

1. Create a Matlab script that does the following:

- Create the following two matrices,

$$X = \begin{bmatrix} 3 & 1 \\ 8 & 6 \\ 0 & 4 \end{bmatrix} \quad \text{and} \quad Y = \begin{bmatrix} 5 & 9 \\ 7 & 2 \end{bmatrix}$$

- Generate matrix Z such as $Z = X \cdot Y$
- Generate matrix R such as $R = 3Z - 2X$
- Allocate the size of matrix R in variable b (What is the size of b?)
- Use b to allocate the number of elements that matrix R holds in variable NoEltsR.
- Generate a 1-column matrix v such as $v = 1^{\text{st}}$ column of R – v is called a **column vector**.
- Generate a 1-row matrix u such as $u = 2^{\text{nd}}$ row of R – u is called a **row vector**.
- Using X and R, generate the matrix 6×2 K such as,

$$K = \begin{bmatrix} 3 & 1 \\ 8 & 6 \\ 0 & 4 \\ 60 & 85 \\ 230 & 240 \\ 84 & 16 \end{bmatrix}$$

- Using K, generate the matrix 3×2 M such as,

$$M = \begin{bmatrix} 0 & 4 \\ 60 & 85 \\ 230 & 240 \end{bmatrix}$$

- Using K, generate the matrix 3×2 N such as,

$$N = \begin{bmatrix} 3 & 1 \\ 0 & 4 \\ 230 & 240 \end{bmatrix}$$

- Using K, generate the matrix 3×2 L such as,

$$L = \begin{bmatrix} 8 & 6 \\ 60 & 85 \\ 84 & 16 \end{bmatrix}$$

2. Create a second Matlab script that does the following:

- Generate the following matrix in the most efficient way,

$$F = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 2 & 4 & 6 & 8 & 10 & 12 & 14 & 16 \\ 5 & 5.5 & 6 & 6.5 & 7 & 7.5 & 8 & 8.5 \end{bmatrix}$$

3. Generate a third Matlab script that does the following:

- Use a "for" loop (or a "while" loop) to construct the following matrix H using the vector

$P = [1, 4, 3, 2, 8]$ and adding 1 to every elements for each new row.

$$H = \begin{bmatrix} 1 & 4 & 3 & 2 & 8 \\ 2 & 5 & 4 & 3 & 9 \\ 3 & 6 & 5 & 4 & 10 \\ 4 & 7 & 6 & 5 & 11 \\ 5 & 8 & 7 & 6 & 12 \\ 6 & 9 & 8 & 7 & 13 \\ 7 & 10 & 9 & 8 & 14 \\ 8 & 11 & 10 & 9 & 15 \\ 9 & 12 & 11 & 10 & 16 \end{bmatrix}$$