Bernoolli distribution : $P(x|\theta) = \theta^{x}(1-\theta)^{1-x}$

The Fischer information is the negative expected value of the second derivative of the log liklihood, evaluated about some point.

$$F = -E_{p(x|\theta)}\left\{ \frac{\partial^2 \log(P(x|\theta))}{\partial\theta^2}\Bigg|_{\theta} \right\}$$

$$\log(P(x|\theta)) = x\log\theta + (1-x)\log(1-\theta)$$

$$\frac{\partial}{\partial\theta}\left(\log(P(x|\theta))\right) = \frac{x}{\theta} - \frac{1-x}{1-\theta}$$

$$\frac{\partial^2}{\partial\theta^2}\left(\log(P(x|\theta))\right) = -\frac{x}{\theta^2} - \frac{1-x}{(1-\theta)^2}$$

$$\therefore F = \frac{1}{\theta^2}E_{p(x|\theta)}\{x\} + \frac{1}{(1-\theta)^2}E_{p(x|\theta)}\{1-x\}$$

$E_{p(x|\theta)}\{x\} = \theta.$

$$\therefore F = \frac{\theta}{\theta^2} + \frac{1-\theta}{(1-\theta)^2} = \theta^{-1} + (1-\theta)^{-1}$$