File created: 14-Jun-88 11:10:38 **{QV}<PEDERSEN>LISP>FLOAT-TESTER.;9**

changes to: (VERIFIED-TESTS COS-TEST EXP-TEST LOG-TEST SIN-TEST POLY BOX UNBOX UBABS UBNEGATE UBFIX UB+ UB- UB* UB/ UB> UBMAX UBMIN MIXED/ INT> FLOAT> MIXED> INT- FLOAT- MIXED- INT+ FLOAT+ MIXED+ INT* FLOAT* MIXED* INT/ FLOAT/)
(IL:VARS IL:FLOAT-TESTERCOMS)
(IL:FUNCTIONS DEFINE-VERIFIED-TEST)
(IL:DEFINE-TYPES VERIFIED-TESTS)
(FILE-ENVIRONMENTS "FLOAT-TESTER")

previous date: 14-Jun-88 11:05:17 {QV}<PEDERSEN>LISP>FLOAT-TESTER.;8

Read Table: XCL

Package: XCL-USER

Format: XCCS


```
(IL:RPAQQ IL:FLOAT-TESTERCOMS
          ((IL:FILES IL:TESTER)
           (IL:COMS
                  ;; Boxed opcodes
                  (VERIFIED-TESTS INT+ FLOAT+ MIXED+)
                  (VERIFIED-TESTS INT- FLOAT- MIXED-)
                  (VERIFIED-TESTS INT* FLOAT* MIXED*)
                  (VERIFIED-TESTS INT/ FLOAT/ MIXED/)
                  (VERIFIED-TESTS INT> FLOAT> MIXED>))
           (IL:COMS
                  ;; Unboxed opcodes [scalar]
                  ;; Ubfloat1
                  (VERIFIED-TESTS BOX UNBOX UBABS UBNEGATE UBFIX)
                  ;; Ubfloat2
                  (VERIFIED-TESTS UB+ UB- UB* UB/ UB> UBMAX UBMIN)
                  ;; Ubfloat3
                  (VERIFIED-TESTS POLY))
           (IL:COMS
                  ;; Transcendentals --- stress test
                  (VERIFIED-TESTS SIN-TEST COS-TEST EXP-TEST LOG-TEST))
           (FILE-ENVIRONMENTS "FLOAT-TESTER")))

(IL:FILESLOAD IL:TESTER)
```

