Gaussian Elimination with Elementary Matrices

Recall the steps of G-E for A:

Step 1:	Row 2 + (-2) x Row 1	, equiv:	mult by $E = E_{12}(-2)$
Step 2:	Row 3 + (1) x Row 1	, equiv:	mult by $F = E_{13}(1)$
Step 3:	Row 3 + (1) x Row 2	, equiv:	mult by $G = E_{23}(1)$

Therefore

$$Ax = b \iff \underbrace{GFEA}_{U}x = \underbrace{GFEb}_{c}$$

i.e.

$$U = GFEA, c = GFEb$$

This is how U and c are related to A and b.
Multiplying A by E, then by F, then by G, performs G-E on A.