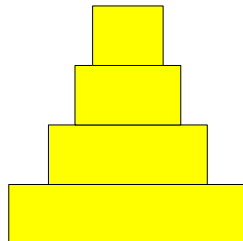


1 Build your own step pyramid

4. Complete the script `stepPyramidSkeleton.m` to draw a step pyramid. The base rectangle is L -by- H where $H \leq L$. Each step has the same height H . The next rectangle up is $2/3$ the length of the rectangle below, and so forth. The top step must have a length no less than H .



You will need function `drawRect`—download it from the *Lecture Materials* page (2/7) and put it in your working directory (the directory from which you will run your script). Use a `while`-loop.

2 Fibonacci numbers

You should read FVL §3.2 before doing the following exercise. However, do not just copy the code from §3.2! Read §3.2, then *put it away* so that you really are reasoning out the solutions to these questions on your own. Don't go back and forth between these questions and the reading. If you need help, work with someone in the lab (a classmate or your lab instructors) to figure things out.

1. Write a script to print the first n Fibonacci numbers. Remember that the Fibonacci numbers are defined as $F_n = F_{n-1} + F_{n-2}$ with $F_1 = 1$ and $F_2 = 1$. Notice that to calculate any F_n , you only need to know the two previous Fibonacci numbers—you do not need to keep track of the entire sequence at any time. Use *scalar* variables only and use a `for`-loop in your solution. A scalar is a variable that stores a single value at one time. Your script will begin with the following statements:

```
n= input('Input n: ');
value1= 1;
value2= 1;
```

2. Write a MATLAB script to print the numbers $F_n, F_n + 1, F_n + 2, \dots, F_{n+1} - 1, F_{n+1}$. For example, if $n = 6$, then your script prints 8, 9, 10, 11, 12, 13 since $F_6 = 8$ and $F_7 = 13$. Your script begins with the following statements:

```
n= input('Input n: ');
value1= 1;
value2= 1;
```

3 ASCII “drawing” in the Command Window

Write a script to “draw” the following figure in the *Command Window* using `fprintf` statements. Prompt the user to input a value (n) for the number of asterisks on each side of the square. For example, if n is 5, then the following figure will be printed. You may assume that $n > 3$.

```
*****
**  *
*  * *
*  **
*****
```

4 Challenge question (not required)

Write a script to display the following figure in the Command Window using `fprintf` statements. Prompt the user to input a value (`n`) for the number of asterisks on each side of the diamond. For example, if `n` is 5, then the following figure will be printed. You may assume that `n > 3`.

```
  *
 * *
*   *
*     *
*       *
*         *
*           *
*             *
*               *
*                 *
```

Want even more challenge? Put a vertical column of asterisks down the center of the diamond!

Please delete your files from the computer before leaving the lab!