;; Boxed opcodes

```
(DEFINE-VERIFIED-TEST INT+ "Opcodes IPLUS,FPLUS, and PLUS, both args integer"
   (LET ((X 3))
        (WITH-COLLECTION (DOLIST (Y '(1 -3 9834756987354 21845 -54))
                                 (COLLECT (IL:IPLUS X Y))
                                 (COLLECT (IL:FPLUS X Y))
                                 (COLLECT (IL:PLUS X Y))))))

(DEFINE-VERIFIED-TEST FLOAT+ "Opcodes IPLUS,FPLUS, and PLUS, both args float"
   (LET ((X 3.0))
        (WITH-COLLECTION (DOLIST (Y '(1.0 -3.0 -3.4028235E+38 21845.0 -54.0))
                                 (COLLECT (IL:IPLUS X Y))
                                 (COLLECT (IL:FPLUS X Y))
                                 (COLLECT (IL:PLUS X Y))))))

(DEFINE-VERIFIED-TEST MIXED+ "Opcodes IPLUS,FPLUS, and PLUS, mixed args"
   (LET ((X 3.0))
        (WITH-COLLECTION (DOLIST (Y '(1 -3 1/3 9834756987354 21845 -54))
                                 (COLLECT (IL:IPLUS X Y))
                                 (COLLECT (IL:FPLUS X Y))
                                 (COLLECT (IL:PLUS X Y))))))

(DEFINE-VERIFIED-TEST INT- "Opcodes IDIFFERENCE,FDIFFERENCE, and DIFFERENCE, both args integer"
   (LET ((X 3))
        (WITH-COLLECTION (DOLIST (Y '(1 3 9834756987354 21845 -54))
                                 (COLLECT (IL:IDIFFERENCE X Y))
                                 (COLLECT (IL:FDIFFERENCE X Y))
                                 (COLLECT (IL:DIFFERENCE X Y))))))

(DEFINE-VERIFIED-TEST FLOAT- "Opcodes IDIFFERENCE,FDIFFERENCE, and DIFFERENCE, both args float"
   (LET ((X 3.0))
        (WITH-COLLECTION (DOLIST (Y '(1.0 3.0 3.4028235E+38 21845.0 -54.0))
                                 (COLLECT (IL:IDIFFERENCE X Y))
                                 (COLLECT (IL:FDIFFERENCE X Y))
                                 (COLLECT (IL:DIFFERENCE X Y))))))

(DEFINE-VERIFIED-TEST MIXED- "Opcodes IDIFFERENCE,FDIFFERENCE, and DIFFERENCE, mixed args"
```

```
   (LET ((X 3.0))
        (WITH-COLLECTION (DOLIST (Y '(1 3 1/3 9834756987354 21845 -54))
                               (COLLECT (IL:IDIFFERENCE X Y))
                               (COLLECT (IL:FDIFFERENCE X Y))
                               (COLLECT (IL:DIFFERENCE X Y))))))

(DEFINE-VERIFIED-TEST INT* "Opcodes ITIMES,FTIMES, and TIMES, both args integer"
   (LET ((X 3))
        (WITH-COLLECTION (DOLIST (Y '(45 345235424 0 23 21845))
                               (COLLECT (IL:ITIMES X Y))
                               (COLLECT (IL:FTIMES X Y))
                               (COLLECT (IL:TIMES X Y))))))

(DEFINE-VERIFIED-TEST FLOAT* "Opcodes ITIMES,FTIMES, and TIMES, both args float"
   (LET ((X 3.0))
        (WITH-COLLECTION (DOLIST (Y '(45.0 0.0 1.1342745E+38 -21845.0))
                               (COLLECT (IL:ITIMES X Y))
                               (COLLECT (IL:FTIMES X Y))
                               (COLLECT (IL:TIMES X Y))))))

(DEFINE-VERIFIED-TEST MIXED* "Opcodes ITIMES,FTIMES, and TIMES, mixed args"
   (LET ((X 3.0))
        (WITH-COLLECTION (DOLIST (Y '(45 1/3 345235424 0 23 21845))
                               (COLLECT (IL:ITIMES X Y))
                               (COLLECT (IL:FTIMES X Y))
                               (COLLECT (IL:TIMES X Y))))))

(DEFINE-VERIFIED-TEST INT/ "Opcodes IQUOTIENT,FQUOTIENT, and QUOTIENT, both args integer"
   (LET ((X 21845))
        (WITH-COLLECTION (DOLIST (Y '(21845 1 345235424 -45))
                               (COLLECT (IL:IQUOTIENT X Y))
                               (COLLECT (IL:FQUOTIENT X Y))
                               (COLLECT (IL:QUOTIENT X Y))))))

(DEFINE-VERIFIED-TEST FLOAT/ "Opcodes IQUOTIENT,FQUOTIENT, and QUOTIENT, both args float"
   (LET ((X 21845.0))
        (WITH-COLLECTION (DOLIST (Y '(21845.0 1.0 -3.4523542E+8 45.0 3.4028235E+38))
                               (COLLECT (IL:IQUOTIENT X Y))
                               (COLLECT (IL:FQUOTIENT X Y))
                               (COLLECT (IL:QUOTIENT X Y))))))

(DEFINE-VERIFIED-TEST MIXED/ "Opcodes IQUOTIENT,FQUOTIENT, and QUOTIENT, args mixed"
   (LET ((X 21845.0))
        (WITH-COLLECTION (DOLIST (Y '(21845 1 4/3 -1345619432 45))
                               (COLLECT (IL:IQUOTIENT X Y))
                               (COLLECT (IL:FQUOTIENT X Y))
                               (COLLECT (IL:QUOTIENT X Y))))))

(DEFINE-VERIFIED-TEST INT> "Opcodes IGREATERP,FGREATERP, and GREATERP, both args integer"
   (LET ((X 21845))
        (WITH-COLLECTION (DOLIST (Y '(21845 -45 345235424 22000))
                               (COLLECT (IL:IGREATERP X Y))
                               (COLLECT (IL:FGREATERP X Y))
                               (COLLECT (IL:GREATERP X Y))))))

(DEFINE-VERIFIED-TEST FLOAT> "Opcodes IGREATERP,FGREATERP, and GREATERP, both args integer"
   (LET ((X 21845.0))
        (WITH-COLLECTION (DOLIST (Y '(21845.0 -45.0 3.4523542E+8 22000.0))
                               (COLLECT (IL:IGREATERP X Y))
                               (COLLECT (IL:FGREATERP X Y))
                               (COLLECT (IL:GREATERP X Y))))))

(DEFINE-VERIFIED-TEST MIXED> "Opcodes IGREATERP,FGREATERP, and GREATERP, both args integer"
   (LET ((X 21845.0))
        (WITH-COLLECTION (DOLIST (Y '(21845 1/3 -45 5498457654 22000))
                               (COLLECT (IL:IGREATERP X Y))
                               (COLLECT (IL:FGREATERP X Y))
                               (COLLECT (IL:GREATERP X Y))))))


;; Unboxed opcodes [scalar]

;; Ubfloat1

(DEFINE-VERIFIED-TEST BOX "Opcode BOX (UBFLOAT1 0)"
   (WITH-COLLECTION (DOLIST (X '((16256 . 0)
                                 (0 . 0)
                                 (49716 . 0)
                                 (26309 . 45156)))
                          (COLLECT (IL:\\FLOATBOX (IL:\\VAG2 (CAR X)
                                                             (CDR X)))))))

(DEFINE-VERIFIED-TEST UNBOX "Opcode UNBOX (UBFLOAT1 1)"
   (WITH-COLLECTION (DOLIST (X '(1.0 0.0 -45.0 4.6678E+23))
                          (LET ((Y (IL:\\FLOATUNBOX X)))
                               (COLLECT (CONS (IL:\\HILOC Y)
                                              (IL:\\LOLOC Y)))))))
```

```
(DEFINE-VERIFIED-TEST UBABS "Opcode UFABS (UBFLOAT1 2)"
   (FLET ((UBABS (X)
                 (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT1 2)
                                 (IL:\\FLOATUNBOX X)))))
         (WITH-COLLECTION (DOLIST (X '(-1.0 0.0 -45.0 4.6678E+23))
                                 (COLLECT (UBABS X))))))

(DEFINE-VERIFIED-TEST UBNEGATE "Opcode UFNEGATE (UBFLOAT1 3)"
   (FLET ((UBNEGATE (X)
                 (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT1 3)
                                 (IL:\\FLOATUNBOX X)))))
         (WITH-COLLECTION (DOLIST (X '(-1.0 0.0 -45.0 4.6678E+23))
                                 (COLLECT (UBNEGATE X))))))

(DEFINE-VERIFIED-TEST UBFIX "Opcode UFIX (UBFLOAT1 4)"
   (FLET ((UBFIX (X)
                 ((IL:OPCODES IL:UBFLOAT1 4)
                  (IL:\\FLOATUNBOX X))))
         (WITH-COLLECTION (DOLIST (X '(-1.0 0.0 -45.0 4.6678E+23))
                                 (COLLECT (UBFIX X))))))
```

