

Local rings

Let  $A$  be a ring.

### Definition

$A$  is called a local ring if it is commutative and has a unique maximal ideal.

If  $A$  is a local ring with maximal ideal  $\mathfrak{m}$ , we often say the pair  $(A, \mathfrak{m})$  is a local ring.

## Question

Let  $k$  be a field and  $t$  a variable. If  $n$  is a non-negative integer, is  $k[t]/(t^n)$  a local ring? What is its maximal ideal?



