Pseudo-codes for matrix-matrix products with diagonal matrices

1) $C = DB$

```
for i = 0 : N-1
    for j = 0 : N-1
        for k = 0 : N-1
            C[i,j] += D[i,k] · B[k,j]
```

```
for i = 0 : N-1
    for j = 0 : N-1
        C[i,j] += D[i,i] · B[i,j]
```

$$D[i,k] \begin{cases} \neq 0, & k = i \\ = 0, & k \neq i \end{cases}$$

```
for i = 0 : N-1
    C[i,:] += D[i,i] · B[i,:]
```

remove "for j" by using the colon notation

2) $E = BD$

```
for i = 0 : N-1
    for j = 0 : N-1
        for k = 0 : N-1
            E[i,j] += B[i,k] · D[k,j]
```

```
for i = 0 : N-1
    for j = 0 : N-1
        E[i,j] += B[i,j] · D[j,j]
```

$$D[k,j] \begin{cases} \neq 0, & k = j \\ = 0, & k \neq j \end{cases}$$

```
for j = 0 : N-1
    E[:,j] += B[:,j] · D[j,j]
```

interchange "for i" and "for j" and remove "for i" by using the colon notation