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$$H(s) = \frac{V_o(s)}{V_i(s)}$$
$$V_o(s) = \frac{R}{R+\frac{1}{SC}}V_i(s) \to \frac{V_o(s)}{V_i(s)} = \frac{R}{R+\frac{1}{SC}} \quad \Big\} \to H(s) = \frac{R}{R+\frac{1}{SC}} \to$$

$$\to H(j\Omega) = \frac{R}{R+\frac{1}{j\Omega C}} = \frac{R(R-\frac{1}{j\Omega C})}{R^2+\frac{1}{(\Omega C)^2}} = \frac{R^2-\frac{R}{j\Omega C}}{R^2+\frac{1}{(\Omega C)^2}} \to H(j\Omega) = \frac{R^2-\frac{R}{j\Omega C}}{R^2+\frac{1}{(\Omega C)^2}}$$

$$|H(j\Omega)| = \sqrt{\left(\frac{R^2}{R^2+\frac{1}{(\Omega C)^2}}\right)^2 + \left(\frac{\frac{R}{\Omega C}}{R^2+\frac{1}{(\Omega C)^2}}\right)^2} = \sqrt{\frac{R^4+\frac{R^2}{(\Omega C)^2}}{R^2+\frac{1}{(\Omega C)^2}}} = \sqrt{\frac{(\Omega C)^2 R^4+R^2}{(\Omega C)^2} \cdot \frac{(\Omega C)^2}{(R\Omega C)^2+1}} = R$$

$$\angle H(j\Omega) = arctg\left(\frac{R^2}{R^2+\frac{1}{(\Omega C)^2}} \cdot \frac{R^2+\frac{1}{(\Omega C)^2}}{\frac{R}{\Omega C}}\right) = arctg\left(R^2 \cdot \frac{\Omega C}{R}\right) = arctg(R\Omega C)$$

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$$\left.\begin{array}{l} \omega = \Omega T \\ \Omega = 2\pi f \\ T = \frac{1}{F_s} \end{array}\right\} \omega = \frac{2\pi f}{F_s}$$

In our case $F_s = 1kHz \to \omega = \frac{2\pi f}{1kHz} = \frac{\pi f}{500Hz}$
a) $f = 250Hz \to \omega = \frac{\pi \cdot 250Hz}{500Hz} = \frac{\pi}{2}$
a) $f = 500Hz \to \omega = \frac{\pi \cdot 500Hz}{500Hz} = \pi$
a) $f = 1kHz \to \omega = \frac{\pi \cdot 1kHz}{500Hz} = 2\pi$

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$$H(s) = \frac{V_o(s)}{V_i(s)}$$
$$V_o(s) = \frac{1/SC}{R}V_i(s) \to \frac{V_o(s)}{V_i(s)} = \frac{1}{CRS} \quad \Big\} \to H(s) = \frac{1}{CRS} \to$$

$$\to H(j\Omega) = \frac{1}{CRS} = -\frac{j\Omega CR}{(\Omega CR)^2} \to H(j\Omega) = -\frac{j\Omega CR}{(\Omega CR)^2}$$

$$|H(j\Omega)| = \frac{\Omega CR}{(\Omega CR)^2} = \frac{1}{\Omega CR} \to H(j\Omega) = \frac{1}{\Omega CR}$$

The real part is $0 \to \angle H(j\Omega) = 90^o$