```
function [soh] = SOH_Calc(soc)

%   this code will mainly count the number of cycles of charging-discharging and calculte the new total capacity of the
%   batteries per the following paper
%   (https://doi.org/10.1063/1.5012602). the calculations is mainly based
%   on an experimental results and curve fitting for the relation between the normalized capacity and the number of cycles
old_soc=1;num_cycles=0; %%main script of the project as it needs to run only once at the begaining.
if  old_soc ~=soc
    if ((old_soc-soc)>0) %for dis-charging
       c=1;%counter
    end
    if ((old_soc-soc)<0) && c==1 %% charging state after discharging state
        num_cycles=num_cycles+1;
    end
    old_soc=soc;
end

    if(num_cycles>10)
        rated_capacity=27.625;
        normaliz_capacity=(-3.72420611065173e-15*num_cycles^6+  3.75024849118566e-12*num_cycles^5  -1.44810117823229e-09*num_cycles^4+ 2.64463491236913e-07*num_cycles^3 -2.23630419461362e-05 *num_cycles^2+    0.00038147157633652 3*num_cycles^1+0.984192557022104)*rated_capacity;
        soh=normaliz_capacity/rated_capacity;
    end
end
```