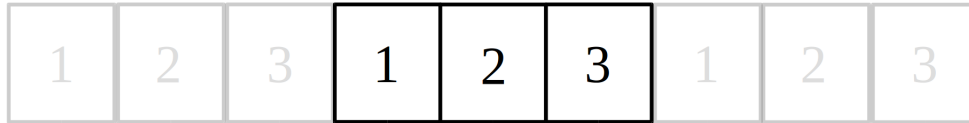


1 Module function in Octave

Example: Imagine a 1D grid formed by 3 cells, with PBCs:



• Code:

```
1 n_cell=3; % Number of cells.
2
3 % We want cycles of 1, 2, 3 and, again, 1, 2, 3:
4
5 disp('Is mod(i,n_cell) adequate, for i=1,2,3...?')
6 for i=-5:6 % for 4 grid cycles, for example: 4x3=12 cells.
7     disp([ 'mod(',num2str(i),',n_cell)= ',    num2str(mod(i,n_cell))  ])
8 endfor
9
10 disp('')
11
12 disp('Or, is mod(i-1,n_cell)+1 adequate, for i=1,2,3...? (Because indexing must start by 1!)')
13 for i=-5:6 % for 4 grid cycles, following the previous example
14     disp([ 'mod(',num2str(i),',-1,n_cell)+1= ',    num2str(mod(i-1,n_cell)+1)  ])
15 endfor
```

• Output:

```
1 Is mod(i,n_cell) adequate, for i=1,2,3...?
2 mod(-5,n_cell)= 1
3 mod(-4,n_cell)= 2
4 mod(-3,n_cell)= 0
5 mod(-2,n_cell)= 1
6 mod(-1,n_cell)= 2
7 mod(0,n_cell)= 0
8 mod(1,n_cell)= 1
9 mod(2,n_cell)= 2
10 mod(3,n_cell)= 0
11 mod(4,n_cell)= 1
12 mod(5,n_cell)= 2
```

```

13 mod(6,n_cell)= 0
14
15 Or, is mod(i-1,n_cell)+1 adequate, for i=1,2,3...? (Because indexing must start by 1!)
16 mod(-5-1,n_cell)+1= 1
17 mod(-4-1,n_cell)+1= 2
18 mod(-3-1,n_cell)+1= 3
19 mod(-2-1,n_cell)+1= 1
20 mod(-1-1,n_cell)+1= 2
21 mod(0-1,n_cell)+1= 3
22 mod(1-1,n_cell)+1= 1
23 mod(2-1,n_cell)+1= 2
24 mod(3-1,n_cell)+1= 3
25 mod(4-1,n_cell)+1= 1
26 mod(5-1,n_cell)+1= 2
27 mod(6-1,n_cell)+1= 3

```

Then, yes, the latter is adequate! It satisfies 2 conditions:

1. Indexing starts by 1 in the cycles.
2. For $i \in [1, n_{\text{cell}}]$ -here, $i = 1, 2, 3, \dots$, $\text{mod}(i - 1, n_{\text{cell}}) + 1 = i$.