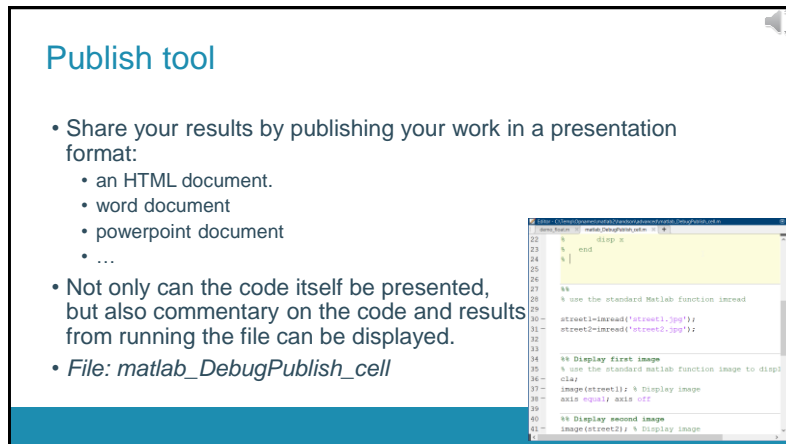


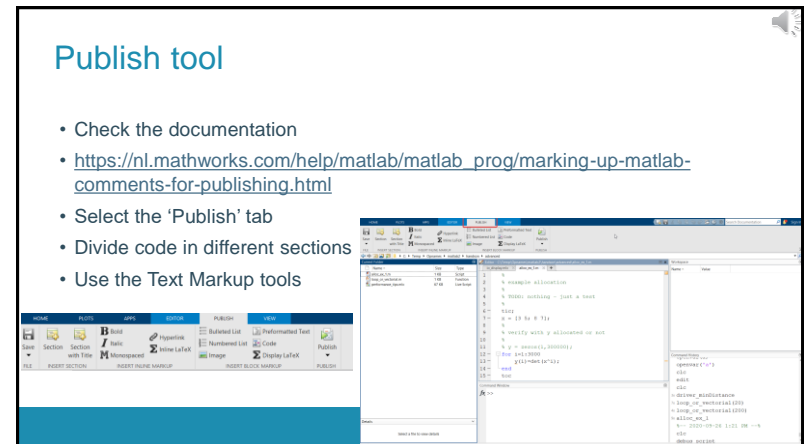
1



2



3



4

## Markup

- Overall document heading
  - %% TITLE
  - Add any overall comments about the file in the lines following this title. If you want the first title to appear as the overall document title, do not add code after the first title and before the next cell (the line starting with %%)
- Section title
  - Position the cursor at the start of a cell, select this menu item, and in the resulting text, replace TITLE with the cell title you want.
- Descriptive text
  - Position the cursor where you want to add a formatted comment, select this menu item, and replace the resulting DESCRIPTIVE TEXT with your comment.
  - descriptive text must appear before the first line of code in a cell.

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## Markup

- Indented text
  - Preformatted Text
  - Select this menu item.
- Bullets
  - select this menu item.
  - The \* at the start of a block distinguishes it as a bulleted list.
  - % \* ITEM1
  - % \* ITEM2
- TeX Equation
  - select this menu item.
  - The equation is surrounded with \$\$
  - $$e^{\pi i} + 1 = 0$$
- Graphic
  - Enclose the name of the graphic file within a double set of angle brackets (<<>>).
  - %% Graphics Area
  - <<surfpeaks.jpg>>
- HTML
  - Use the HTML tags <html> and </html> to use HTML formatting.

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## Markup

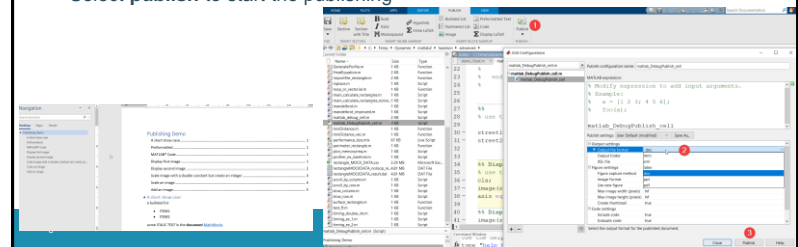
- Bold text
  - Select the text within a comment that you want to appear in bold and then select this menu item.
  - Enclosed between \*
  - % \*BOLD TEXT\*
- Italic text
  - Select this menu item.
  - Enclosed between \_
  - % \_ITALIC TEXT\_
- Monospaced text
  - Select the text within a comment that you want to appear in a monospaced font and then select this menu item.
  - Enclosed between |
  - % |MONOSPAED TEXT|
- Links for HTML output
  - If the URL is the only information on the line, enter comment text that consists of a valid Internet address.
  - % http://www.mathworks.com

