



Digital Systems

Wintersemester 2017/2018

Serie 1

Assignment Date: Thursday, 2.11.2017

Submission Date: Thursday, 16.11.2017, 8 a.m. in the delivery cupboard in HRS 3

Presentation Assignment

Note: Please provide all calculations or other elaborations for all the tasks.

Task 1

- Convert the number $(79)_{10}$ into a binary number.
- Multiply the binary number from a) by the binary number $(1101)_2$.
- Convert the result of b) into a decimal number.

Task 2

Perform the subtraction $(181)_{10} - (93)_{10}$ in the binary system. Make use of the 2's complement. Think of a suitable number format (length of numbers). Convert the result into a decimal number.

Homework

Note: Please provide all calculations or other elaborations for all the tasks.

Task 1

- Convert the number $(311)_{10}$ into a binary number.
- Multiply the binary number from a) with the binary number $(1110)_2$.
- Convert the result of b) into a decimal number.

30 points, 10 points each

Task 2

Multiply the number $(368)_9$ with the number $(775)_9$ in the 9-adic number system.

20 points

Task 3

Perform the subtraction $(297)_{10} - (114)_{10}$ in the binary system. Make use of the 2's complement. Consider a suitable number format (length of numbers). Convert the result into a decimal number.

30 points

Task 4

- (a) Convert the binary number $(1010111110101)_2$ using the concatenation of bits into an octal number ...
- (b) ... and a hexadecimal number.
- (c) Consider, how you would encode the numbers of the hexadecimal system in a 4-adic number system. Then represent $(A41FD7)_{16}$ in the 4-adic number system.

5, 5, 10 points