Digital Watch Project PO2_DGW
(SRS)

Table 1 Status Table

Document Name	Author	Version	Update Date	Status
SRS	Samira Saeid	1.2	7/03/2023	Proposed

DOCUMENT HISTORY

Table 2 Document History

Version	Description of Change	Author	Date	Document Status
1.0	Initial creation of SRS Document	Yosuf Ahmad/ Abdollah Mahmoud/ Samira Saeed	16/02/2023	Draft
1.1	Added requirements regarding the SIQ document answers	Yousef Ahmed/ Abdollah Mahmoud/ Samira saeid	17/02/2023	Draft
1.2	Added requirements regarding the SRS Review.	Samira saeid	7/03/2023	Proposed

Table 3 Reference Table

Reference Input Documents	Version	Status
CYRS	1.1	Released
HIS	1.1	Released

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1 INTRODUCTION

1.1 Purpose

This is version 1 of the requirements specification for a simple Digital watch with alarm with settings and Stop Watch.

1.2 Glossary

Definitions, acronyms and abbreviations

Digital watch consists of 3 main Functions:

1-Clock.

2.Alarm.

3.Stop Watch.

1.2.1 clock

a device that has its own value of time in hours, minutes and seconds, which it displays and which it maintains accurately relative to when the time was last reset.

In this document, a "conventional watch" means such a clockwork or electric device in the real world; "watch" means a computer operating system function that returns

at least an absolute or elapsed time as measured by the operating system.

1.2.2 **alarm**

a device which is a conventional clock with an additional time value setting and an attached alarm bell. When the clock time reaches the time of the "alarm setting" it rings the bell.

In this specification, "alarm clock" means the software application that imitates many of the functions of a conventional clock with an alarm.

1.2.3 **ring the bell**

the continuous alert sound (the term "audible signal" is too pedantic!) that an alarm clock can make. It may be a buzzer or chime or other tone

(compare mobile phone "ring tones" which no longer resemble a bell).

1.2.4 **clock time**

the time relative to the last reset of the clock.

1.3 General description

The Digital Watch System that has A Clock with a simple alarm clock in an on-screen window and Stop watch. The user can select an option of the three options

(View Clock, setting stop watch, Setting alarm).

The clock provides an alarm and allows the user to set alarms and provide a Stop watch.

2 Software Context

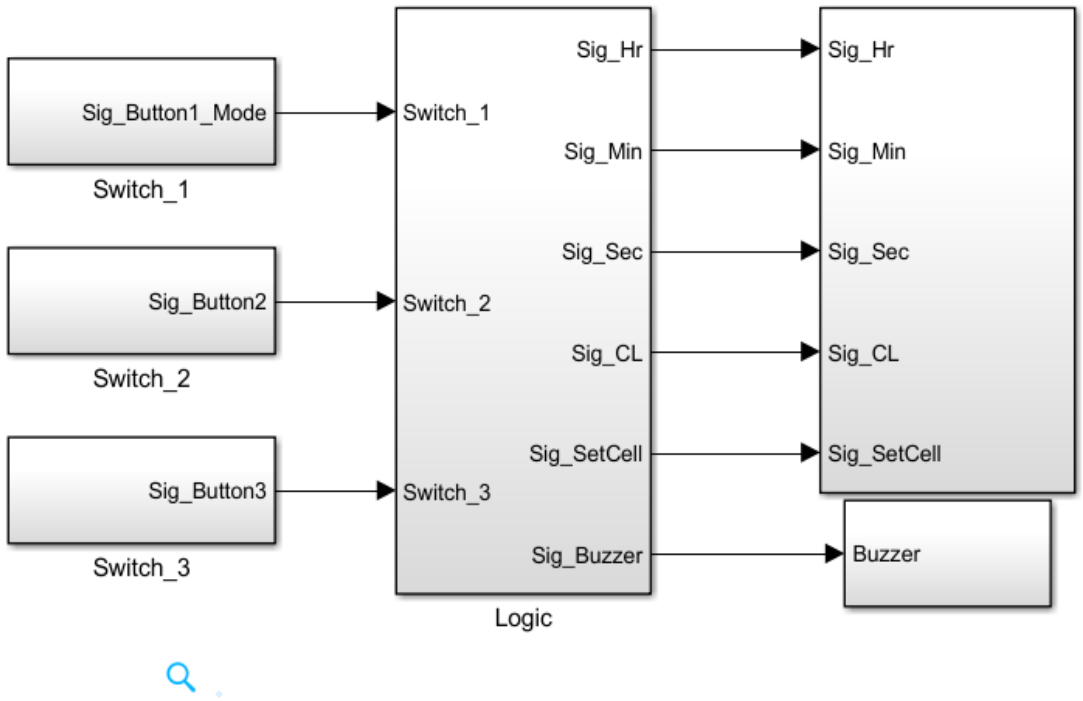

Figure 1 SW Context Block Diagram

3 FUNCTIONAL REQUIREMENTS

3.1 Time-Display Mode Requirements

Req_ID	Req_PO2_DGW_SRS_01_V01.2	**Covers**	Req_PO2_DGW_CYRS_01_V01.2
Author	Abdollah Mahmoud	**Date**	16/3/2023
Description:	The SW shall increment SecondsVar Variable with delay 1 sec.		
inputs	Sig_Hr, Sig_Min, Sig_Sec	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec

Req_ID	Req_PO2_DGW_SRS_02_V01.2	**Covers**	Req_PO2_DGW_CYRS_01_V01.2
Author	Abdollah Mahmoud	**Date**	16/3/2023
Description:	The SW shall reset HoursVar to zero if it reaches 12.		
inputs	Sig_Hr, Sig_CL	**Outputs**	Sig_Hr, Sig_CL

3.2 Alarm mode requirements

Req_ID	Req_PO2_DGW_SRS_03_V01.2	**Covers**	Req_PO2_DGW_CYRS_02_V01.1
Author	Yosuf Ahmad	**Date**	16/2/2023
Description:	The SW shall keep comparing the alarm variables with the time variable if ((AlHoursVar == HoursVar)&(AlMinutesVar == MinutesVar)&(AlCycleLength == CycleLength)) {the Buzzer_State = 1}		
inputs	Sig_Hr, Sig_Min, Sig_Sec, Sig_CL	**Outputs**	Sig_Buzzer

Req_ID	Req_PO2_DGW_SRS_04_V01.2	**Covers**	Req_PO2_DGW_CYRS_02_V01.1
Author	Yosuf Ahmad	**Date**	16/2/2023
Description:	If (Buzzer_state == 1) {the buzzer is enabled} else {it will be disabled}		
inputs	Sig_Buzzer	**Outputs**	-

3.3 Stop-Watch mode requirements

Req_ID	Req_PO2_DGW_SRS_05_V01.2	**Covers**	Req_PO2_DGW_CYRS_03_V01.2
Author	Yosuf Ahmad	**Date**	16/3/2023
Description:	The SW shall start (SwHoursVar, SwMinutesVar, SwSecondsVar) with zeros and increment with delay 1 sec.		
inputs	Sig_Hr, Sig_Min, Sig_Sec	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec

