CSC104 Winter 2020 Exercise #1

Print this out and fill it in by hand. Hand in your solutions to the TA at the start of your quiz.

UTorID:
Surname:
Given Name:

Precision and care are crucial in programming, and we assume you check your exercise answers in DrRacket.
Your mark will reflect the care you took to make sure your answers are all, or almost all, correct.

Part A. Circle each of the following twelve pieces of code that reports an error (rather than produces a value) ...

- beside-top
- \((+ (2 - 3) 4)\)
- \(\text{small}\)
- \(\text{anti-clockwise}\)

- \((* 1 2 (- 3) 4)\)
- \(\text{above-right}\)
- \(\text{scale-height .5}\)
- \(\text{above}\)

- \(\text{tall}\)
- beside
- \(\text{turn}\)
- \(\text{beside-top}\)

Part B. Show all the steps to evaluate the following expression.

You do not need to include the "• Steps •" or "\" punctuation that DrRacket shows when using step.
Include the underlining of sub-expressions that will change.
In DrRacket, the step operation starts by copying the given expression so that it can add some underlining,
but you may save some effort by adding the initial underlining directly to the original expression.

\[
\text{(mirror (beside (clockwise (tall (solid-triangle (/ 150 10))))}
\text{(turn (above (circle (* 0 40 (- 10))))}
\text{(square (- 30 15))))}
\text{ (+ (* 2 1 5) (* (height (wide (circle 10))) 3) 5))}
\]
Part C. Beside each of the following expressions, write its value ...

\[ \triangle \]

-123

circle

width

45

number?

*

#true

turn

(function? -67)

(image? square)

(boolean? ☑)

(function? rectangle)

(number? height)

(number? *)

(function? /)

(image? image?)

(function? function?)

(boolean? image?)

(boolean? boolean?)

(image? ⬇)

(boolean? #false)

(function? boolean?)

(number? -89)

(image? #true)

(unary? scale-height)

(binary? solid-oval)

(binary? -)

(unary? binary?)
Part D. Show all the steps to evaluate the following expressions.

; You do not need to include the "• Steps•", "•", nor "•" punctuation that DrRacket shows when using step.

; In DrRacket, the step operation starts by copying the given expression so that it can add some underlining, 
; but you may save some effort by adding the initial underlining directly to the original expression.

(image? (+ 1 2 3))

(number? (circle 10))

(boolean? (- 45))

(function? (flip △))

(image? (rectangle 20 10))

(number? (/ 10 2))

(boolean? (unary? beside-top))

(function? (image? 12))

(image? (image? mirror))
(define (s z y) (text-join z y))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define i (square 10 "solid" "black"))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define (b d c) (above d c (turn d 45)))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define f (text-join b "mb"))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define x (b i j))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define rick "rick")
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define (scale (scale 3))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define sun (scale 3))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define bottom (remove-bottom kids (+ 1 (/ (height kids) 2)))))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define i raise)
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define another-good-number (+ 2 52))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define (remove-bottom an-image a-bottom) (image-top an-image (- (height an-image) (height a-bottom))))
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define (scaled-bird amount) (scale amount)
; Defines a ... Function Variable
; Variable or Function Name:
; Parameter Names (if any):

(define (b x y) (+ (text-length y) x))
; Defines a ... Function Variable
; Variable Name (if applicable):
; Parameter Names (if any):