

## Homework #4

(C Programming for Beginners - OnLine)

**4.1** Here is a listing of a program, use a paper computer and answer how many times each loop is executed

a) How many times this loop is executed?

```
int i = 0;
while (i++ < 10) {
    printf("Hello World: %d\n", i);
}
```

b) How many times this loop is executed if we changed the counter increment to ++i ?

```
i = 0;
while (++i < 10) {
    printf("Hello World: %d\n", i);
}
```

c) How many times this loop is executed, if it is executed immediately after the loop in #b, i.e. i is not reinitialized before the loop?

```
while (++i < 10) {
    printf("Hello World: %d\n", i);
}
```

**4.2** Remember our famous homework#1 program? This program draws a box 20 characters in width and 10 characters in height, using a '-' for horizontal line and '|' for vertical line.

```
printf("Using brutal force: \n");
printf("-----\n");
printf("|               |\n");
printf("|               |\n");
printf("|               |\n");
printf("|               |\n");
printf("|               |\n");
printf("|               |\n");
printf("|               |\n");
printf("|               |\n");
printf("-----\n");
```

Only println() is used for this purpose. A good solution could involve a loop, which now you know. So, write the solution - using loop.

Hint: One way to solve this would be by writing a loop to draw top line and nested loops to draw the middle lines and later similar loop like top for the bottom line.

**4.2** Change the while loop in 4.2 to do..while loop to print the same box.

**4.4** Change the while loop in 4.3 to *for* - loop to print the same box

**4.5** Modify the program in 4.4 and use variables for horizontal, vertical characters instead of hard coded values like '|', '-'. Ask user for all these values height, width, and characters to draw ('|', '-') instead of using hard coded values.

**4.5** Modify the program in 4.5 so that it repeats the drawing by asking user to continue. If user enters 'y' then continue drawing more boxes.