1. Write the decision-making statement for a vertical wipe. (back top)

```c
if(t < double(r) / m_image.Height())
    m_image[r][c * 3 + clr] = mImage1[r][c * 3 + clr];
else
    m_image[r][c * 3 + clr] = mImage2[r][c * 3 + clr];
```

2. Write the decision code for a diamond from center wipe (back middle).

Simple version:

```c
// How far are we from the center horizontally?
int dcHorz = abs(c - m_image.Width() / 2);

// How far are we from the center vertically?
int dcVert = abs(r - m_image.Height() / 2);

if((dcHorz + dcVert) < (t * m_image.Width() / 2))
    m_image[r][c * 3 + clr] = mImage2[r][c * 3 + clr];
else
    m_image[r][c * 3 + clr] = mImage1[r][c * 3 + clr];
```

Different aspect ratio:

```c
// How far are we from the center horizontally?
double dcHorz = double(abs(c - m_image.Width() / 2)) / (m_image.Width() / 2);

// How far are we from the center vertically?
int dcVert = double(abs(r - m_image.Height() / 2)) / (m_image.Height() / 2);

if((dcHorz + dcVert) < t)
    m_image[r][c * 3 + clr] = mImage2[r][c * 3 + clr];
else
    m_image[r][c * 3 + clr] = mImage1[r][c * 3 + clr];
```

3. Suppose I know something is at (100, 25) at frame 20 and at (200, 300) at frame 30. Where would it be at frame 22?

```c
t = (22 - 20) / (30 - 20) = 0.2
(x, y) = 0.8 (100, 25) + 0.2 (200, 300) = (120, 80)
```
For the following, assume these are 25 pixels from a monochrome image. Assume (0,0) is the lower left corner:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>112</td>
<td>32</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>107</td>
<td>120</td>
<td>122</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>110</td>
<td>118</td>
<td>123</td>
<td>120</td>
<td>22</td>
</tr>
<tr>
<td>119</td>
<td>109</td>
<td>119</td>
<td>117</td>
<td>18</td>
</tr>
<tr>
<td>100</td>
<td>105</td>
<td>111</td>
<td>109</td>
<td>20</td>
</tr>
</tbody>
</table>

4. What would be \( G_x \) for pixel (3, 2) assuming the Prewitt operator?

Centered on the 120
\[-123 - 119 - 122 + 22 + 18 + 28 = -296 \]

5. What would be \( G_y \) for pixel (3, 2) assuming the Prewitt operator?

\[-122 - 28 - 28 + 119 + 117 + 18 = 76 \]

6. Assuming "similar color" is defined as a difference of no more than 20 from the starting pixel color, execute the algorithm in slide 30. After three iterations of the while loop, what will be the status of the stack, assuming we start with pixel (3, 2)?

Flagged as in region: (3, 2), (2, 2), (2, 3), (3, 1), (2, 1), (1, 1) (1, 2) (3, 0), (2, 0), (1, 0), (0, 1), (0, 0)

Stack after 1 iteration:
(2, 2)
(2, 3)
(3, 1)
(2, 1)

Stack after 2 iteration :
(2, 2)
(2, 3)
(3, 1)
(1, 1)
Stack after 3 iterations:
(2, 2)
(2, 3)
(3, 1)
(1, 1)
(1, 2)
(3, 0)
(2, 0)
(0, 1)
(0, 0)