;; Ubfloat2

```
(DEFINE-VERIFIED-TEST UB+ "Opcode UFADD (UBFLOAT2 0)"
   (FLET ((UB+ (X Y)
               (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT2 0)
                               (IL:\\FLOATUNBOX X)
                               (IL:\\FLOATUNBOX Y)))))
         (LET ((X 3.0))
              (WITH-COLLECTION (DOLIST (Y '(1.0 -3.0 -3.4028235E+38 21845.0 3))
                                       (COLLECT (UB+ X Y)))))))

(DEFINE-VERIFIED-TEST UB- "Opcode UFSUB (UBFLOAT2 1)"
   (FLET ((UB- (X Y)
               (IL:\\FLOATBOX (;; ub -
                               (IL:OPCODES IL:UBFLOAT2 1)
                               (IL:\\FLOATUNBOX X)
                               (IL:\\FLOATUNBOX Y)))))
         (LET ((X 3.0))
              (WITH-COLLECTION (DOLIST (Y '(1.0 3.0 3.4028235E+38 21845 1/3 -54.0))
                                       (COLLECT (UB- X Y)))))))

(DEFINE-VERIFIED-TEST UB* "Opcode UFMULT (UBFLOAT2 3)"
   (FLET ((UB* (X Y)
               (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT2 3)
                               (IL:\\FLOATUNBOX X)
                               (IL:\\FLOATUNBOX Y)))))
         (LET ((X 3.0))
              (WITH-COLLECTION (DOLIST (Y '(45.0 0.0 1.1342745E+38 -21845.0))
                                       (COLLECT (UB* X Y)))))))

(DEFINE-VERIFIED-TEST UB/ "Opcode UFDIV (UBFLOAT2 4)"
   (FLET ((UB/ (X Y)
               (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT2 4)
                               (IL:\\FLOATUNBOX X)
                               (IL:\\FLOATUNBOX Y)))))
         (LET ((X 21845.0))
              (WITH-COLLECTION (DOLIST (Y '(0.001 1.0 -3.4523542E+8 45.0 3.4028235E+38))
                                       (COLLECT (UB/ X Y)))))))

(DEFINE-VERIFIED-TEST UB> "Opcode UFGREAT (UBFLOAT2 5)"
   (FLET ((UB> (X Y)
               ((IL:OPCODES IL:UBFLOAT2 5)
                (IL:\\FLOATUNBOX X)
                (IL:\\FLOATUNBOX Y))))
         (LET ((X 21845.0))
              (WITH-COLLECTION (DOLIST (Y '(21845.0 -45.0 3.4523542E+8 0.001))
                                       (COLLECT (UB> X Y)))))))

(DEFINE-VERIFIED-TEST UBMAX "Opcode UFMAX (UBFLOAT2 6)"
   (FLET ((UBMAX (X Y)
                 (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT2 6)
                                 (IL:\\FLOATUNBOX X)
                                 (IL:\\FLOATUNBOX Y)))))
         (LET ((X 21845.0))
              (WITH-COLLECTION (DOLIST (Y '(21845.0 -45.0 3.4523542E+8 0.001))
                                       (COLLECT (UBMAX X Y)))))))

(DEFINE-VERIFIED-TEST UBMIN "Opcode UFMAX (UBFLOAT2 7)"
   (FLET ((UBMIN (X Y)
                 (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT2 7)
                                 (IL:\\FLOATUNBOX X)
                                 (IL:\\FLOATUNBOX Y)))))
         (LET ((X 21845.0))
              (WITH-COLLECTION (DOLIST (Y '(21845.0 -45.0 3.4523542E+8 0.001))
                                       (COLLECT (UBMIN X Y)))))))
```

