Racket Programming Assignment #1: First Interactions

Learning Abstract

This assignment focuses on very basic interactions in racket. All interactions in this assignment take place in the terminal. The first part of this assignment focuses on computation in racket. The second is focused on setting up the dimensions of an imaginary square and circle. The third is generating the images of the square and circle overlapping. Then the fourth is similar to the third in how I am creating images of shapes, although instead this one features concentric squares. Lastly the fifth part of the assignment was to find the area of the concentric squares which is red. In the last part I was able to get a decimal reading to represent the percentage.

Interaction: Simple Numeric Processing

```
> x
🗞 🐼 x: undefined;
 cannot reference an identifier before its definition
> 55
55
> 55.2
55.2
> pi
3.141592653589793
> ( * 3 8 )
24
> ( + ( * 3 8 ) 6 )
30
> (expt 2 8)
256
> ( * pi ( expt 7 2 ) )
153.93804002589985
> ( expt 9 50 )
515377520732011331036461129765621272702107522001
> |
```

Interaction: Solution to the blue and red tile area problem

The blue and red tile area problem: A tile of side 200 is blue, except for a centered red disk of radius one-third the side of the tile. What is the area of the tile which is blue? Answer: 36509.341496011344

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```
Welcome to DrRacket, version 8.3 [cs].
Language: racket, with debugging; memory limit: 128 MB.
> ( define side-of-tile 200 )
> ( define diameter-of-dot ( / side-of-tile 3 ) )
> ( define radius-of-dot ( / diameter-of-dot 2 ) )
> ( define total-tile-area ( expt side-of-tile 2 ) )
> ( define red-dot-area ( * pi ( expt radius-of-dot 2 ) ) )
> ( define blue-tile-area ( - total-tile-area red-dot-area ) )
> side-of-tile
200
> diameter-of-dot
66\frac{2}{3}
> radius-of-dot
33\frac{1}{3}
> red-dot-area
3490.658503988659
> blue-tile-area
36509.341496011344
>
```

Interaction: Painting the blue and red tile

A "library" called 2htdp/image is available for drawing and painting images. By way of introduction to this library, some simple computations are performed to produce pictures consistent with the blue tile area problem situation. What can you say about Racket as a result of the following interaction? Racket is very useful for making simple pictures. What questions does the interaction most immediately bring to mind? I want to know if there are much more abstract picture filters in Racket.



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Interaction: Painting the concentric squares image



- > (define blue-square (square side-of-blue-square "solid" "blue"))
- > (overlay small-red-square yellow-square green-square blue-square big-red-square)

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Interaction: Finding the percent of the concentric squares image which is red.



So 40% of the square is red.