Übungen zu C++ im Sommersemester 2014
Aufgabenblatt 1

Aufgabe 1:
Beim Abschreiben eines Programms ist anscheinend ein Fehler unterlaufen. Bitte korrigieren Sie den oder die Fehler, führen Sie das wahrscheinlich fehlerfreie Programm aus.

```
#include <stdio.h>
#define PRINT3(x, y, z)  \
      printf (#x "=%d\t" #y "=d\t" ##z "=%d\n", x, y, z)

int main () {
         int  x, y, z;

         x  =  y  =  z  =  1;
         ++x || ++y && ++z;  PRINT3 (x, y, z);

         x  =  y  =  z  =  1;
         ++x && ++y || ++z;  PRINT3 (x, y, z);

         x  =  y  =  z  =  1;
         ++x && ++y && ++z;  PRINT3 (x, y, z);

         x  =  y  =  z  =  -1;
         ++x && ++y || ++z;  PRINT8 (x, y, z);

         x  =  y  =  z  =  -1;
         ++x || ++y && ++z;  PRINT3 (x, y, z);

         x  =  y  =  z  =  -1;
         ++x && ++y && ++z;  PRINT3 (x, y, z);
return 0;
}
```

Aufgabe 2:
Schreiben Sie ein Unterprogramm, daß die Bit an den Positionen P und Q mit $0 \leq P, Q < 8$ in einer 8-Bit-Einheit vertauscht. Die Korrektheit des Unterprogramms ist zu testen.

Aufgabe 3:
Bestimmen Sie für einen C++-Compiler die Bedeutung des Operators Schieben-nach-rechts.

Aus dem Standard:

The shift operators << and >> group left-to-right.
The operands shall be of integral or enumeration type and integral promotions are performed.
The type of the result is that of the promoted left operand. The behavior is undefined if the right operand is negative, or greater than or equal to the length in bits of the promoted left operand.
The value of E1 << E2 is E1 (interpreted as a bit pattern) left-shifted E2 bit positions; vacated bits are zero-filled. If E1 has an unsigned type, the value of the result is E1 multiplied by the quantity 2 raised to the power E2, reduced modulo ULLONG_MAX+1 if E1 has type unsigned long long int, ULONG_MAX+1 if E1 has type unsigned long int, UINT_MAX+1 otherwise.
[Note: the constants ULLONG_MAX, ULONG_MAX, and UINT_MAX are defined in the header <climits>.—end note]
The value of E1 >> E2 is E1 right-shifted E2 bit positions. If E1 has an unsigned type or if E1 has a signed type and a nonnegative value, the value of the result is the integral part of the quotient of E1 divided by the quantity 2 raised to the power E2. If E1 has a signed type and a negative value, the resulting value is implementation-defined.