CMPE 100 - Introduction to Computing

Project 2

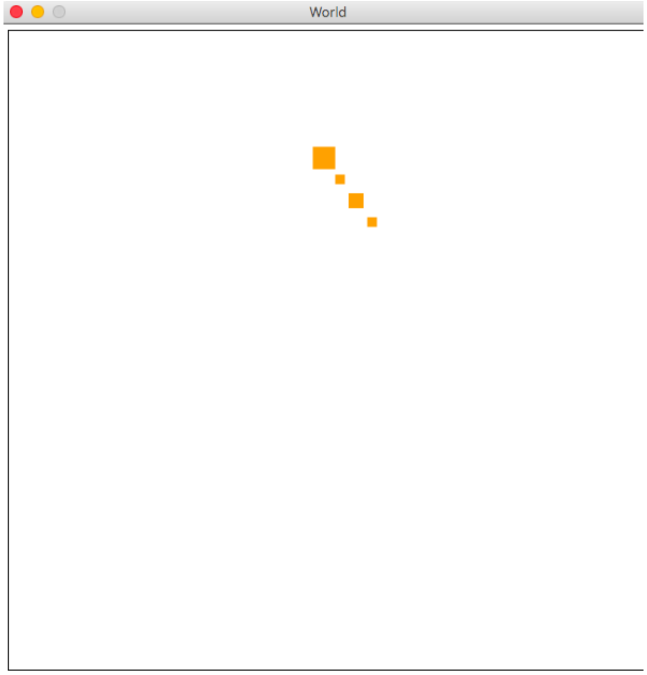
Deadline: Sunday 16th December, 2018

- Submission
  - Submit your solution as [name surname project02].rkt.
  - Solution without comments will not get full points.
  - Late submissions will not be accepted. Submission system will be closed after deadline.
  - Submissions via e-mail will not be accepted.
- Presentation
  - Projects without presentation will get ZERO.
  - Students have to make their presentations next week(Week 14) during lab sessions. Excuses other than medical reports or emergency situations are not accepted.
  - Every student has to attend his/her own subsection
- Question Design a simulation using DrRacket big-bang environment. Ensure that your programs are fully documented, using comments.
  - Define a structure named shape which has three fields:
    ; size is the size of shape
    ; color is color of shape
    ; pos is a posn structure and gives the location of shape

    ;keyEvent can be one of the following;
    ;s for square
    ;c for circle
    ;t for triangle
  - Design tick-f function which takes list-of-shapes and produces a list-of-shapes. The function subtracts the position of shapes by one.
  - Design key-f function which takes list-of-shapes and keyEvent and produces a list-of-shapes. The function checks the key event. If

keyEvent is “s” then create a new shape as “square” and produce random colored shape with random size (between 0-30) and random position where x is between [0,WIDTH] and y is between [0,HEIGHT]. If keyEvent “c” then create a new shape as ”circle” or if keyEvent is ”t” then create a new shape as ”triangle”.

- Design mouse-f function which takes list-of-shapes, x, y and mouseEvent and produces a list-of-shapes on scene. The function checks the mouse event. If it is “button-down”, change the locations of all the shapes to align through a line around the clicked point as it is shown in the following image:



- Design draw-f function which takes list-of-shapes and produces images on scene. The function draws shape using size, color, type and location of given shape.

```
;list-of-shapes -> list-of-shapes
(define (main w0)
(big-bang w0
(on-tick tick-f)
(on-key key-f)
(on-mouse mouse-f)
(to-draw draw-f)))
(define b1 (make-shape 10 "red" "circle" (make-posn 50 50)))
(define b2 (make-shape 15 "green" "triangle" (make-posn 150 150)))
```

```
(define b3 (make-shape 10 "blue" "square" (make-posn 25 25)))
(define b4 (make-shape 10 "purple" "square" (make-posn 50 1750)))
(define b5 (make-shape 10 "orange" "circle" (make-posn 20 250)))
(define los1 (list b1 b2 b3 b4 b5))
(main los1)
```