%FontSize=10
%TeXFontSize=10
\documentclass[11pt]{ctexart}
\usepackage[top=2cm, bottom=2cm, left=2cm, right=2cm]{geometry}
\usepackage{algorithm}
\usepackage{algorithmicx}
\usepackage{algpseudocode}
\usepackage{amsmath}

\floatname{algorithm}{Algorithm}
\renewcommand{\algorithmicrequire}{\textbf{Input:}}
\renewcommand{\algorithmicensure}{\textbf{Output:}}

\begin{document}
    \begin{algorithm}
        \caption{Bubble Sort with Flag}
        \begin{algorithmic}[1] 
            \Require $Array$
            \Ensure $Sorted\quad Array$
            
                \State $time \gets len(Array)$
                \State $end \gets len(Array)-1$
                \For{$i=0$; $i<time-1$; $i++$ } 
                   \State $flag \gets False$
                   \For{$j=0$; $j<end$; $j++$ } 
                       \If{$Array[j]>Array[j+1]$}  
                        \State swap $Array[j],Array[j+1]$  
\State $flag \gets True$
                   \EndIf
                   \EndFor
\If{$flag == False$}
\State \Return{$Array$}
\EndIf
\State $end \gets end-1$
                \EndFor 
                \State \Return{$Array$}
                    \end{algorithmic}
    \end{algorithm}
\end{document}

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\begin{document}
    \begin{algorithm}
        \setcounter{algorithm}{1}
        \caption{Bubble Sort with Interval}
        \begin{algorithmic}[1] 
            \Require $Array$
            \Ensure $Sorted\quad Array$
            
                \State $length \gets len(Array)$
                \State $interval \gets int(len(Array)//1.3)$

                \While{$interval \geq 1$}
\State $i \gets 0$
\While{$i+interval < length$}
\If{$Array[i]>Array[i+interval]$}
\State swap $Array[i],Array[i+interval]$
\EndIf
\State $i \gets i+1$
\EndWhile
\State $interval \gets int(interval//1.3)$
\EndWhile
                \State \Return{$Array$}
                    \end{algorithmic}
    \end{algorithm}
\end{document}