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## Publish

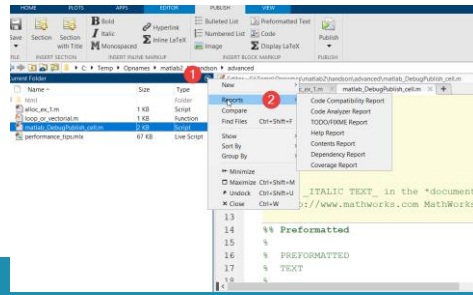
- Publish: select the publishing from the menu.
- Select the document type
- Select **publish** to start the publishing



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## Directory reports

- Accessed from the current directory browser (click on the upside down triangle)



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## Directory reports

- Code Compatibility Report analyzes your code, lists the entire set of compatibility issues in tabular format, and provides you with instructions on how to address these compatibility issues. The report enables you to:
  - Identify the compatibility issues that you must address for your code to run properly in the current MATLAB® release.
  - Estimate the effort required to update your code when you upgrade to a newer MATLAB release.
  - Improve your code by replacing functionality that is not recommended.
- Code Analyzer Report: displays potential problems in your code as well as opportunities for improvements
- TODO/FIXME Report  
Searches the current directory for keywords (TODO, FIXME, ...) and displays the files that contains these keywords

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## Directory reports

- HELP Report  
Summarizes help information in your m-files
- Contents Report  
displays information about the integrity of the Contents.m file for the directory.
- Dependency Report  
Shows dependencies among m-files in a directory
- Coverage Report  
Run the Coverage Report after you run the Profiler to identify how much of a file ran when it was profiled.
  - when you have an if statement in your code, that section might not run during profiling, depending on conditions.

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## Profiling

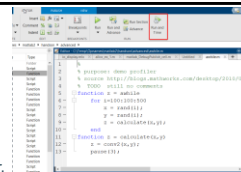
- What is Profiling?
  - Identify which functions in your code consume the most time. (performance bottlenecks -80/20 rule-)
  - Determine why you are calling them and look for ways to minimize their use.
- Profiling uncovers performance problems can be solved by:
  - Avoiding unnecessary computation, which can arise from oversight.
  - Changing your algorithm to avoid time-consuming functions.
  - Avoiding recomputation by storing results for future use.
  - Spending most of the time on calls to built-in functions.

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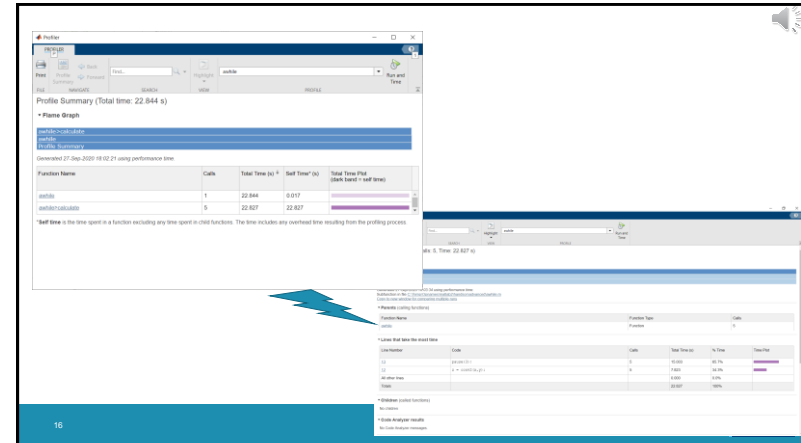
## MATLAB Profiler

- GUI for viewing where the time is being spent in your M-code.
- Usage:
  - Select Run and Time from the menu in the MATLAB Editor/Debugger.
  - Select one or more statements in the Command History window, right-click to view the context menu, and choose Profile Code.
  - Enter `profile viewer` in the Command Window
    - Enter the code (script, function) to run and profile
- Running the Profiler on MATLAB code generates the following:
  - Profile Summary Report presents statistics about the overall execution of the function and provides summary statistics for each function called.
  - Profile Detail Report shows profiling results for a selected function that was called during profiling.
  - Drill down.



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## Timing

- use the stopwatch timer functions to:
  - get an idea of how long your program (or a portion of it) takes to run
  - to compare the speed of different implementations of a program
- MATLAB timing functions:
  - `tic toc`
  - `cputime`
  - `etime`

## Timing

- TIC/TOC
  - **TIC**: starts the stopwatch
  - **TOC**: stops the stopwatch and displays the elapsed time
  - TIC/TOC functions measure "wall clock" time (other processes running on the computer are also taken into account)
- **CPUTIME** measures the actual CPU time spent on the process.
- **ETIME** calculates the time elapsed between 2 time vectors
- example
  - `timing_ex_1.m`
  - `timing_ex_2.m`