

CPSC 314 Homework 1 Solutions

[Q1]

A: (5, -1)

B: (2, -1)

C: (-1, 1/2)

[Q2]

$$\begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 4 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

[Q3]

`glTranslatef(1.0f, 1.0f, 1.0f);`

`glRotatef(90.0f, 0.0f, 1.0f, 0.0f);`

[Q4]

(4, 1, 2, 1)

[Q5]

$$A: \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$B: \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 3 \\ -1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$C: \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 3 \\ -1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 1 \end{pmatrix} * \begin{pmatrix} 2 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} * \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 4 \\ -2 & 0 & 0 & -2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$D: \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 3 \\ -1 & 0 & 0 & -2 \\ 0 & 0 & 0 & 1 \end{pmatrix} * \begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 3 \\ -1 & 0 & 0 & -3 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

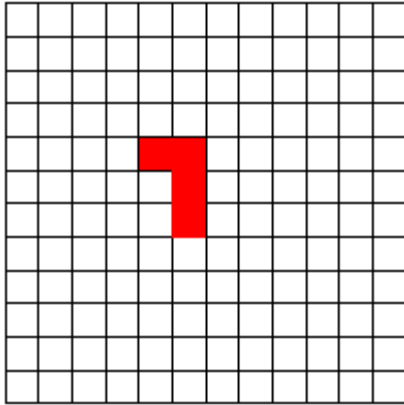
[Q6]

a)

`glRotatef(180.0f, 0.0f, 0.0f, 1.0f);`

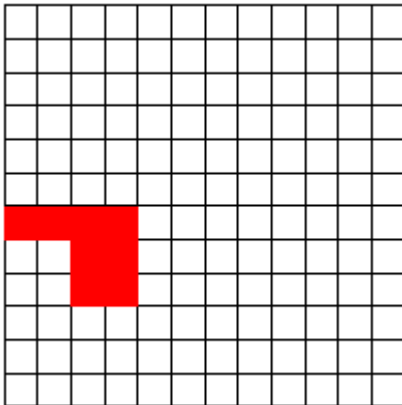
`glTranslatef(0.0f, -2.0f, 0.0f);`

`drawL();`



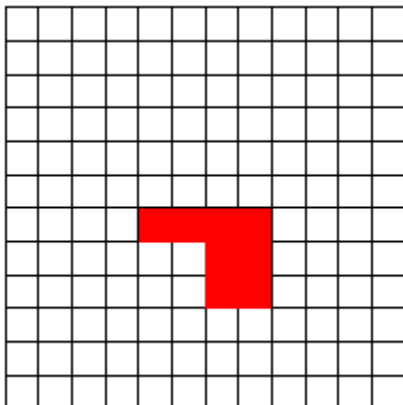
b)

```
glRotatef(180.0f, 0.0f, 0.0f, 1.0f);
glScalef(2.0f, 1.0f, 1.0f);
glTranslatef(1.0f, 0.0f, 0.0f);
drawL();
```



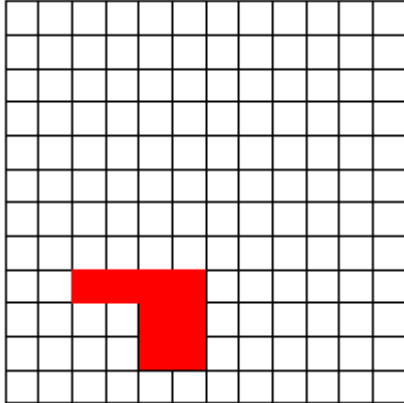
c)

```
glScalef(2.0f, 1.0f, 1.0f);
glTranslatef(1.0f, 0.0f, 0.0f);
glRotatef(180.0f, 0.0f, 0.0f, 1.0f);
drawL();
```



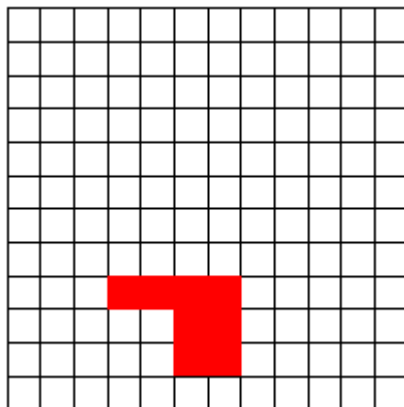
d)

```
glScalef(2.0f, 1.0f, 1.0f);  
glTranslatef(0.0f, -2.0f, 0.0f);  
glRotatef(180.0f, 0.0f, 0.0f, 1.0f);  
drawL();
```



e)

```
glTranslatef(1.0f, 0.0f, 0.0f);  
glTranslatef(0.0f, -2.0f, 0.0f);  
glScalef(2.0f, 1.0f, 1.0f);  
glRotatef(180.0f, 0.0f, 0.0f, 1.0f);  
drawL();
```



f)

```
glScalef(2.0f, 1.0f, 1.0f);  
glRotatef(180.0f, 0.0f, 0.0f, 1.0f);  
glTranslatef(1.0f, 0.0f, 0.0f);  
glRotatef(180.0f, 0.0f, 0.0f, 1.0f);  
glTranslatef(1.0f, 0.0f, 0.0f);  
drawL();
```

