## Question 1: Model with a Main: First Without IO, change the membrane potential value

**MainProgram** *Neuron() #no inputs*

**Declaration**

Vini=70 #global variable used by function Vmembrane
I=200 #basic parameters that will be part of the logic operations
n=1000
V_reset=-75
V_th=-65
dt=0.1
…

**Start**

Vmembrane←Logic operations on Vmembrane #so the global variable changed
#but nothing is returned

**End**

## Question 2: Model with a Main: With I/O system, input made by keyboard.

**MainProgram** *Neuron(Vini) #the input is provided by the keyboard*

**Declaration**

I=200 #basic parameters that will be part of the logic operations
n=1000
V_reset=-75
V_th=-65
dt=0.1
…

**Start**

Vmembrane←Logic operations on Vmembrane
Return Vmembrane

**End**

## Question 3: Model with a Main: With I/O system, input made by keyboard, output spike using function call

**Function** *Vmembrane*(Vini//float)

**Declaration**

**Start**

Vmembrane←Logic operations on Vmembrane
Return Vmembrane

**End function Vmembrane**

**MainProgram** *Neuron(Vini)*

**Declaration**

I=200 #basic parameters that will be part of the logic operations
n=1000
V_reset=-75
V_th=-65
dt=0.1
…

**Start**

Function Vmembrane(Vini)
**If** Vmembrane(Vini)>V_th
Return True #we admit the function neuron returns true if the neuron spikes.
**Endif**

**End**

## Question 4: Model with a Main: With I/O system, input made by a command line, output spike using function call

**Function** *Vmembrane*(Vini//float)

**Declaration**

**Start**

Vmembrane←Logic operations on Vmembrane
Return Vmembrane

**End function Vmembrane**

**MainProgram** *Neuron() #inputs are not provided by keyboard anymore*

**Declaration**

I=200 #basic parameters that will be part of the logic operations
n=1000
V_reset=-75
V_th=-65
dt=0.1
…

**Start**

read(Vini) on input={keyboard}
Function Vmembrane(Vini)
**If** Vmembrane(Vini)>V_th
Return True #we admit the function neuron returns true if the neuron spikes.
**Endif**

**End**