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I used the version of guile available on the BC servers which is mainly R5RS I believe.

I used the document you link for us <https://www.gnu.org/software/guile/manual/guile.html> as a reference for the Lab.

I decided to do the Lab on the Celsius/Fahrenheit conversion, as I felt that was the easiest given that its purely formulaic with only a single variable. The goal here is to be able to convert a number, be it in Fahrenheit or Celsius, into the other, and vice versa if needed. The formula for C->F is (C x 9/5) +32 and the formula for F->C being (F – 32) x 5/9.

This is what the code looks like:

;;converts a Fahrenheit temperature into a Celsius temperature

(define (FtoC Fahrenheit))

(\* (/ 5 9) (- Fahrenheit 32)) ;Formula for converting Fahrenheit to Celsius

;; converts a listof Fahrenheit temps into Celsius temps

(define (listFtoC list-F)

(cond

[(empty? list-F) empty]

[(cons? list-F) (cons (FtoC (first list-F)) (listFtoC (rest list-F)))])) ; takes a list of Fahrenheit temps and recursively creates a new list of Celsius temps from the converted Fahrenheit temps

;; converts a Celsius temperature into a Fahrenheit temperature

(define (CtoF Celsius)

(+ (\* Celsius (/ 9 5)) 32) ;Formula for converting Celsius to Fahrenheit

;; converts a list of Celsius temps into Fahrenheit temps

(define (listCtoF list-C)

(cond

[(empty? list-F) empty]

[(cons? list-C) (cons (CtoF (first list-C)) (listCtoF (rest list-C)))])); takes a list of Celsius temps and recursively creates a new list of Fahrenheit temps from the converted Celsius temps

To show how the formulas would work:

scheme@(guile-user)> (define F 32)

scheme@(guile-user)> (\* (/ 5 9) (- F 32)

)

$1 = 0

scheme@(guile-user)> (define F 98)

scheme@(guile-user)> (\* (/ 5 9) (- F 32))

$2 = 110/3

scheme@(guile-user)> (define F 212)

scheme@(guile-user)> (\* (/ 5 9) (- F 32))

$3 = 100

scheme@(guile-user)> (define F -40)

scheme@(guile-user)> (\* (/ 5 9) (- F 32))

$4 = -40

scheme@(guile-user)> (define C 18)

scheme@(guile-user)> (+ (\* C (/ 9 5)) 32)

$5 = 322/5

scheme@(guile-user)> (define C -40)

scheme@(guile-user)> (+ (\* C (/ 9 5)) 32)

$6 = -40

scheme@(guile-user)>