# CS1115 Lab 3 (September 6, 2012)

Completing the lab is very important, but your work is not graded and it is not submitted. If you finish before the hour is over, then you can leave early or you can work on the "Finished Early" problems. If you do not finish the problems before the end of class, then be sure to ask enough questions so that you can complete the exercises in the next day or two on your own.

Download the functions `DrawStar` and `DrawRect` and the scripts `StarsA`, `StarsB`, and `StarsC` from the syllabus page. The first three problems involve completing given scripts so that a specified pattern of white stars are drawn against a blue background. To understand how the layouts are specified, consider the following 11-by-9 array of stars:
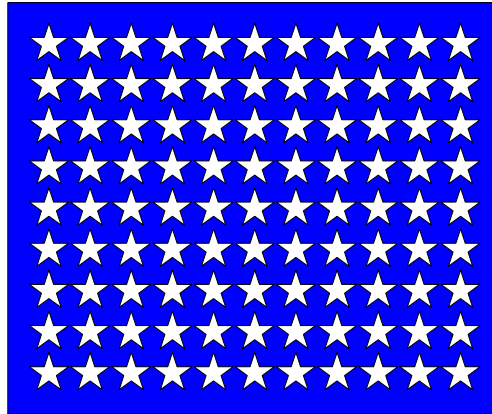

We assume that

- The lower left corner of the blue rectangle is (0,0).

- All the stars have radius 1.

- The lower left star has center at (Δ_x, Δ_y). (In the scripts, $\Delta_x = 3$ and $\Delta_y = 3$.)

- The spacing between each column of stars is Δ_x.

- The spacing between each row of stars is Δ_y.

- The upper right corner of the blue rectangle is $(12\Delta_x, 10\Delta_y)$.

1 Border Stars

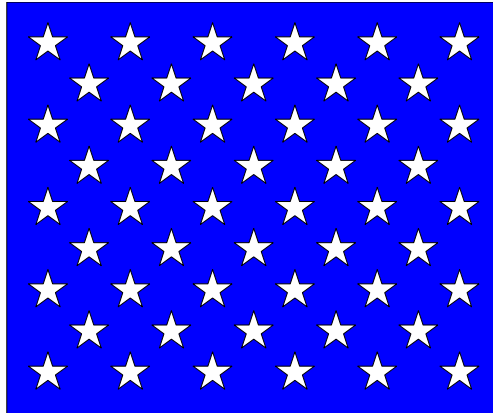Complete the script `StarsA` so that it displays the following:
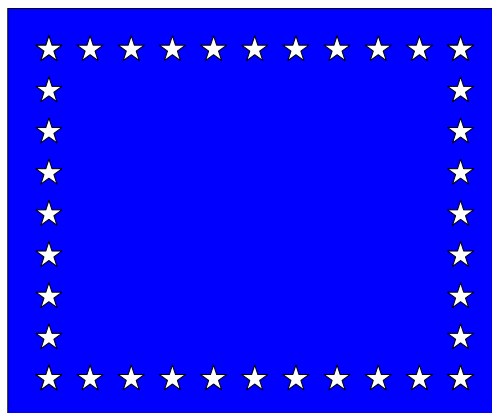
2 Ninety-Nine Stars

Complete the script `StarsB` so that it displays the 11-by-9 array of stars shown above.

3 Fifty Stars

Complete the script `StarsC` so that it displays the following:

4 StarWalk

Download the script `StarWalk`. (a) In a few sentences, describe what this script simulates. (b) Modify `StarWalk` so that it terminates as soon as the center of the highlighted star is outside the square.

5 Finished Early

Define

$$
\begin{aligned}
t_0 &= \sqrt{1+0} \\
t_1 &= \sqrt{1+1} \\
t_2 &= \sqrt{1+2} \\
t_3 &= \sqrt{1+2\sqrt{1+3}} \\
t_4 &= \sqrt{1+2\sqrt{1+3\sqrt{1+4}}} \\
t_5 &= \sqrt{1+2\sqrt{1+3\sqrt{1+4\sqrt{1+5}}}}
\end{aligned}
$$

Pick up the pattern and develop a program that prints $t_1, \ldots, t_{26}$. A loop is required for each t_k.

Please delete your files from the computer before you leave the lab!