

### 1. What does RGBA stand for?

**Solution** - RGBA(Red-Green-Blue-Alpha).The RGB color model is extended in this specification to include "alpha" to allow specification of the opacity of a color.

### 2. From the Pillow module, how do you get the RGBA value of any images?

**Solution** - Pillow offers the `ImageColor.getcolor()` function so you don't have to memorize RGBA values for the colors you want to use. This function takes a color name string as its first argument, and the string 'RGBA' as its second argument, and it returns an RGBA tuple.

### 3. What is a box tuple, and how does it work?

**Solution** - The `box` tuple submodule provides read-only access for the tuple userdata type. It allows, for a single tuple: selective retrieval of the field contents, retrieval of information about size, iteration over all the fields, and conversion to a Lua table.

### 4. Use your image and load in notebook then, How can you find out the width and height of an Image object?

**Solution** - `PIL.Image.open()` is used to open the image and then `.width` and `.height` property of `Image` are used to get the height and width of the image. The same results can be obtained by using `.size` property.

### 5. What method would you call to get Image object for a 100×100 image, excluding the lower-left quarter of it?

**Solution** - To get an image object for a 100x100 image, excluding the lower left quarter of it in Python, you can use the Pillow library. Here is an example code snippet that demonstrates this:

```
from PIL import Image

img = Image.open("image.png")

cropped_img = img.crop((0, 0, 75, 75))

resized_img = cropped_img.resize((100, 100))

resized_img.show()
```

In this code, ``Image.open()`` is used to load the image file, and ``Image.crop()`` is used to crop the image to exclude the lower left quarter. The ``crop()`` method takes a tuple of four values representing the left, upper, right, and lower pixel coordinates of the crop box. In this case, we set the crop box to ``(0, 0, 75, 75)`` to exclude the lower left quarter of the original image. Then, ``Image.resize()`` is used to resize the cropped image to 100x100. Finally, ``Image.show()`` is used to display the resulting image.

**6. After making changes to an Image object, how could you save it as an image file?**

**Solution** - To save images, we can use the `PIL.save()` function. This function is used to export an image to an external file. But to use this function, first, we should have an object which contains an image.

**7. What module contains Pillow's shape-drawing code?**

**Solution** - The `ImageDraw` module provides simple 2D graphics for `Image` objects. You can use this module to create new images, annotate or retouch existing images, and to generate graphics on the fly for web use.

**8. Image objects do not have drawing methods. What kind of object does? How do you get this kind of object?**

**Solution** - In Python, the `Pillow` library provides an `ImageDraw` module that contains a set of drawing primitives that can be used to draw on `Image` objects. To use the drawing methods, you need to create an `ImageDraw` object from the `Image` object.

```
from PIL import Image, ImageDraw

img = Image.new('RGB', (200, 200), color='white')

draw = ImageDraw.Draw(img)

draw.rectangle((50, 50, 150, 150), outline='red')

img.save('output.png')
```

In this code, `Image.new()` is used to create a new `Image` object with a white background and dimensions of 200x200 pixels. Then, an `ImageDraw` object is created from the `Image` object using `ImageDraw.Draw()`. Finally, the `rectangle()` method of the `ImageDraw` object is called to draw a red rectangle on the image. The `rectangle()` method takes a tuple of four values representing the left, upper, right, and lower coordinates of the rectangle. The resulting image is then saved to a file using the `save()` method of the `Image` object.