```
\documentclass[12pt]{article}
\usepackage[margin=2cm]{geometry}

\usepackage{listings} %For codes

\usepackage{algorithm} %For algo
\usepackage{algpseudocode} %For algo

\usepackage{tikz}
\usetikzlibrary{shapes.geometric,arrows}

\tikzstyle{description} = [rectangle, minimum width=3cm, minimum height=2cm,
draw=black,fill=red]
\tikzstyle{a} = [thick, ->]

\begin{document}

	\begin{lstlisting}[language=C]
#include<stdio.h>

int main()
{
	printf(``Hello");
	return 0;
}
	\end{lstlisting}

	\lstinputlisting[language=C]{test.c}

	\begin{algorithm}
		\caption{An algorithm with caption}
		\label{alg:cap}
		\begin{algorithmic}
			\Require $n \geq 0$
			\Ensure $y = x^n$
			\State $y \gets 1$
			\State $X \gets x$
			\State $N \gets n$
			\While{$N \neq 0$}
				\If{$N$ is even}
					\State $X \gets X \times X$
					\State $N \gets \frac{N}{2}$
					\Comment{This is a comment}
				\ElsIf{$N$ is odd}
```

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                \State $y \gets y \times X$
                \State $N \gets N - 1$
            \EndIf
        \EndWhile
    \end{algorithmic}
\end{algorithm}

\pagebreak

\setlength{\unitlength}{1cm}
\begin{picture}(4,3)
    \put(0,0){\line(1,-1){5}}
    \put(1,1){\vector(1,0){4}}
    \put(0,0){\circle{2}}
\end{picture}

\pagebreak

\begin{tikzpicture}[]
    \path [draw] (0,0) -- (4,5);
    \fill[color=yellow, opacity=0.2] (0,0) rectangle (4,4);
    \draw (6,2) circle (3);
    \draw (6,2) circle [x radius =2, y radius =1.5];
    \draw (12,0) parabola (16,3);
    \draw (12,3) -- (12,0) -- (16,0) -- (12,3);
%   \draw (12,0) parabola (8,3) -- (16,3);
\end{tikzpicture}

%   \vspace{10pt}
%   \begin{tikzpicture}
%       \draw (0,2) -- (-2,0) -- (2,0) -- (0,2);
%   \end{tikzpicture}

\vspace{10pt}
\begin{tikzpicture}
    \draw[->] (0,0) -- (5,0);
    \draw[->] (0,0) -- (-5,0);
    \draw[->] (0,0) -- (0,5);
    \draw[->] (0,0) -- (0,-5);
    \draw (0,0) circle (2);
    \draw[step=0.25cm, opacity=0.2] (-5,-5) grid (5,5);
\end{tikzpicture}

\vspace{10pt}
```

```
\begin{tikzpicture}
	\draw[->>, dashed] (1,0) -- (5,0);
	\draw[->] (-1,0) -- (-5,0);
	\draw[|->] (0,1) -- (0,5);
	\draw[|->>, dotted] (0,-1) -- (0,-5);
\end{tikzpicture}

\vspace{10pt}
\begin{tikzpicture}
	\draw (4,4) arc (0:45:2);
\end{tikzpicture}

\pagebreak

\begin{tikzpicture}[node distance=5cm]
	\node (desc) [description] {Hello};
	\node (desc2) [description, below of = desc] {Class};
	\node (desc3) [description, left of = desc2] {Anything};

	\draw [a] (desc) -- (desc2);
	\draw [->>] (desc) -| (desc3);
\end{tikzpicture}



\end{document}
```