Racket Programming Assignment #1: First Interactions

Learning Abstract:

This assignment includes simple interactions in the Racket programming language. All the computations occur inside of the DrRacket PDE software. In the initial segment of the task, I learned about the numerical calculations that racket allows to generate meaningful results and the computations that produce errors. The following two parts of the assignment highlighted a blue square tile and the overlaying of a red circle afterwards. In the second part of the assignment, I emulated the solutions of finding the area of the blue tile and the area of the red dot. In the last two parts of the assignment, I displayed 5 concentric circles by rendering the image with a red and blue color. The final aspect of this assignment computes a percentage of the area of a blue circle by extracting the red circles out. This task complimented a variation of problem-solving skills to gain logical outcomes.

Interaction: Simple Numeric Processing

```
Welcome to DrRacket, version 8.6 [cs].
Language: Determine language from source; memory limit: 128 MB.
> 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

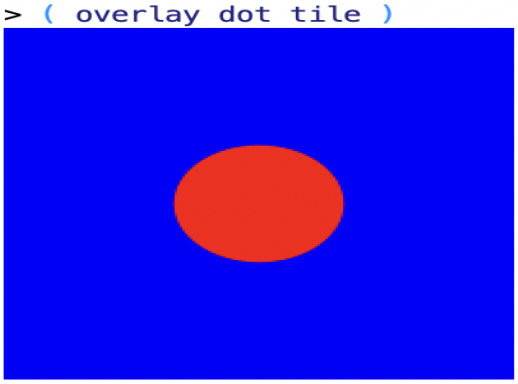
```
Welcome to DrRacket, version 8.6 [cs].
Language: Determine language from source; memory limit: 128 MB.
> ( define side-of-tile 200 )
> ( define diameter-of-dot ( / side-of-tile 3 ) )
> ( define radius-of-dot ( / diameter-of-dot 2 ) )
> ( define total-tile-area ( expt side-of-tile 2 ) )
> ( define 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 2/3
> total-tile-area
40000
> red-dot-area
3490.658503988659
> blue-tile-area
36509.341496011344
```

Interaction: Painting the blue and red tile

```
Welcome to DrRacket, version 8.6 [cs].
Language: Determine language from source; memory limit: 128 MB.
> ( require 2htdp/image )
> ( define side-of-tile 200 )
> ( define diameter-of-dot ( / side-of-tile 3 ) )
> ( define radius-of-dot ( / diameter-of-dot 2 ) )
> ( define tile ( square side-of-tile "solid" "blue" ) )
> tile
```

```
> ( define dot ( circle radius-of-dot "solid" "red" ) )
> dot
```

```
> ( overlay dot tile )
```



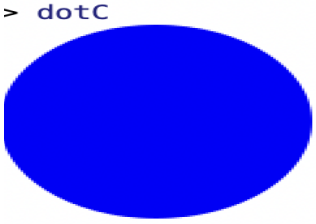
```
>
```

Interaction: Painting the blue and red concentric disks image

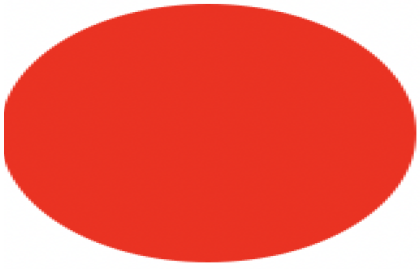
```
Welcome to DrRacket, version 8.6 [cs].
Language: Determine language from source; memory limit: 128 MB.
> ( require 2htdp/image )
> ( define radius-of-dotA 20 )

> ( define radius-of-dotB 40 )
> ( define radius-of-dotC 60 )
> ( define radius-of-dotD 80 )
> ( define radius-of-dotE 100 )
> ( define dotA ( circle radius-of-dotA "solid" "blue" ) )

> dotA
```

```
> ( define dotB ( circle radius-of-dotB "solid" "red" ) )

> dotB
```

```
> ( define dotC ( circle radius-of-dotC "solid" "blue" ) )

> dotC
```

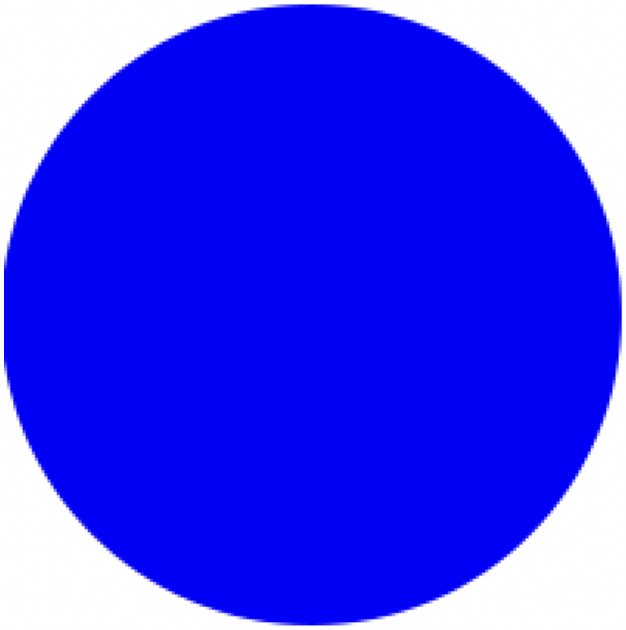


```
> ( define dotD ( circle radius-of-dotD "solid" "red" ) )

> dotD
```



```
> ( define dotE ( circle radius-of-dotE "solid" "blue" ) )

> dotE
```

```
> ( define dotE ( circle radius-of-dotE "solid" "blue" ) )
> dotE
```



```
> ( overlay dotA dotB dotC dotD dotE )
```

```
> |
```

Interaction: Computing the area of the concentric disks image which is blue

```
Welcome to DrRacket, version 8.6 [cs].
Language: Determine language from source; memory limit: 128 MB.
> ( define radius-of-dotA 20 )
> ( define radius-of-dotB 40 )
> ( define radius-of-dotC 60 )
> ( define radius-of-dotD 80 )
> ( define radius-of-dotE 100 )
> ( define area-of-dotA ( * pi ( expt radius-of-dotA 2 ) ) )
> ( define area-of-dotB ( * pi ( expt radius-of-dotB 2 ) ) )
> ( define area-of-dotC ( * pi ( expt radius-of-dotC 2 ) ) )
> ( define area-of-dotD ( * pi ( expt radius-of-dotD 2 ) ) )
> ( define area-of-dotE ( * pi ( expt radius-of-dotE 2 ) ) )
> ( + ( - ( + ( - area-of-dotA area-of-dotB ) area-of-dotC ) area-of-dotD )
area-of-dotE)
18849.55592153876
>
```