Additional exercise on typing

Exercise 1

We consider the following program (in the While language extended with a command 'write' as we already saw once before):

```plaintext
begin
  var x := 2;
  var y := 1;
  proc p is
    x := x + y;
  begin
    var y := true;
    call p;
    write x;
  end;
end;
```

1. According to the static semantics for variables and procedures, what does this program write?
2. Is this program well-typed in the static semantics type system?
3. According to the dynamic semantics for variables and procedures, what happens with this program?
4. Is this program well-typed in the dynamic semantics type system? We deduce from this that the fact that the program is well-typed in the static type system does not matter when we want to execute it with a dynamic semantics!
5. Propose a modification of this program which is well-typed in the dynamic semantics type system, and which displays a boolean.

Remark: if you master the static-dynamic semantics, you can try to exhibit a program which is well-typed in the dynamic type system but not in the static-dynamic type system. You can use a second procedure q.