

1. Write a function called `rectangle` that takes two integers `m` and `n` as arguments and prints out an  $m \times n$  box consisting of asterisks. Shown below is the output of `rectangle(2, 4)`

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2. (a) Write a function called `add_excitement` that takes a list of strings and adds an exclamation point (!) to the end of each string in the list. The program should modify the original list and not return anything.  
(b) Write the same function except that it should not modify the original list and should instead return a new list.
3. Write a function called `sum_digits` that is given an integer `num` and returns the sum of the digits of `num`.
4. The *digital root* of a number  $n$  is obtained as follows: Add up the digits  $n$  to get a new number. Add up the digits of that to get another new number. Keep doing this until you get a number that has only one digit. That number is the digital root.  
For example, if  $n = 45893$ , we add up the digits to get  $4 + 5 + 8 + 9 + 3 = 29$ . We then add up the digits of 29 to get  $2 + 9 = 11$ . We then add up the digits of 11 to get  $1 + 1 = 2$ . Since 2 has only one digit, 2 is our digital root.  
Write a function that returns the digital root of an integer  $n$ . [Note: there is a shortcut, where the digital root is equal to  $n \bmod 9$ , but do not use that here.]
5. Write a function called `first_diff` that is given two strings and returns the first location in which the strings differ. If the strings are identical, it should return -1.