

## CS102: Introduction to Computer Science

Summer 2013

Program #1

You are going to write a program that displays a rectangle composed of ASCII characters, allowing the user to specify the number of rows and columns. The user should be told that they can specify numbers of rows and columns in the range from 3 to 20; if they specify integers outside of this range, they should be re-prompted until they get it right. (You do not need to worry about them typing text or floating-point values.) The displayed rectangle should consist of '+' characters (at the corners), '-' characters (everywhere other than corners in the first and last rows), '|' characters (everywhere other than corners in the first and last columns), spaces (everywhere within the rectangle), and newline characters (after each row).

Here is a sample run (where the user types some incorrect values before correct values when choosing the numbers of rows and columns):

```
Enter number of rows (from 3 to 20): 2
Enter number of rows (from 3 to 20): 21
Enter number of rows (from 3 to 20): 5
Enter number of columns (from 3 to 20): 950
Enter number of columns (from 3 to 20): 10
+-----+
|         |
|         |
|         |
+-----+
```

*Hints: Use two separate loops to prompt the user for the numbers of rows and columns. Then use a pair of nested loops to display the rectangle. The outer loop should loop through the rows and the inner loop should loop through the columns of the current row. Inside the nested loops, an "if" statement with multiple "else if" or "else" clauses can be used to decide what to display. Remember that a newline character needs to be displayed after each row.*

Your homework will be graded out of 100 points with the following breakdown:

- **Correctness:** You should follow all instructions exactly as stated above. This is an individual assignment (i.e., you should not collaborate with anyone else). **75 points.**
- **Elegance and Efficiency:** You should use the concepts we have learned in class to write your program in a simple, elegant manner. **10 points.**
- **Format:** Your program should use proper indentation and other spacing which makes the code readable and easy to understand. **10 points.**
- **Comments:** You should include one comment at the top of your program indicating your full name and (briefly) what the program does, plus one or more short comments within the code explaining how it works. **5 points.**

**Submitting assignments:** Email me your code (to [CarlSable.Cooper@gmail.com](mailto:CarlSable.Cooper@gmail.com)) as an attachment. Do NOT attach the executable (only send the source file). Please state in your e-mail which environment you used to develop the code (e.g., Cygwin, Quincy, Ubuntu, etc.). This program is due the night of Tuesday, July 23, before midnight.