We can take any word and rearrange all the letters to get another “word”. These new “words” may be nonsensical. For example, you can rearrange the letters in \textit{MATH} to get \textit{MTHA}. Geordie wants to rearrange all the letters in the word \textit{CADET}. However, he uses the following rules:

- the letters \textit{A} and \textit{D} must be beside each other, and
- the letters \textit{E} and \textit{T} must be beside each other.

How many different arrangements of the word \textit{CADET} can Geordie make if he follows these rules?

\textit{Note:} \textit{ADCET} and \textit{ADTEC} are acceptable words, while \textit{ADTCE} is not.