In [12]:

```
from sympy import *
```

In [13]:

```
import numpy as np
import galois
```

In [25]:

```
GF3=galois.GF(3);
GF3
```

Out[25]:

```
<class 'numpy.ndarray over GF(3)'>
```

In [26]:

```
#change the original M to be in field Z3
M = GF3([[1, 2, 0, 1], [1, 1, 0, 2], [2, 0, 1, 2]]);
M
```

Out[26]:

```
GF([[1, 2, 0, 1],
    [1, 1, 0, 2],
    [2, 0, 1, 2]], order=3)
```

In [27]:

```
GF3.row_reduce(M)
```

Out[27]:

```
GF([[1, 0, 0, 0],
    [0, 1, 0, 2],
    [0, 0, 1, 2]], order=3)
```