Exercise 1

Consider that the machine contains the following bit-pattern at addresses 00 to 09:
1A 02 2B 02 9C AB 3C 00 C0 00
The machine starts at 00 in the Program Counter.

a) Which value resides in memory cell 00 when the machine terminates?

b) Which value resides in the Program Counter when the machine terminates?

Exercise 2

With the help of machine code, write a program which fulfills the following tasks:

a) Copy the bit-pattern of memory cell 66 into memory cell BB.

b) Set the 4 least significant bits in memory cell 34 to 0, leaving all other bits remain unchanged.

c) Copy the 4 least significant bits from memory cell A5 to the 4 least significant bits in memory cell A6 leaving all other bits unchanged.

Exercise 3

Consider that the machine contains the following bit-pattern at addresses 00 to 11:
20 01 11 01 22 0A 53 01 40 30 B2 10 B0 06 C0 00 B0 0E
The machine starts at 00 in the Program Counter.

a) Which value resides in memory cell 00 when the machine terminates?

b) Which value resides in the Program Counter when the machine terminates?

Exercise 4

With the help of machine code, write a program which fulfills the following tasks:

a) Add the values of memory cell $A0_{16}$ and $A1_{16}$ and save the result in cell $A2_{16}$.(Try not to use the virtual machine at first for this task!)

b) In the memory cells $A0_{16}$ – $A3_{16}$ the IP address 192.168.65.10 is stored. In the cells $B0_{16}$-$B3_{16}$ we have the net mask 255.255.240.0 saved as well. Calculate the network with your program and save the result in cells $C0_{16}$-$C3_{16}$! (For this exercise, the usage of the virtual machine is recommended!) Now try to change the IP address to 192.168.65.129/28!