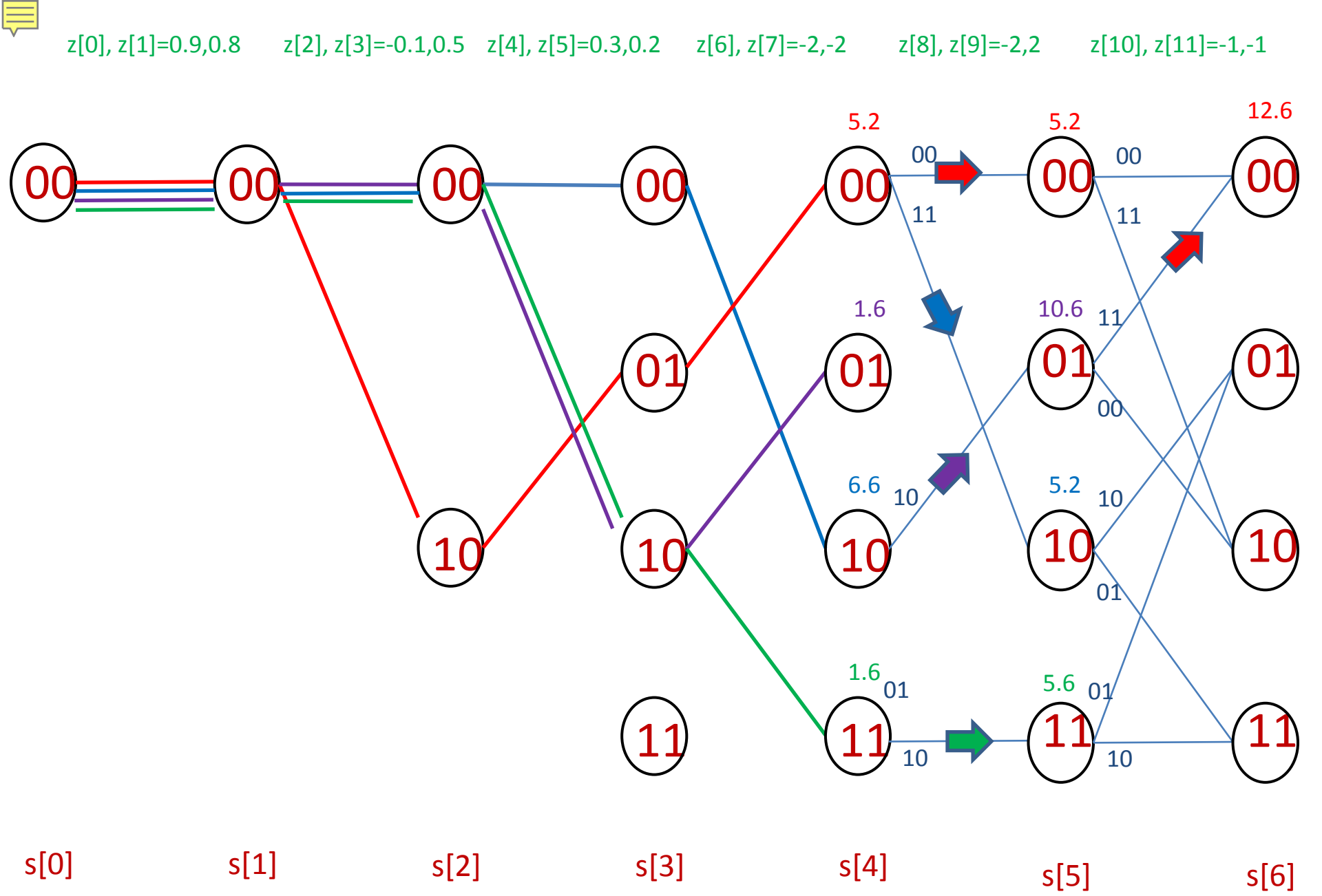
z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2

