Chapter 2

Example 2.3

Determine the values of \( \text{val} \), the dereferenced pointer \( \ast p \), and the difference between the pointer \( p \) address and the initial address \( p_0 \), after the execution of each line of the following code:

```c
#include <stdio.h>

int print(int val, long int dp, char *note) {
    printf("value = %i, \tp offset = %li, \t%s\n", val, dp, note);
}

int main() {
    int a[] = {0, 1};
    int *p = a, *p0 = a, val = *p;
    print(val, p - p0, "initial");
    val = *p++; print(val, p - p0, "*p++");
    val = *p--; print(val, p - p0, "*p--");
    val = +++p; print(val, p - p0, "+++p");
    val = --p; print(val, p - p0, "--p");
    val = +++p; print(val, p - p0, "+++p");
    val = --*p; print(val, p - p0, "--*p");
}
```

The program prints the following to the console:

```
value = 0, p offset = 0, initial
value = 0, p offset = 1, *p++
value = 1, p offset = 0, *p--
value = 1, p offset = 1, +++p
value = 0, p offset = 0, --p
value = 1, p offset = 0, +++p
value = 0, p offset = 0, --*p
```

Note that \( p \) is unchanged in the last two lines of the output because the dereferencing operates first.