



Problem 4. «RGB»

Victor is studying the Moctod search server. Inside its software, he found two integer variables a and b that change their values when special search queries “RED”, “GREEN” and “BLUE” are processed. More precisely, the pair (a, b) is changed to $(a + 18b, 18a - b)$ when processing the query “RED”, to $(17a + 6b, -6a + 17b)$ when processing “GREEN”, and to $(-10a - 15b, 15a - 10b)$ when processing “BLUE”. When any of a or b reaches a multiple of 324, it resets to 0. Whenever $(a, b) = (0, 0)$, the server crashes.

On the server startup, the variables (a, b) are set to $(20, 20)$. Prove that the server will never crash with these initial values, regardless of the search queries processed.