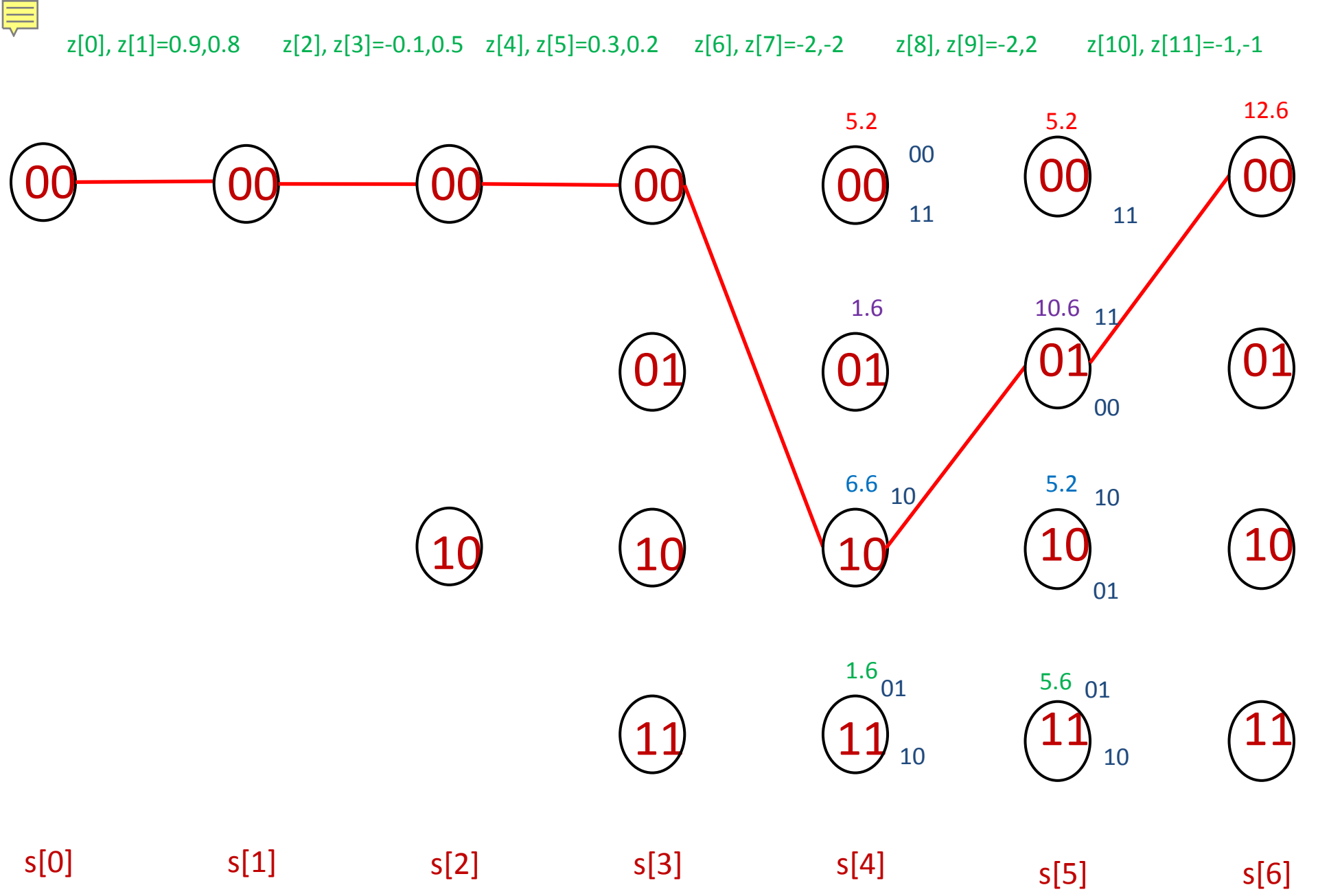


z[0], z[1]=0.9,0.8 z[2], z[3]=-0.1,0.5 z[4], z[5]=0.3,0.2 z[6], z[7]=-2,-2 z[8], z[9]=-2,2 z[10], z[11]=-1,-1

