

CS 1102

## Assignment #1

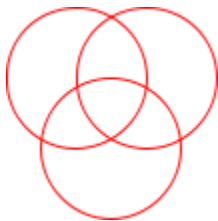
Due September 10, 2013 @ 9:00 a.m. via turnin

For all assignments in this course, you must create your functions according to HtDF template. Therefore, you are expected to supply test cases and commenting guidelines for function headers.

**Question 1.** Write a function that takes as input circle color and size, and draws three overlapping rings.

Example:

```
(three-rings "red" 35)
```



**Question 2.** Write a function that responds to an input string according to whether it is a question, an exclamation, a declarative sentence, or none of those. For deciding on the type of statement, just look at the last character in the input. You should probably watch the video on the `cond` statement before answering this question.

Examples:

```
(respond "is this working correctly?")  
"Were you trying to ask a question?"
```

```
(respond "please work correctly!")  
"You tried to tell me to do something!"
```

```
(respond "I think this function is working correctly.")  
"Thank you for the information."
```

```
(respond "woohoo")  
"Now I'm all confused"
```

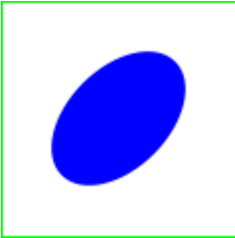
**Question 3.** Write a function that takes as input an image, a color, and a border size, and creates a frame around the image with the specified color, and with border size pixels between the image and the frame.

Examples:

```
(draw-frame (ellipse 30 60 "solid" "blue") "red" 2)
```



```
(draw-frame (rotate -45 (ellipse 50 80 "solid" "blue")) "green" 25)
```



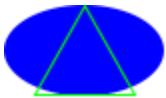
**Question 4.** Write a function that takes as input two images. The function draws the images overlaid on each other such that the first image is scaled to be large (or small!) enough to be the same size as the second image. You may also assume the two images are of “polite” shapes that make it easy to compute width and height correctly, and are not responsible for edge effects (see the second example, below).

Examples:

```
(scale-image (rotate -15 (ellipse 80 22 "solid" "blue"))  
             (rectangle 50 50 "outline" "green"))
```



```
(scale-image (triangle 10 "outline" "green")  
             (ellipse 80 45 "solid" "blue"))
```



**Question 5.** Extra credit. Create a function `scale-image-max`, which behaves identically to the function specified in question 4, but also considers rotations of `image1` that will maximize the scale at which `image1` can be drawn.

```
(scale-image-max
```

```
(rotate -15 (ellipse 80 22 "solid" "blue"))  
(rectangle 50 50 "outline" "green"))
```



[contrast with the identical parameters passed to `scale-image`, above]