

Scilab

Defining variables

Numbers

```
Vrest=-70;
```

Words ("strings")

```
cellType='Purkinje';
```

Lists of numbers (vector), tables of numbers (matrices)

```
externalWeights=[2 -10 4];
```

```
networkWeights=[0 -5 2; -5 0 3; -10 10 0];
```

$$\begin{bmatrix} 0 & -5 & 2 \\ -5 & 0 & 3 \\ -10 & 10 & 0 \end{bmatrix}$$

Structures – associate multiple pieces of information with one variable

```
neuron.Vrest=-70;
```

```
neuron.Vthresh=10;
```

```
neuron.tau=20;
```

```
neuron.name='Purkinje';
```

Scilab as a calculator

Addition (+), subtraction (-), multiplication (*), division (/), exponents (^)

Loading/saving data files

```
loadmatfile('filename.mat');
```

```
savematfile('filename.mat','variable1','variable2','variable3');
```

Vector indexing: vectorVariable(startIndex:endIndex)

```
voltsRecord=[-70 -65 -60 -56 -51 -47 -44 -40 -36 -33 -30 -27 -24 -21 -19 -16 -14 -12 -10 -8];
```

```
voltsRecord(5:10) -> [-51 -47 -44 -40 -36 -33]
```

Matrix indexing: matrixVariable(startRow:endRow,startColumn:endColumn)

```
numberMat = [1 2 3 4; 5 6 7 8; 9 10 11 12];
```

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 9 & 10 & 11 & 12 \end{bmatrix}$$

```
numberMat(1:2,3:4) ->  $\begin{bmatrix} 3 & 4 \\ 7 & 8 \end{bmatrix}$ 
```

Looking at data

```
figure;
```

```
plot(vector);
```

```
disp2d(matrix);
```

Using more-complicated functions

```
exec('fncName.sci');
```

```
[output1,output2]=fncName(input1,input2);
```