A non-primitive C^*-algebra.

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$C[0,1]$. In fact if A is a commutative primitive C^*-algebra, then A has a nonzero faithful irreducible representation (H,φ). So $(\varphi(A))' = \mathcal{C}1$. But $\varphi(A)$ is commutative, so $\varphi(A) \subseteq (\varphi(A))' = \mathcal{C}1$. But $\varphi(A) \neq \{0\}$ so $\varphi(A) = \mathcal{C}1$. Thus $A \simeq \varphi(A) = \mathcal{C}1$.