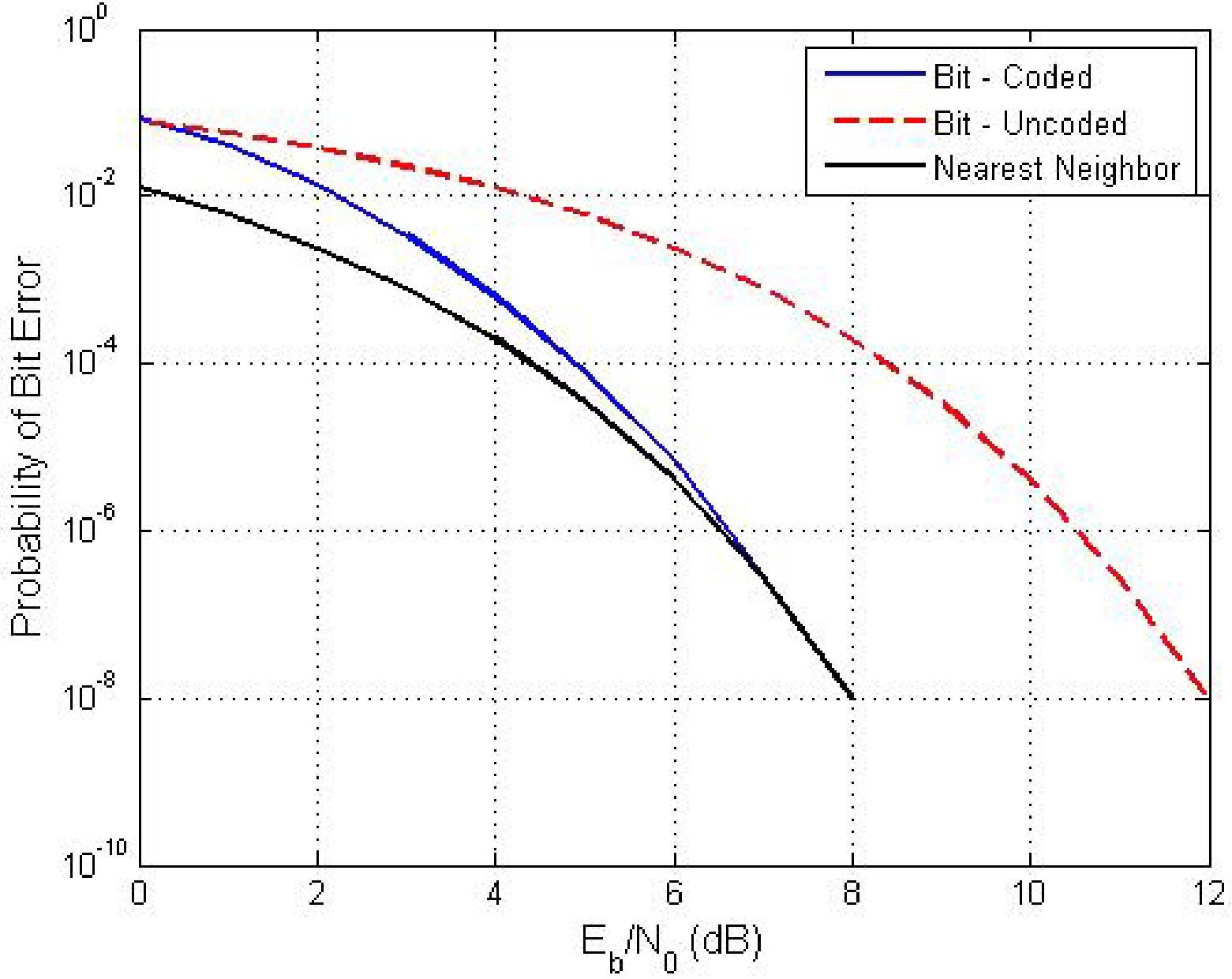


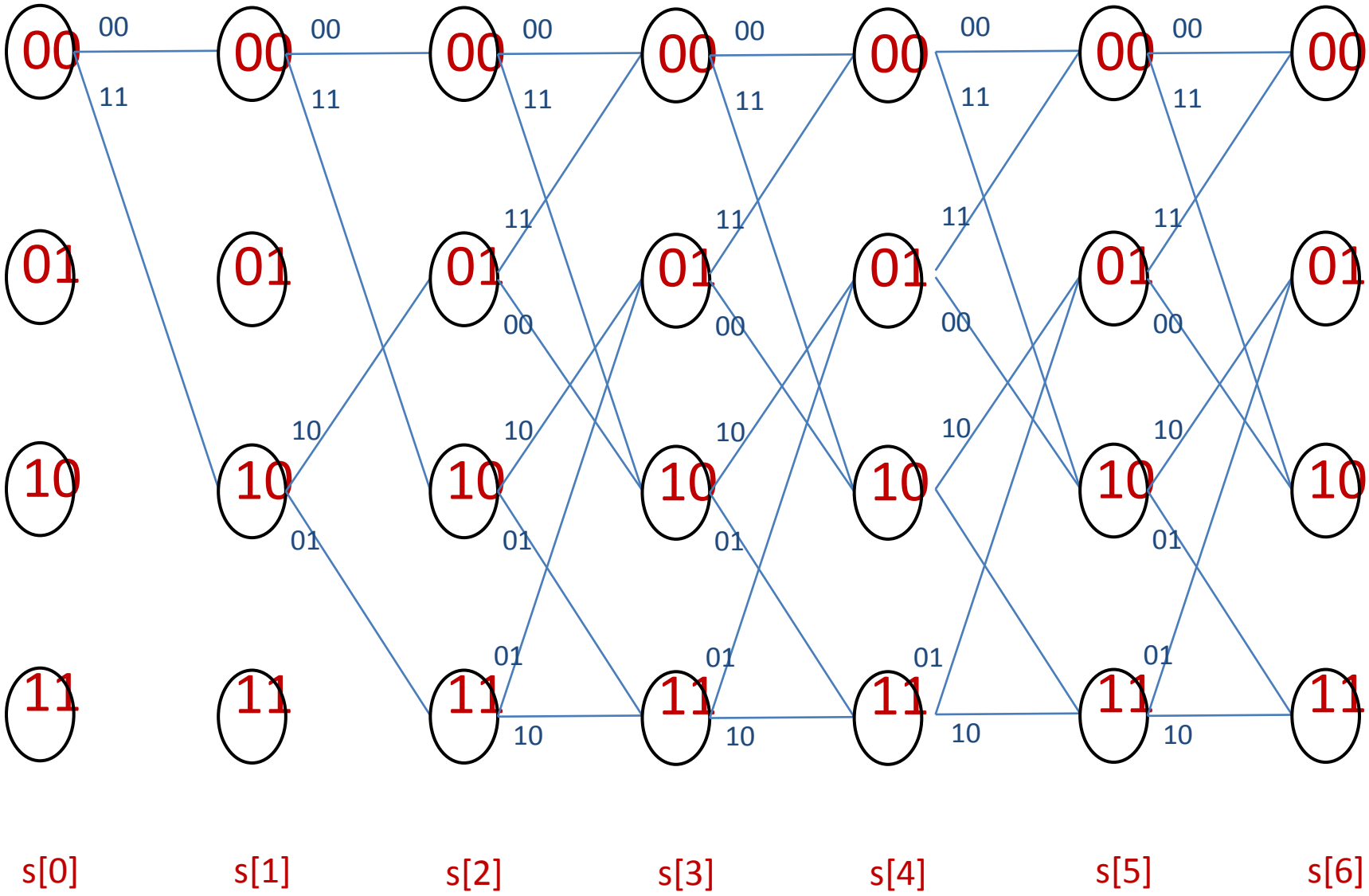

z[0], z[1]=0.9,0.8
z[2], z[3]=-0.1,0.5
z[4], z[5]=0.3,0.2
z[6], z[7]=-2,-2
z[8], z[9]=-2,2
z[10], z[11]=-1,-1
00
01
10
11
5.2
1.6
6.6
1.6
10.6
5.2
5.6
00
11
10
01
s[0]
s[1]
s[2]
s[3]
s[4]
s[5]
s[6]

