For $\mathfrak{g}_2$, the Cartan subalgebra is
\[ t = \{ (a + b + c) : a + b + c = 0 \}. \]
The roots are
\[ R = \pm\{ a - b, b - c, a - c, a, b, c \}. \]
We can choose
\[ R^+ = \{ c, b - c, b, -a, c - a, b - a \}. \]
The corresponding coroots are
\[ H_c = (-1, -1, 2), H_{b-c} = (0, 1, -1), H_b = (-1, 2, -1), \]
\[ H_{-a} = (-2, 1, 1), H_{c-a} = (-1, 0, 1), H_{b-a} = (-1, 1, 0) \]
Here is the root system:

Here are the coroots.

The simple picture:

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and the last one.