

# Exercise Multimedia Technology WS 2004/2005

Sheet 1 (October 29th 2004)

## 1.1 Huffman coding

Please code the string MISSISSIPPI using the algorithm invented by Huffman. Calculate the relative occurrence first and afterwards build the tree accordingly. How great are the savings with regard to an 8-Bit coding of the string?

## 1.2 Lempel-Ziv Welch coding

Please code the string MISSISSIPPIMISSISSIPPI using Lempel-Ziv coding in the version of Welch (the one taught in the lecture). The predefined alphabet looks like this:

1	I
2	M
3	P
4	S
5	...

Which is the minimum number of bits needed to store or transmit the resulting index values?

## 1.3 Arithmetic coding

The following table defines probabilities for the alphabet  $a,b,c,d,e$ . Please code the string aabdcea using static arithmetic coding. In the interval which you will use begin with the letter a.

Letter	Probability
a	0.3
b	0.2
c	0.1
d	0.1
e	0.3