

// Sean's CS106B Pointers Worksheet! Show the contents of variables a, b, p, and q
 // at the various stages of the program's execution where I've drawn the boxes.

```
#include <iostream>
#include "console.h"
using namespace std;
```

```
int main()
{
```

```
    int a = 42, b = 52, *p = nullptr, *q = nullptr;
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |    42    |      |    52    |      | nullptr |      | nullptr |
// +-----+      +-----+      +-----+      +-----+
```

```
p = &a;
q = &b;    // Show the contents of those variables after executing this line.
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |    42    |      |    52    |      | 0x1168  |      | 0x1188  |
// +-----+      +-----+      +-----+      +-----+
```

```
*p = 106;    // Show the contents of those variables after executing this line.
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |   106    |      |    52    |      | 0x1168  |      | 0x1188  |
// +-----+      +-----+      +-----+      +-----+
```

```
*q = *p;    // Show the contents of those variables after executing this line.
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |   106    |      |   106    |      | 0x1168  |      | 0x1188  |
// +-----+      +-----+      +-----+      +-----+
```

```
q = p;    // Show the contents of those variables after executing this line.
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |   106    |      |   106    |      | 0x1168  |      | 0x1168  |
// +-----+      +-----+      +-----+      +-----+
```

```
q = &b;    // Show the contents of those variables after executing this line.
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |   106    |      |   106    |      | 0x1168  |      | 0x1188  |
// +-----+      +-----+      +-----+      +-----+
```

```
// The remaining lines are a bit wild and honestly just kind of silly. There's
// a supplementary section of course notes that explains what's happening here.
```

```
*&a = 99;    // Show the contents of those variables after executing this line.
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |    99    |      |   106    |      | 0x1168  |      | 0x1188  |
// +-----+      +-----+      +-----+      +-----+
```

```
*&p = &b;    // Show the contents of those variables after executing this line.
```

```
// a      0x1168      b      0x1188      p      0x2122      q      0x2154
// +-----+      +-----+      +-----+      +-----+
// |    99    |      |   106    |      | 0x1188  |      | 0x1188  |
// +-----+      +-----+      +-----+      +-----+
```

```
    return 0;
```

```
}
```