

Foundations of Information Systems

Winter Semester 2024–25, Exercise 3

For discussion on Wednesday, November 6, 2024

1. Convert the following decimal numbers into binary. Note that the resulting binary representation may not terminate and become periodic.
 - (a) $(9.5)_{10}$
 - (b) $(\frac{44}{7})_{10}$
2. Convert from binary to decimal.
 - (a) $(1101.0111)_2$
 - (b) $(0.0\overline{1001})_2$
3. Convert from decimal to hexadecimal (a) or back (b).
 - (a) $(39.75)_{10}$
 - (b) $(F.42)_{16}$
4. Find the 8-bit two's complement of $(67)_{10}$.
5. Which integer is represented by the bit pattern 10111010 interpreted as 8-bit two's complement representation?
6. Show that the two's complement of the two's complement of a bit pattern returns the original bit pattern.