

12/11/19
16:23:56

\$cse112-wm/Assignments/asg1-scheme-sbi/sources/sb-files
00-hello-world.sb

1/1

```
1: # $Id: 00-hello-world.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3: # Classic Hello World program.
4: #
5:      print "Hello, World!"
```

```
1: # $Id: 01-1to10.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3: # Print the numbers 1 to 10, one number per line.
4: #
5:     print 1
6:     print 2
7:     print 3
8:     print 4
9:     print 5
10:    print 6
11:    print 7
12:    print 8
13:    print 9
14:    print 10
```

```
1: # $Id: 02-exprs.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3: # some expressions using print
4:
5:     print "1+1      = ", 1+1
6:     print "2-2      = ", 2- 2
7:     print "3*3      = ", 3*3
8:
9:     print
10:
11:     print "4/9      = ", 4/9
12:     print "3*4+5*6  = ", 3*4+5*6
13:
```

```
1: # $Id: 10-exprs.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3: # All of the following should print something without error messages.
4: # This program checks to see if expressions can be interpreted.
5: #
6:
7:     let pi = 4 * atan(1)
8:     let e = exp(1)
9:
10:    print "1+1      = ", 1+1
11:    print "2-2      = ", 2- 2
12:    print "3*3      = ", 3*3
13:    print "4/9      = ", 4/9
14:    print "2^10     = ", 2^10
15:    print "3*4+5*6  = ", 3*4+5*6
16:
17:    print "log(10)   = ", log(10)
18:    print "sqrt(2)   = ", sqrt(2)
19:    print "pi        = ", pi
20:    print "e         = ", e
21:
22:    print "+1/+0     = ", +1/+0
23:    print "-1/+0     = ", -1/+0
24:    print "+1/-0     = ", +1/-0
25:    print "-1/-0     = ", -1/-0
26:    print "+0/+0     = ", +0/+0
27:    print "-0/-0     = ", -0/-0
28:    print "sqrt(-1)  = ", sqrt(-1)
29:    print "log(0)    = ", log(0)
30:
31:    print "6.02e23   = ", 6.02*10^23
32:    print "(1+2)/7    = ", (1+2)/7
```

```
1: # $Id: 11-let.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3: # test let
4: #
5:     let i = 1
6:     let j = i + 3
7:     let k = 8 * i + 9 / j
8:     print "i=", i
9:     print "j=", j
10:    print "k=", k
```

```
1: # $Id: 12-let-dim.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2:
3: # Simple let without expressions.
4:
5:     let i = 6
6:     print i
7:     dim a[10]
8:     let a[i] = 9
9:     print a[i]
```

```
1: # $Id: 20-goto.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3:      goto zero
4: four:  print "four"
5:      goto done
6: one:   print "one"
7:      goto two
8: three: print "three"
9:      goto four
10: two:  print "two"
11:      goto three
12: zero:  print "zero"
13:      goto one
14: done:
```

```
1: # $Id: 21-let-if.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3:      let i = 1
4: loop: print i
5:      let i = i + 1
6:      if i <= 10 goto loop
```



```
1: # $Id: 22-fibonacci.sb,v 1.2 2019-11-08 12:49:19-08 - - $
2: #
3: # Print out all Fibonacci numbers up to max.
4: #
5:     let max = 10^6
6:
7:     let fib0 = 0
8:     let fib1 = 1
9:     print "fib(", 0, ")=", fib0
10:    print "fib(", 1, ")=", fib1
11:    let i=1
12: loop: let fib = fib0 + fib1
13:    let i=i+1
14:    print "fib(", i, ")=", fib
15:    let fib0 = fib1
16:    let fib1 = fib
17:    if fib <= max goto loop
```

```
1: # $Id: 25-pi-e-fns.sb,v 1.3 2019-12-11 16:23:56-08 - - $
2:
3:     print pi, e
4:     let pi = 4 * atan(1)
5:     let e = exp(1)
6:     print "pi = ", pi
7:     print "e = ", e
8:
9:     print "sqrt (pi) = ", sqrt (pi)
10:    print "exp (pi) = ", exp (pi)
11:    print "log (pi) = ", log (pi)
12:    print "sin (pi) = ", sin (pi)
13:    print "cos (pi) = ", cos (pi)
14:    print "tan (pi) = ", tan (pi)
15:    print "acos (pi) = ", acos (pi)
16:    print "asin (pi) = ", asin (pi)
17:    print "atan (pi) = ", atan (pi)
18:    print "abs (pi) = ", abs (pi)
19:    print "ceiling (pi) = ", ceiling (pi)
20:    print "floor (pi) = ", floor (pi)
21:    print "round (pi) = ", round (pi)
22:
```

```
1: # $Id: 31-big-o-.sb,v 1.4 2019-11-26 14:08:39-08 - - $
2:
3: # Given the value of N1, is the following program guaranteed
