

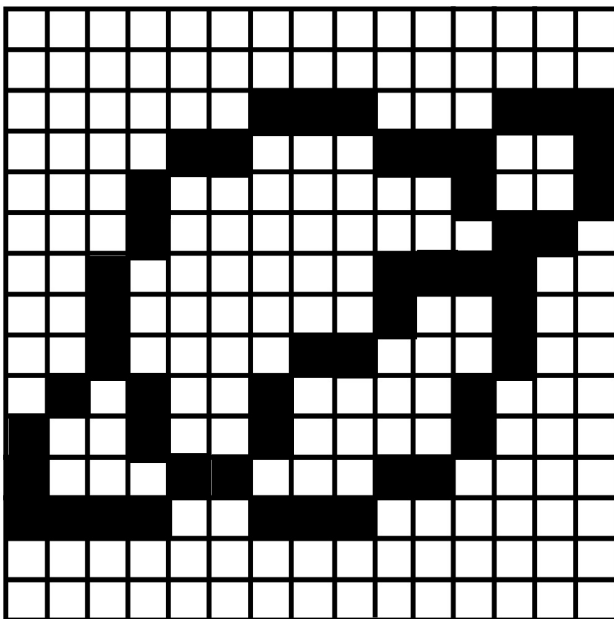


# QUANTUM CODE CRUNCHERS

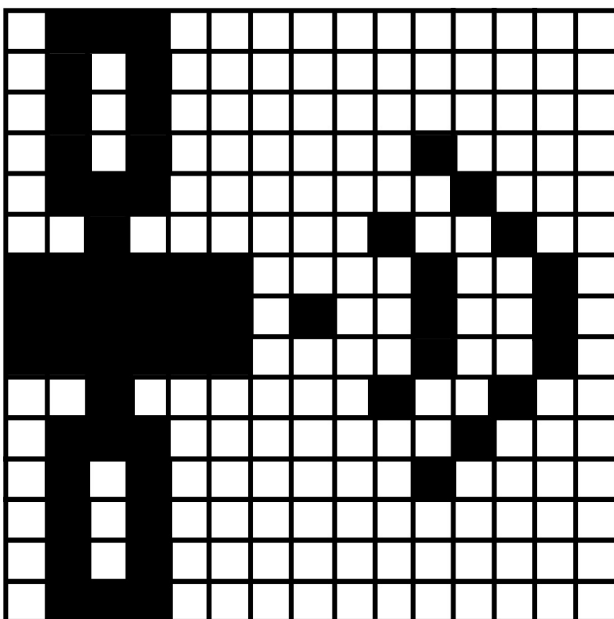
## A Space Communications and Navigation (SCaN) Binary Code Hacking Activity

**|| GRADES 3 - 6 ||** NASA SCaN aims to use quantum communications to safely send and receive space data. Particles known as quantum qubits securely transmit messages using combinations of “1” and “0” to represent the data as binary code.

**|| INSTRUCTIONS ||** Convert the image on the left into binary code on the right by matching up each line and writing “0” to represent a white pixel and “1” to represent a black pixel. The first three lines of binary code have been completed for you!



0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 0 0 0 0 0 0 1 1 1 0 0 0 1 1 1  
 0 0 0 0 1 1 0 0 0 1 1 1 0 0 1  
 0 0 0 1 0 0 0 0 0 0 0 1 0 0 1  
 0 0 0 1 0 0 0 0 0 0 0 0 1 1 0  
 0 0 1 0 0 0 0 0 0 1 1 1 1 0 0  
 0 0 1 0 0 0 0 0 0 1 0 0 1 0 0  
 0 0 1 0 0 0 0 1 1 0 0 0 1 0 0  
 0 1 0 1 0 0 1 0 0 0 0 1 1 0 0  
 1 0 0 1 0 0 1 0 0 0 0 1 0 0 0  
 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0  
 1 1 1 1 0 0 1 1 1 0 0 0 0 0 0  
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0



0 1 1 1 0 0 0 0 0 0 0 0 0 0 0  
 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0  
 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0  
 0 1 0 1 0 0 0 0 0 0 1 0 0 0 0  
 0 1 1 1 0 0 0 0 0 0 0 1 0 0 0  
 0 0 1 0 0 0 0 0 0 1 0 0 1 0 0  
 1 1 1 1 1 1 0 0 0 0 1 0 0 1 0  
 1 1 1 1 1 1 0 1 0 0 1 0 0 1 0  
 1 1 1 1 1 1 0 0 0 0 1 0 0 1 0  
 0 0 1 0 0 0 0 0 0 1 0 0 1 0 0  
 0 1 1 1 0 0 0 0 0 0 0 1 0 0 0  
 0 1 0 1 0 0 0 0 0 0 1 0 0 0 0  
 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0  
 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0  
 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0