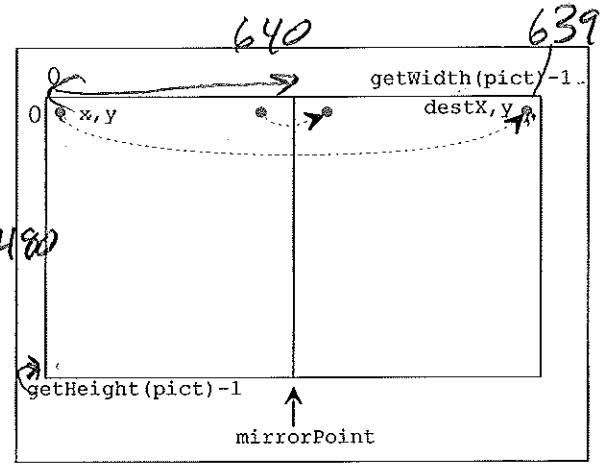
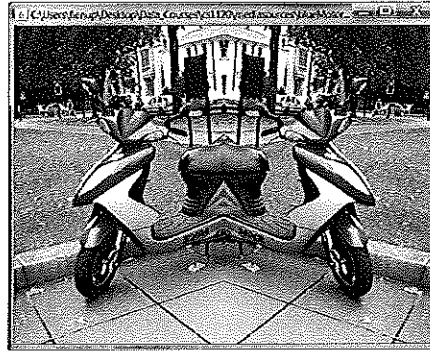
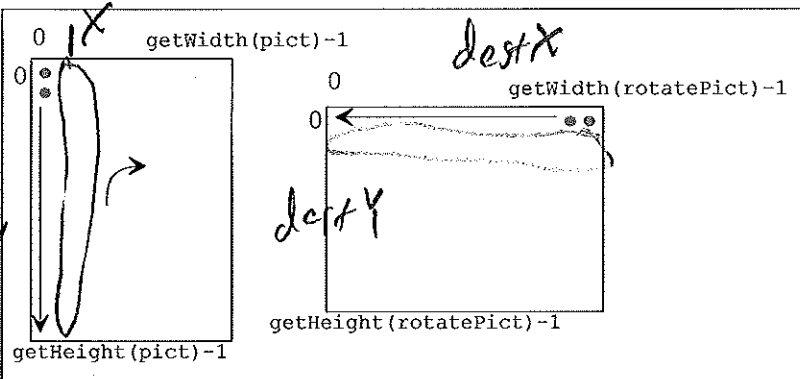


1. Let's think about how we might mirror a picture vertically



Complete the code:

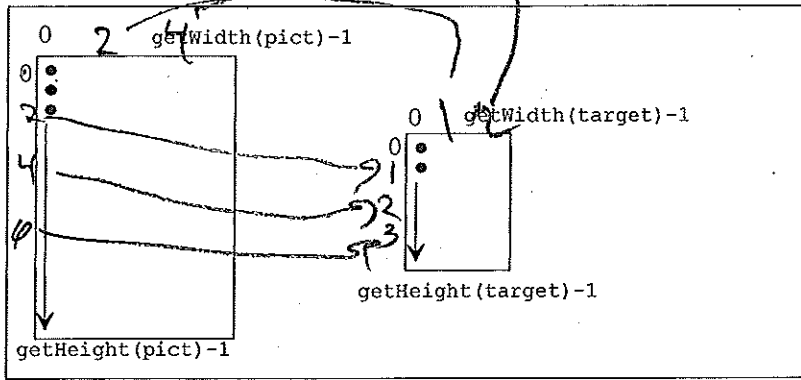
```
def mirrorVertically(pic):
    """ Mirrors the pic picture vertically """
    mirrorPoint = getWidth(pic) / 2
    for y in range(0, getHeight(pic)):
        destX = getWidth(pic) - 1 - y
        for x in range(0, mirrorPoint):
            leftPixel = getPixel(pic, x, y)
            rightPixel = getPixel(pic, destX, y)
            leftPixelColor = getColor(leftPixel)
            setColor(rightPixel, leftPixelColor)
            destX = destX - 1
```



2. Complete the code to rotate a picture 90° clockwise.

```
def rotatePicture(pic):
    rotatePic = makeEmptyPicture(getHeight(pic), getWidth(pic))
    destY = 0
    for x in range(getWidth(pic)):
        destX = getWidth(rotatePic)
        for y in range(getHeight(pic)):
            sourcePixel = getPixel(pic, x, y)
            sourceColor = getColor(sourcePixel)
            destPixel = getPixel(rotatePic, destX, destY)
            setColor(destPixel, sourceColor)
            destX = destX - 1
        destY = destY + 1
    return rotatePic
```

3. Let's think about how we might scale down a picture to half size.



Complete the code:

```
def scaleDown(pict):
```

```
    """ Scale picture to half size """
```

```
    target = makeEmptyPicture(getWidth(pict)/2, getHeight(pict)/2)
```

```
    for x in range(0, getWidth(pict)/2):
```

```
        for y in range(0, getHeight(pict), 2):
```

```
            sourcePixel = getPixel(pict, x, y)
```

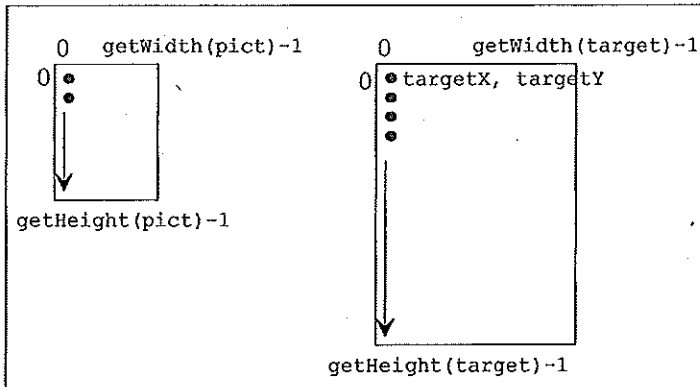
```
            sourceColor = getColor(sourcePixel)
```

```
            targetPixel = getPixel(target, x/2, y/2)
```

```
            setColor(targetPixel, sourceColor)
```

```
    return target
```

4. Let's think about how we might scale up a picture to twice its size.



```
def scaleUp(pict):
```

```
    """ Scale picture to half size """
```

```
    target = makeEmptyPicture(
```

```
        for targetX in range(
```

```
            for targetY in range(
```

```
                sourcePixel = getPixel(pict,
```

```
                sourceColor = getColor(sourcePixel)
```

```
                targetPixel = getPixel(target, targetX, targetY)
```

```
                setColor(targetPixel, sourceColor)
```

```
    return target
```