;; Ubfloat3

```
(DEFINE-VERIFIED-TEST POLY "Opcode POLY (UBFLOAT3 0)"
   (FLET ((POLY (X BASE SIZE)
                (IL:\\FLOATBOX ((IL:OPCODES IL:UBFLOAT3 0)
                                (IL:\\FLOATUNBOX X)
                                BASE SIZE))))
         (LET* ((ARRAY (MAKE-ARRAY 4 :ELEMENT-TYPE 'SINGLE-FLOAT :INITIAL-CONTENTS '(1.0 2.0 3.0 4.0)))
                (BASE (IL:%ARRAY-BASE ARRAY)))
               (WITH-COLLECTION (DOLIST (PAIR '((1.0 . 3)
                                                (1.0 . 1)
                                                (3.5 . 3)))
                                        (COLLECT (POLY (CAR PAIR)
                                                       BASE
                                                       (CDR PAIR))))))))
```

;; Transcendentals --- stress test

```
(DEFINE-VERIFIED-TEST SIN-TEST "Function SIN"
   (WITH-COLLECTION (DOLIST (X '(0.0 1/3 -1.2 12.6))
                            (COLLECT (SIN (* PI X))))))

(DEFINE-VERIFIED-TEST COS-TEST "Function COS"
   (WITH-COLLECTION (DOLIST (X '(0.0 1/3 -1.2 12.6))
                            (COLLECT (COS (* PI X))))))

(DEFINE-VERIFIED-TEST EXP-TEST "Function EXP"
   (WITH-COLLECTION (DOLIST (X '(1.0 20.5 1/3 -5.2))
                            (COLLECT (EXP X)))))

(DEFINE-VERIFIED-TEST LOG-TEST "Function LOG"
   (WITH-COLLECTION (DOLIST (X '(2.7182817 -2.0 453.78))
                            (COLLECT (LOG X)))))


(DEFINE-FILE-ENVIRONMENT "FLOAT-TESTER" :PACKAGE "XCL-USER"
   :READTABLE "XCL"
   :COMPILER :COMPILE-FILE)

(IL:PUTPROPS IL:FLOAT-TESTER IL:COPYRIGHT ("Xerox Corporation" 1988))
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FILE-ENVIRONMENT INDEX
