

Solution to Practice Problem 1:

```
int main() {
    int a = 10;
    int b = 20;
    int c = 30;

    int* p1 = &a;
    int* p2 = &b;
    int* p3 = &c;

    printf("%i %i %i\n", *p1, *p2, *p3);

    *p3 = 66;

    p3 = p2;
    p2 = p1;

    *p1 = *p1 + 100;
    *p2 = *p2 + 400;
    *p3 = *p3 + 800;

    printf("%i %i %i\n", *p1, *p2, *p3);
    printf("%i %i %i\n", a, b, c);

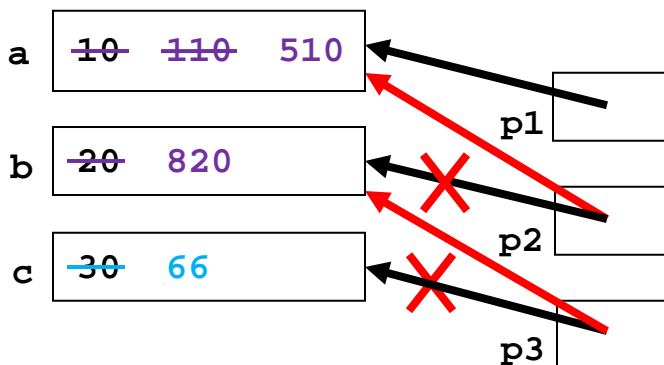
    return EXIT_SUCCESS;
}
```

Draw a box-and-pointer diagram (in the box at the bottom) to indicate what the following snippets of code are doing. Also show what is output.

Output:

```
10 20 30
510 510 820
510 820 66
```

Box and pointer diagram (you can just cross out things to show how they change as the code executes):



Black shows the situation after the first *printf*.

Blue shows the effect of the *blue* statement in the code.

Red shows the effect of the *red* statements in the code: the arrows from **p3** and **p2** change.

Purple shows the effect of the *purple* statements in the code: **a** changes twice (because **a** is the pointee for both **p1** and **p2** at that point in the code) and **b** changes once (because **b** is the pointee for **p3** at that point in the code).