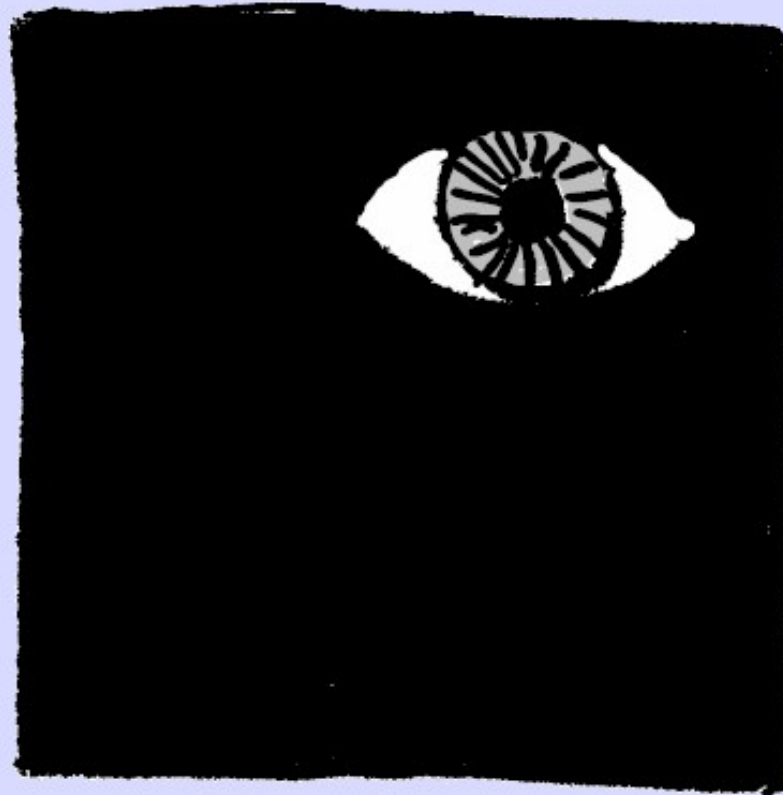


Scoping



Meindert Meindersma
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BBScope.BAS:

```

A = 42
PRINT "MAIN: A = "; A

PROC_P1
PROC_P2

PRINT "MAIN: A = "; A
PRINT "----"

END

DEF PROC_P1
PRINT "  P1: A = "; A
ENDPROC

DEF PROC_P2
LOCAL A
PRINT "  P2: A = "; A
PROC_P1
A = 21
PRINT "  P2: A = "; A
PROC_P1
ENDPROC

```

```

MAIN: A = ...
P1: A = ...
P2: A = ...
P1: A = ...
P2: A = ...
P1: A = ...
MAIN: A = ...
----

```

BBScope.BAS:

```
A = 42
PRINT "MAIN: A = "; A

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END

DEF PROC_P1
PRINT "  P1: A = "; A
ENDPROC

DEF PROC_P2
LOCAL A
PRINT "  P2: A = "; A
PROC_P1
A = 21
PRINT "  P2: A = "; A
PROC_P1
ENDPROC
```

```
MAIN: A = 42
P1: A = 42
P2: A = 0
P1: A = 0
P2: A = 21
P1: A = 21
MAIN: A = 42
----
```

BBScope.BAS:

```

A = 42
PRINT "MAIN: A = "; A

PROC_P1
PROC_P2

PRINT "MAIN: A = "; A
PRINT "-----"

END

DEF PROC_P1
PRINT "  P1: A = "; A
ENDPROC

DEF PROC_P2
LOCAL A
PRINT "  P2: A = "; A
PROC_P1
A = 21
PRINT "  P2: A = "; A
PROC_P1
ENDPROC

```

```

MAIN: A = 42
P1: A = 42
P2: A = 0
P1: A = 0
P2: A = 21
P1: A = 21
MAIN: A = 42
-----

```

QBSCOPE.BAS:

```

DECLARE SUB S1 ()
DECLARE SUB S2 ()

A = 42
PRINT "MAIN: A = "; A

CALL S1
CALL S2

PRINT "MAIN: A = "; A
PRINT "-----"

SUB S1
  SHARED A
  PRINT "  S1: A = "; A
END SUB

SUB S2
  PRINT "  S2: A = "; A
  CALL S1
  A = 21
  PRINT "  S2: A = "; A
  CALL S1
END SUB

```

```

MAIN: A = ...
S1: A = ...
S2: A = ...
S1: A = ...
S2: A = ...
S1: A = ...
MAIN: A = ...
-----

```

BBScope.BAS:

```

A = 42
PRINT "MAIN: A = "; A

PROC_P1
PROC_P2

PRINT "MAIN: A = "; A
PRINT "-----"

END

DEF PROC_P1
PRINT "  P1: A = "; A
ENDPROC

DEF PROC_P2
LOCAL A
PRINT "  P2: A = "; A
PROC_P1
A = 21
PRINT "  P2: A = "; A
PROC_P1
ENDPROC

```

```

MAIN: A = 42
P1: A = 42
P2: A = 0
P1: A = 0
P2: A = 21
P1: A = 21
MAIN: A = 42
-----

```

QBSCOPE.BAS:

```

DECLARE SUB S1 ()
DECLARE SUB S2 ()

A = 42
PRINT "MAIN: A = "; A

CALL S1
CALL S2

PRINT "MAIN: A = "; A
PRINT "-----"

SUB S1
  SHARED A
  PRINT "  S1: A = "; A
END SUB

SUB S2
  PRINT "  S2: A = "; A
  CALL S1
  A = 21
  PRINT "  S2: A = "; A
  CALL S1
END SUB