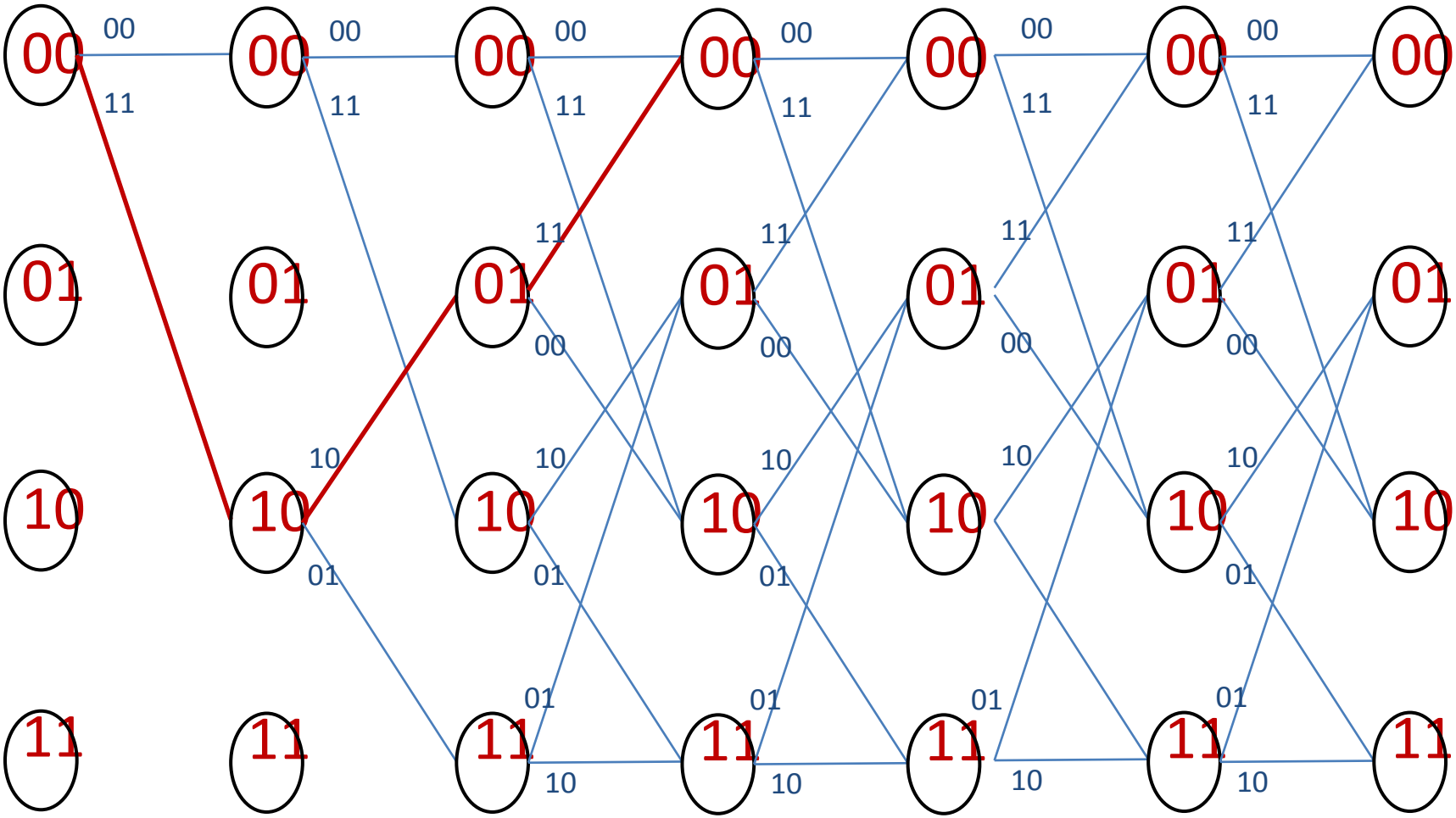

z[0], z[1]=0.9,0.8
z[2], z[3]=-0.1,0.5
z[4], z[5]=0.3,0.2
z[6], z[7]=-2,-2
z[8], z[9]=-2,2
z[10], z[11]=-1,-1
00
01
10
11
5.2
1.6
6.6
1.6
5.2
10.6
5.2
5.6
12.6
s[0]
s[1]
s[2]
s[3]
s[4]
s[5]
s[6]



Viterbi estimate (accounting for termination) of four info bits: 0001


Bit - Coded
Bit - Uncoded
Nearest Neighbor
Probability of Bit Error
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
0
2
4
6
8
10
12
E_b/N_0 (dB)


