Answer on Question #52780 - Chemistry - Organic Chemistry

Common Name	Formula	Acidity Constant	pKa
Trichloroacetic acid	CCl_3COOH	0.23	0.77
Acetic acid	CH_3COOH	$1.77 \cdot 10^{-5}$	4.75
Propanoic acid	CH_3CH_2COOH	$1.3 \cdot 10^{-5}$	4,87
Phenol	C_6H_5OH	10^{-10}	10.0

Stronger acids have smaller or more negative pK_a values than do weaker acids.

The more electronegative substituent (for example Cl) and the more atoms of it are substituted to the anion the greater their effect on the acid strength. It leads to greater stabilization of the substituted anion by delocalization of the negative charge, thereby increasing the strength of the acid. That is why trichloroacetic acid is strong acid. The positive inductive effect of the alkyl group reduces the activity of the alkanoic acids, by reducing the positive charge on the carboxyl group. That is way propanoic acid is weaker than acetic acid.