```

```

MAIN: A = 42
S1: A = 42
S2: A = 0
S1: A = 42
S2: A = 21
S1: A = 42
MAIN: A = 42
-----

```

BBScope.BAS:

```

A = 42
PRINT "MAIN: A = "; A

PROC_P1
PROC_P2

PRINT "MAIN: A = "; A
PRINT "----"

END

DEF PROC_P1
PRINT "  P1: A = "; A
ENDPROC

DEF PROC_P2
LOCAL A
PRINT "  P2: A = "; A
PROC_P1
A = 21
PRINT "  P2: A = "; A
PROC_P1
ENDPROC

```

```

MAIN: A = 42
P1: A = 42
P2: A = 0
P1: A = 0
P2: A = 21
P1: A = 21
MAIN: A = 42
----

```

QBSCOPE.BAS:

```

DECLARE SUB S1 ()
DECLARE SUB S2 ()

A = 42
PRINT "MAIN: A = "; A

CALL S1
CALL S2

PRINT "MAIN: A = "; A
PRINT "----"

SUB S1
  SHARED A
  PRINT "  S1: A = "; A
END SUB

SUB S2
  PRINT "  S2: A = "; A
  CALL S1
  A = 21
  PRINT "  S2: A = "; A
  CALL S1
END SUB

```

```

MAIN: A = 42
S1: A = 42
S2: A = 0
S1: A = 42
S2: A = 21
S1: A = 42
MAIN: A = 42
----

```

pyscope.py:

```

a = 42
print("main: a =", a)

def f1():
    print("  f1: a =", a)

def f2():
    a = 0 # explicit association
           # with a value demanded
           # before it can be used
    print("  f2: a =", a)
    f1()
    a = 21
    print("  f2: a =", a)
    f1()

f1()
f2()

print("main: a =", a)
print("----")

```

```

main: a = ...
f1: a = ...
f2: a = ...
f1: a = ...
f2: a = ...
f1: a = ...
main: a = ...
---
```

BBScope.BAS:

```

A = 42
PRINT "MAIN: A = "; A

PROC_P1
PROC_P2

PRINT "MAIN: A = "; A
PRINT "-----"

END

DEF PROC_P1
PRINT "  P1: A = "; A
ENDPROC

DEF PROC_P2
LOCAL A
PRINT "  P2: A = "; A
PROC_P1
A = 21
PRINT "  P2: A = "; A
PROC_P1
ENDPROC

```

```

MAIN: A = 42
P1: A = 42
P2: A = 0
P1: A = 0
P2: A = 21
P1: A = 21
MAIN: A = 42
-----

```

QBSCOPE.BAS:

```

DECLARE SUB S1 ()
DECLARE SUB S2 ()

A = 42
PRINT "MAIN: A = "; A

CALL S1
CALL S2

PRINT "MAIN: A = "; A
PRINT "-----"

SUB S1
  SHARED A
  PRINT "  S1: A = "; A
END SUB

SUB S2
  PRINT "  S2: A = "; A
  CALL S1
  A = 21
  PRINT "  S2: A = "; A
  CALL S1
END SUB

```

```

MAIN: A = 42
S1: A = 42
S2: A = 0
S1: A = 42
S2: A = 21
S1: A = 42
MAIN: A = 42
-----

```

pyscope.py:

```

a = 42
print("main: a =", a)

def f1():
    print("  f1: a =", a)

def f2():
    a = 0 # explicit association
           # with a value demanded
           # before it can be used
    print("  f2: a =", a)
    f1()
    a = 21
    print("  f2: a =", a)
    f1()

f1()
f2()

print("main: a =", a)
print("----")

```

```

main: a = 42
f1: a = 42
f2: a = 0
f1: a = 42
f2: a = 21
f1: a = 42
main: a = 42
----

```

BBScope.BAS: (BBC BASIC)

```

A = 42
PRINT "MAIN: A = "; A

PROC_P1
PROC_P2

PRINT "MAIN: A = "; A
PRINT "----"

END

DEF PROC_P1
PRINT "  P1: A = "; A
ENDPROC

DEF PROC_P2
LOCAL A
PRINT "  P2: A = "; A
PROC_P1
A = 21
PRINT "  P2: A = "; A
PROC_P1
ENDPROC

```

```

MAIN: A = 42
P1: A = 42
P2: A = 0
P1: A = 0
P2: A = 21
P1: A = 21
MAIN: A = 42
----

```

*dynamic scoping***QBSCOPE.BAS:** (Quick BASIC)

```

DECLARE SUB S1 ()
DECLARE SUB S2 ()

A = 42
PRINT "MAIN: A = "; A

CALL S1
CALL S2

PRINT "MAIN: A = "; A
PRINT "----"

SUB S1
  SHARED A
  PRINT "  S1: A = "; A
END SUB

SUB S2
  PRINT "  S2: A = "; A
  CALL S1
  A = 21
  PRINT "  S2: A = "; A
  CALL S1
END SUB

```

```

MAIN: A = 42
S1: A = 42
S2: A = 0
S1: A = 42
S2: A = 21
S1: A = 42
MAIN: A = 42
----

```

*lexical (static) scoping***pyscope.py:** (Python 3)

```

a = 42
print("main: a =", a)

def f1():
    print("  f1: a =", a)

def f2():
    a = 0 # explicit association
           # with a value demanded
           # before it can be used
    print("  f2: a =", a)
    f1()
    a = 21
    print("  f2: a =", a)
    f1()

f1()
f2()

print("main: a =", a)
print("----")

```

```

main: a = 42
f1: a = 42
f2: a = 0
f1: a = 42
f2: a = 21
f1: a = 42
main: a = 42
---

```

lexical (static) scoping