

Informatik für Mathematiker und Physiker**Serie 5****HS 07**URL: <http://www.ti.inf.ethz.ch/ew/courses/Info1.07/>**Skript-Aufgabe 43 (4 Punkte)**

Compute the binary expansions of the following decimal numbers.

a) 0.25 c) 1.3 d) 11.1

Skript-Aufgabe 44 (4 Punkte)For the numbers in the previous exercise, compute nearest floating point numbers in the systems $\mathcal{F}^*(2, 5, -1, 2)$ and $\mathcal{F}(2, 5, -1, 2)$.**Skript-Aufgabe 51 (4 Punkte)**The number π can be defined through various infinite sums. Here are two of them.

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$$
$$\frac{\pi}{2} = 1 + \frac{1}{3} + \frac{1 \cdot 2}{3 \cdot 5} + \frac{1 \cdot 2 \cdot 3}{3 \cdot 5 \cdot 7} + \dots$$

Write a program for computing an approximation of π , based on these formulas. Which formula is better for that purpose?**Skript-Aufgabe 52 (4 Punkte)**Write a program `fpsys.C` to visualize a normalized floating point number system $\mathcal{F}^*(2, p, e_{\min}, e_{\max})$. The program should read the parameters p , e_{\min} , and e_{\max} as inputs and for each positive number x from $\mathcal{F}^*(2, p, e_{\min}, e_{\max})$ draw a circle of radius x around the origin. Use the library `libwindow` and the program `draw_circle.C` that are available at the course homepage to create graphical output.**Challenge**

This week's opportunities for challenge exercises are exercises 53 and 54 from the lecture notes. You can replace two of the normal exercises by one of the challenges, which will be awarded with 8 points. You may not replace all four normal exercises.

Abgabe: Bis 30. Oktober 2007, 15.15 Uhr.