

Assignment 4 - Synthesis I

Submission details: Please submit a .rkt file. Submit via GradeScope. If you have questions on this process, get in touch via the Slack or via email.

Due: 9/28/20

For this assignment, you'll develop a synthesizer in Rosette.

Starter code, which includes the task description, is available on the website. Reproduced below:

```
#lang rosette/safe

(require rosette/lib/synthax)
(current-bitwidth #f)

; Scenario: We've segmented a bunch of PDFs into individual text elements.
; A user is trying to turn the PDFs into structured data, and one of their
; tasks is to identify which text elements represent titles.
; They've labeled a few elements as titles or not titles. Text elements
; are also labeled with their font size and the number of words inside.
; The goal of this assignment is to learn a program to apply to the
; remaining texts in the user's corpus to categorize them as titles or
; not titles.
;
; This is a sample (below), but feel free to play around with more realistic
; scenarios. :)
(define texts
  [list (list 20 450 #f) (list 30 1200 #f) (list 70 4 #t)])

(define (get-font-size t)
  (list-ref t 0))

(define (get-num-words t)
  (list-ref t 1))

(define (get-is-title t)
  (list-ref t 2))

(get-font-size (list-ref texts 0))
(get-num-words (list-ref texts 0))
(get-is-title (list-ref texts 0))

; Now write a synthesizer that can learn a program for labeling texts as titles
; or not titles based on the examples in our texts list.

; Hint: if you end up using the #:forall (list i) approach in your solution,
; remember that i can be less than 0 and greater than the length of the texts
; list.
```