

```
In [3]: import re

# Define regular expressions for Markdown patterns
header_pattern = r'^({1,6}) (.+)$'
bold_pattern = r'\*\*(.+)\*\*'
italic_pattern = r'\*(.+)\*'
unordered_list_pattern = r'^\* (.+)$'
paragraph_pattern = r'(.+?)'

def markdown_to_html(markdown_text):
    def handle_headers(match):
        level, text = match.group(1), match.group(2)
        return f'<h{len(level)}>{text}</h{len(level)}>'

    def handle_bold(match):
        return f'<strong>{match.group(1)}</strong>'

    def handle_italic(match):
        return f'<em>{match.group(1)}</em>'

    def handle_unordered_list(match):
        return f'<li>{match.group(1)}</li>'

    # Define the order of replacement
    patterns = [
        (header_pattern, handle_headers),
        (bold_pattern, handle_bold),
        (italic_pattern, handle_italic),
        (unordered_list_pattern, handle_unordered_list),
        (paragraph_pattern, r'<p>\1</p>'),
    ]

    html_text = markdown_text
    for pattern, replacement in patterns:
        html_text = re.sub(pattern, replacement, html_text, flags=re.MULTILINE)

    return html_text

markdown_text = """
# Heading 1
## Heading 2

This is a bold and italic text.

* List item 1
* List item 2

This is a paragraph.
"""

html_output = markdown_to_html(markdown_text)
print(html_output)
```

<p><</p><p>h</p><p>1</p><p>></p><p>H</p><p>e</p><p>a</p><p>d</p><p>i</p><p>n</p><p>g</p><p> </p><p>1</p><p><</p><p>/</p><p>h</p><p>1</p><p>></p><p>h</p><p>2</p><p>></p><p>H</p><p>e</p><p>a</p><p>d</p><p>i</p><p>n</p><p>g</p><p> </p><p>2</p><p><</p><p>/</p><p>h</p><p>2</p><p>></p><p>T</p><p>h</p><p>i</p><p>s</p><p> </p><p>i</p><p>s</p><p> </p><p>a</p><p> </p><p><</p><p>s</p><p>t</p><p>r</p><p>o</p><p>n</p><p>g</p><p>></p><p>b</p><p>o</p><p>l</p><p>d</p><p><</p><p>/</p><p>s</p><p>t</p><p>r</p><p>o</p><p>n</p><p>g</p><p>></p><p> </p><p>a</p><p>n</p><p>d</p><p>p> </p><p><</p><p>e</p><p>m</p><p>></p><p>i</p><p>t</p><p>a</p><p>l</p><p>i</p><p>c</p><p><</p><p>/</p><p>e</p><p>m</p><p>></p><p> </p><p>t</p><p>e</p><p>x</p><p>t</p><p>.</p><p><</p><p>l</p><p>i</p><p>></p><p>L</p><p>i</p><p>s</p><p>t</p><p> </p><p>i</p><p>t</p><p>e</p><p>m</p><p> </p><p>1</p><p><</p><p>/</p><p>l</p><p>i</p><p>></p><p>l</p><p>i</p><p>></p><p>L</p><p>i</p><p>s</p><p>t</p><p> </p><p>i</p><p>t</p><p>e</p><p>m</p><p> </p><p>2</p><p><</p><p>/</p><p>l</p><p>i</p><p>></p><p>T</p><p>h</p><p>i</p><p>s</p><p> </p><p>i</p><p>s</p><p> </p><p>a</p><p> </p><p>p</p><p>a</p><p>r</p><p>a</p><p>g</p><p>r</p><p>a</p><p>p</p><p>h</p><p>.</p></p>

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In [ ]:
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