00
01
10
11
00
11
10
01
s[0]
s[1]
s[2]
s[3]
s[4]
s[5]
s[6]

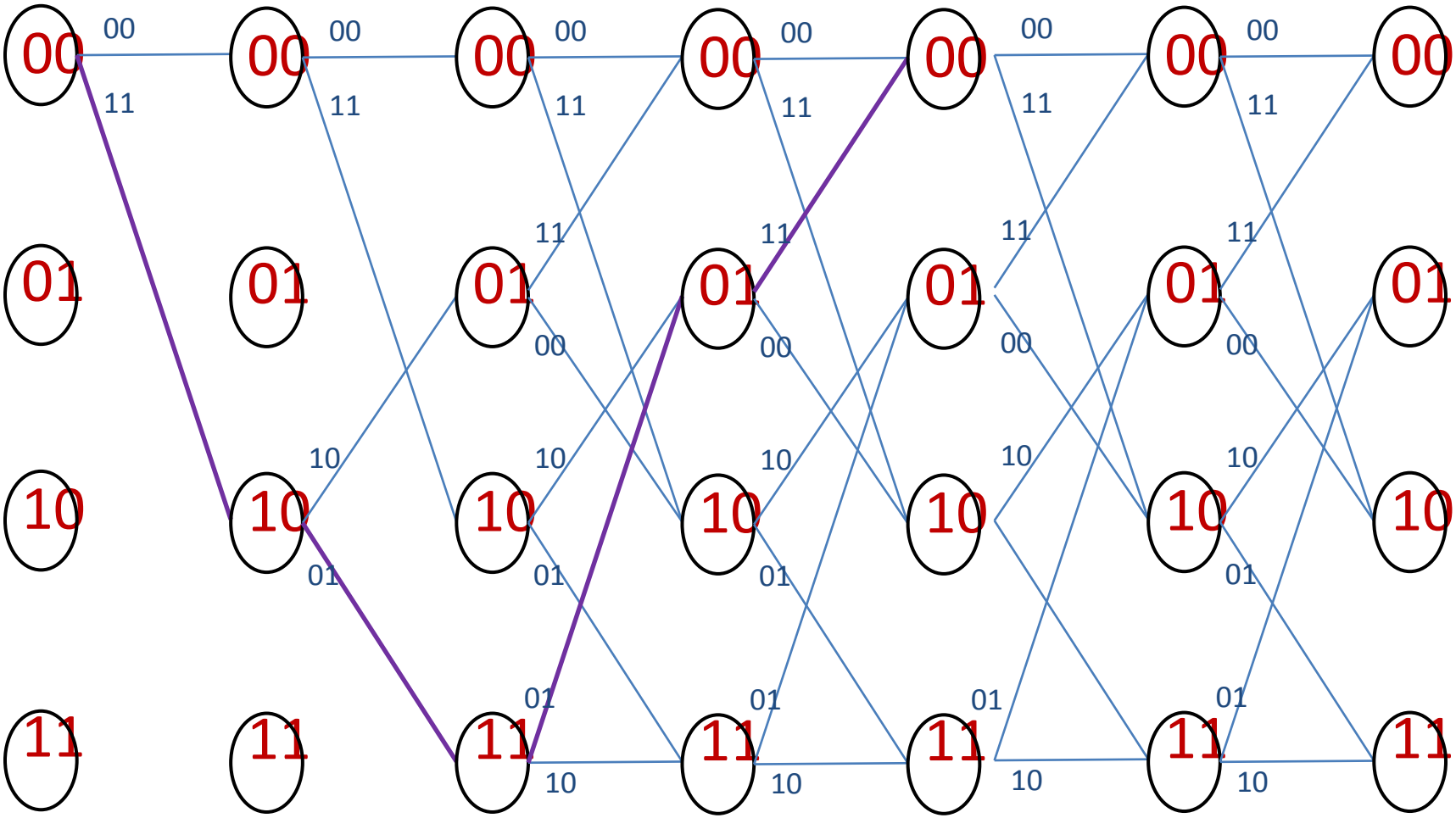


Info bit sequence: 100…

Codeword: 11 10 11 00 …

Input weight=1

Output weight = 5

