

## Additional Explanations

### Question # 2

The key difference that I noticed between both implementations are as follows.

- **Floyd-Steinberg Dithering:** As seen in the output images it produces produces more abrupt transitions between dark and light regions which is more evident in the region other than the portion covering Einstein. The image could appear more pixelated with small clusters of dithered pixels.
- **JJN Dithering:** The output shows smoother gradients, with less visible noise. The dithered patterns are spread more evenly, creating a more continuous tonal range and fewer abrupt transitions between bright and dark areas.

### Question # 3

These filters involve calculating the variance of multiple regions within a neighborhood, and the output is determined by taking the mean of the region that has the lowest variance. In its most basic form, the filter examines a 5×5 neighborhood around a specific pixel  $p$  and considers the four overlapping 3×3 neighborhoods that include it as a corner. The process begins by computing the variances of these four neighborhoods surrounding  $p$ , and the final output is the mean value from the neighborhood with the smallest variance.