4: # to terminate? If so, what is the big-O of time for termination?
5: # http://en.wikipedia.org/wiki/Collatz\_conjecture
6:
7: # Big-O
8: # C:   while (n>1) n=n&1?3*n+1:n/2;
9: # APL: L:->Lx11<N<-((|_N/2),3xN+1)[1=2|N]
10:
11:       input N1
12:       let i = 0
13:       let n = N1
14: while: if n <= 1 goto done
15:       let i = i + 1
16:       let f = floor( n / 2 )
17:       if n != f * 2 goto odd
18:       let n = f
19:       goto while
20: odd:   let n = n * 3 + 1
21:       goto while
22: done:  print N1, " loops ", i, " times."
```

```
1: # $Id: 32-factorial.sb,v 1.4 2019-11-26 14:08:39-08 - - $
2: #
3: # Factorial.
4: #
5: read:   print "Factorial of:"
6:         input x
7:         # check the variable eof for a valid value or not.
8:         if eof = 1 goto stop
9:         if x != x goto error
10:        if x < 0 goto error
11:        goto letfac
12: error:  print "Invalid input."
13:        goto read
14:
15: #
16: #
17: #
18:
19: letfac: let factorial = 1
20:        let itor = 2
21: loop:   if itor > x goto prt
22:        let factorial = factorial * itor
23:        let itor = itor + 1
24:        goto loop
25: prt:    print "factorial(", x, ") = ", factorial
26:        goto read
27:
28: #
29: # end of file.
30: #
31:
32: stop:   print "Program stopping."
```

```
1: # $Id: 33-quadratic.sb,v 1.3 2019-11-08 12:49:19-08 - - $
2: #
3: # Quadratic equation solver
4: #
5:
6:     print "Quadratic Equation solver."
7: loop:  print "Input a, b, c"
8:         input a, b, c
9:         if eof = 1 goto stop
10:        let q = sqrt( b ^ 2 - 4 * a * c )
11:        print "Equation: ", a, " * x ^ 2 +", b, " * x +", c
12:        print "root1 = ", ( - b + q ) / ( 2 * a )
13:        print "root2 = ", ( - b - q ) / ( 2 * a )
14:        goto loop
15: stop:
```

```
1: # $Id: 40-sort-array.sb,v 1.7 2019-11-26 14:08:39-08 - - $
2: #
3: # sort numbers
4: #
5: # Input is a sequence of numbers ending with end of file.
6: # User is assumed to have not more than 100 numbers.
7: # Note that nan != nan, other was x = x for all x that is not nan.
8: #
9:         let size = 100
10:        dim a[size]
11:        let max = 0
12: read:   input x
13:        if eof != 0 goto eof
14:        if x != x goto error
15:        let a[max] = x
16:        let max = max + 1
17:        if max < size goto read
18: eof:
19:        print ""
20:        print "unsorted"
21:        let i = 0
22: prt1p:  print "a[" , i , "]= ", a[i]
23:        let i = i + 1
24:        if i < max goto prt1p
25:        if i < 1 goto sorted
26:
27:        let i = max - 1
28: outer:  let j = 0
29: inner:  if a[j] <= a[j + 1] goto noswap
30:        let t = a[j]
31:        let a[j] = a[j+1]
32:        let a[j+1]=t
33: noswap: let j = j + 1
34:        if j <= i - 1 goto inner
35:        let i = i - 1
36:        if i > 0 goto outer
37:
38: sorted: print ""
39:        print "sorted"
40:        let i = 0
41: sort1p: print "a[" , i , "]= ", a[i]
42:        let i = i + 1
43:        if i < max goto sort1p
44:        goto stop
45: error:  print "Invalid input"
46: stop:
```

```
1: # $Id: 41-eratosthenes.sb,v 1.3 2019-11-08 12:49:19-08 - - $
2: #
3:         let n = 100
4:         dim sieve[n]
5:
6: # Assume all numbers in the sieve are prime
7:
8:         let i = 2
9: init:    let sieve[i] = 1
10:        let i = i + 1
11:        if i < n goto init
12:
13: # Find primes and punch out their multiples.
14:
15:        let prime = 2
16: primes: if sieve[prime] = 0 goto next
17:        print prime
18:        let i = prime * 2
19:        goto punch
20: loop:   let sieve[i] = 0
21:        let i = i + prime
22: punch:  if i < n goto loop
23:
24: next:   let prime = prime + 1
25:        if prime <= n goto primes
```

```
1: #!/bin/sh -x
2: # $Id: compile.sh,v 1.7 2012-01-19 17:13:09-08 - - $
3: sbirdir=../sbir-files
4: sbtran=../translator/sbtran
5: cid + $0
6: if [ ! -d $sbirdir ]
7: then
8:     mkdir $sbirdir
9: fi
10: for sbfile in *.sb
11: do
12:     cid + $sbfile
13:     $sbtran $sbfile >../sbir-files/${sbfile}ir
14: done
15: mkpspdf ../sb-files.ps *.sb $0
```