1. (10 points) Find values of the constants $a$ and $b$ such that the following integral is as small as possible.

$$\int_{0}^{1} (ax + b - x^2)^2 \, dx$$

(Hint: Evaluate the integral and consider it as a function of $a$ and $b$, i.e. minimize $f(a, b)$.)

Bonus: Name an African nation.