There will be UPTO 12 wells .  
So, let us say the number of wells is n.  
The last well that is the nth we’ll will be the drying well. It has a heater which may be switched ON during the drying step.  
The last but one well, that is the (n-1)th well will be the washing well. There are two pumps connected to this well- one to fill washing solution and the other to drain the washing solution.  
The rest of the wells (that is n-2 wells ) contain different solutions in them.  
There is a sample holder on which the sample is mounted.  
The sample is dipped into the wells, held there for a programmable time, then shaken up and down for a programmable time, then held again for a programmable time then raised up again for a programmable time.  
It is then moved to another well and the whole process is repeated.  
There are two stepper motors . Stepper motor’Z’ is used to move the sample up and down and motor ‘X’ is used to move the sample from left to right and right to left.. When ‘Z’ motor turns clockwise the sample moves down. When ‘X’ motor moves clockwise the sample moves from right to left. Both motors have ‘Home’ positions, which are sensed by opto interrupters . The Z motor Home is at the top and the X motor Home is at extreme left. Before moving the X motor, it should always be ensured that the Z motor is in Home position.  
There should be a provision for storing ten independent programmes. Each programme can have upto 25 steps and each step will have 5 sub steps in ‘Z’ direction. A step is a movement of sample from one well to another (X direction) and sub step is movement in ‘Z’ direction. Please note that a sample can be moved from any well to any well and not necessarily from well 1 to well 2 to well 3 etc. .  
In the ‘Z’ direction there are following steps ( referred above as sub steps)  
Wait at the top (Z Home ) for x1 seconds  
Move to bottom for x2 seconds  
Shake up/down at the bottom for x3 seconds  
Wait again at the bottom for x4 seconds  
Go to top (Home) for x5 seconds.  
The above timing should be programmable for every well.  
The washing well should be filled with solution before the start of every cycle and should be drained as per the programme.  
The heater should be started only when the sample is lowered into the heating well and heater ON is chosen in the programme.  
LCD is 2 line 16 character but if necessary you may use a 4 line LCD. Also, if possible, write the code so that IN FUTURE the LCD can be replaced by a GLCD.

A typical simple programme  
On power ON Z motor goes to Home then X motor goes to Home position. Programme 1 is selected  
Go to well 2 , wait 5 sec  
Go to bottom position , wait 120 sec  
Shake 24 sec. ( the sample will be moved up/dn through 15 millimetres )  
Wait 10 sec  
Go to Top, wait 5 sec  
Go to well 4, wait 4 sec  
Go to bottom and wait 100 sec  
Shake for 0 sec  
Wait for 0 sec  
Go to Top  
Wait for 2 sec  
Go to wash  
Wait 15 sec  
Shake 15 sec  
Wait 0 sec  
Go to Top  
Wait 2 sec  
Go to drying  
Switch heater ON  
Wait 50 sec  
Go to Top  
END . ( The sample should go to ‘Z ‘Home and ‘X’ Home)  
I have shown only four steps here ( well2 then well4 then wash well and lastly drying well. In reality there could be upto 25 such steps)

