**07. 'Speicherplatz als rares Gut - Kompression':**

Sie lösen die folgenden 5 Aufgaben 7.1 bis 7.5 und mindestens die  
 Zusatzaufgaben und melden alle Ihre Probleme bzw. Unklarheiten spätestens bei der Besprechung!

**Aufgabe 7.1:** Kompression allgemein

a) Suchen Sie fünf Beispiele für Datenkompression aus Ihrem Alltag

b) Welche Ihrer Beispiele werden verlustfrei komprimiert?

**Aufgabe 7.2:** Huffman-Codierung

a) Erstellen Sie den Huffman-Codebaum für die Zeichenfolge TENNESSEE ERLEBEN

b) Erstellen Sie die zugehörige Code-Tabelle

c) Schreiben Sie die binäre Codierung der Zeichenfolge auf

d) Berechnen Sie Kompressionsfaktor und Kompressionsrate unter der Annahme,   
dass der Originaltext mit 8 Bit pro Zeichen abgespeichert worden ist.

**Aufgabe 7.3:** Dateien komprimieren unter Windows

Stellen Sie sicher, dass auf Ihrem PC das Programm 7-zip installiert ist   
(ansonsten herunterladen und installieren).

Laden Sie sich vom Modul-Share die Datei DummyText in einen neuen Ordner herunter   
und komprimieren Sie diesen zu einem 7z-Archiv.

Berechnen Sie wiederum Kompressionsfaktor und Kompressionsrate.

Entpacken Sie den Ordner wiederum.

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**Aufgabe 7.4:** Verschlüsseltes Komprimieren mit Passwort

Finden Sie heraus, wie Sie mit 7-zip einen Ordner verschlüsselt komprimieren können.

Schreiben Sie ein Textdokument für Ihren Pultnachbarn.

Packen Sie diese in einen verschlüsselten Ordner und senden Sie ihm das Ganze als MailAnhang zu. Verwenden Sie dazu keines Ihrer Standard-Passwörter!

Übermitteln Sie das Passwort auf einem anderen Weg (z. B. via Smartphone).

**Aufgabe 7.5:** Qualität von Passwörtern

Prüfen Sie die Qualität des in Aufgabe 7.4 verwendeten Passworts unter https://password.kaspersky.com/de/.

Was könnten Sie tun, um die Qualität des Passworts zu verbessern?

Lesen Sie dazu das Dokument Mein\_sicheres\_Passwort (auf dem Modul-Share).

**Zusatzaufgabe** für Interessierte: Komprimieren unter Linux

Lesen Sie den Artikel https://wiki.ubuntuusers.de/tar/.

Erstellen, komprimieren und entpacken Sie eine Datei auf bmLP1.

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