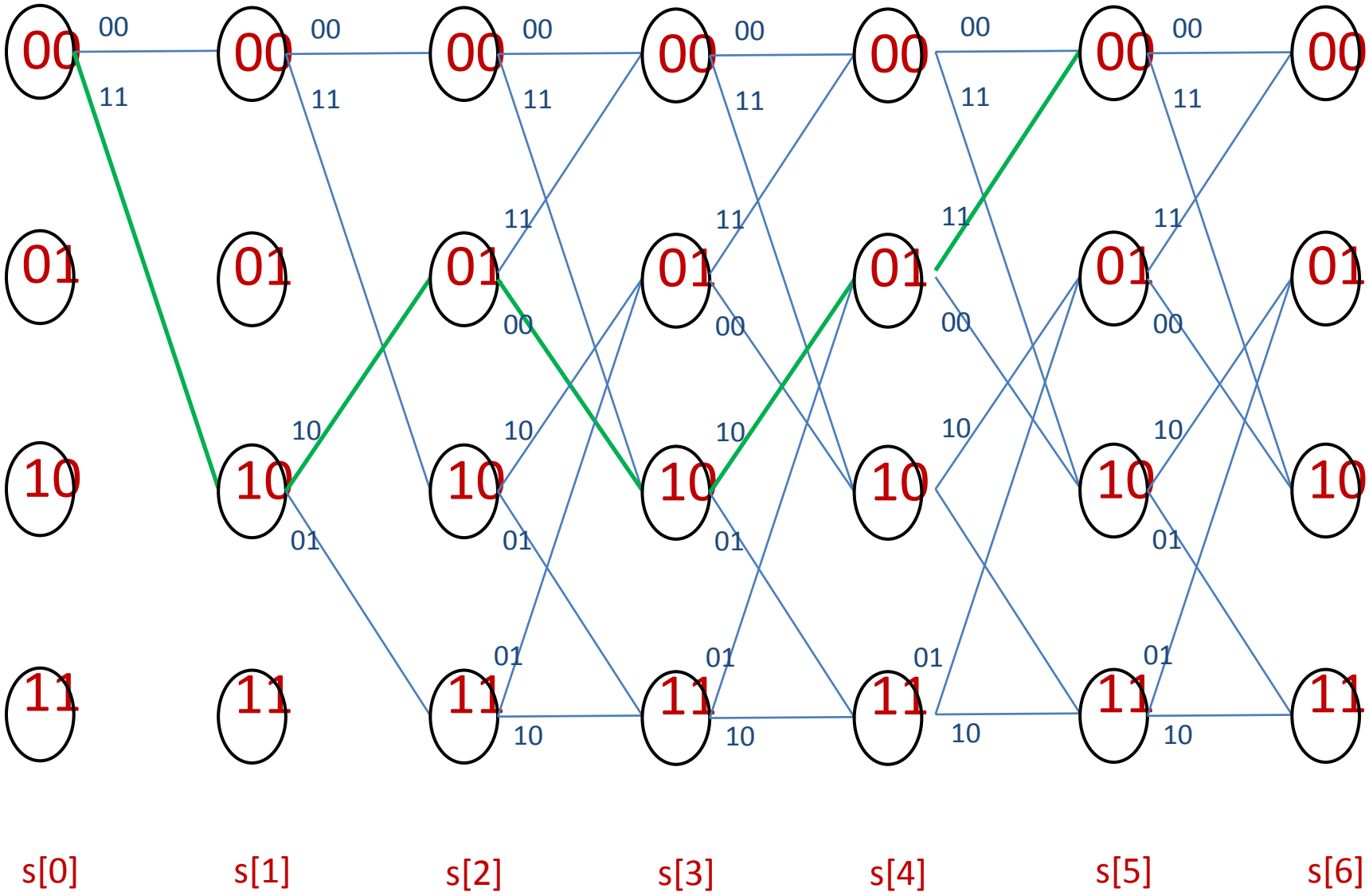


Info bit sequence: 1100…

Codeword: 11 01 01 11 00 …

Input weight=2

Output weight = 6


00
01
10
11
s[0]
s[1]
s[2]
s[3]
s[4]
s[5]
s[6]