

Informatik für Mathematiker und Physiker**Serie 3****HS 09**URL: http://www.ti.inf.ethz.ch/ew/courses/Info1_09/**Skript-Aufgabe 2 (4 Punkte)**

Which of the following character sequences are not C++ expressions, and why not? Here, a and b are variables of type int.

- (a) `1*(2*3)` (b) `a=(b=5)` (c) `1=a` (d) `(a=1)`
(e) `(a=5)*(b=7)` (f) `(1` (g) `(a=b)*(b=5)` (h) `(a*3)=(b*5)`

Skript-Aufgabe 3 (4 Punkte)

For all of the expressions that you have identified in Exercise 2, decide whether these are lvalues or rvalues, and explain your decisions.

Skript-Aufgabe 5 (4 Punkte)

Which of the following (rather stupid) programs are syntactically incorrect (w.r.t. the usage of `const`), and why? Among the correct ones, which programs do not adhere to the **Const Guideline**, and why?

- ```
a) int main ()
{
 const int a = 5;
 int b = a;
 b = b*2;
 return 0;
}

b) #include <iostream>
int main ()
{
 const int a = 5;
 std::cin >> a;
 std::cout << a + 5;
 return 0;
}

c) #include <iostream>
int main ()
{
 const int a;
 int b;
 std::cin >> b;
 std::cout << a;
 return 0;
}
```

```

d) int main ()
 {
 const int a = 5;
 int b = 2*a;
 int c = 2*b;
 b = b*b;
 return 0;
 }

e) int main ()
 {
 const int a = 5;
 const int b = (a = 6);
 return 0;
 }

f) int main ()
 {
 const int a = 5;
 a = 5;
 return 0;
 }

g) #include<iostream>
 int main ()
 {
 int a = 5;
 a = a*a;
 int b = a;
 b = b*b;
 const int c = b;
 std::cout << c*c;
 return 0;
 }

```

### Skript-Aufgabe 8 (4 Punkte)

Write a program `power20.cpp` that reads an integer `a` from standard input and outputs  $a^{20}$  using at most five multiplications.

Die **Aufgaben 11** und **12** aus den Vorlesungsunterlagen sind die **Challenge Aufgaben** und geben jeweils 8 Punkte, wenn sie richtig gelöst werden.

**Abgabe:** Bis 13. Oktober 2009, 15.15 Uhr.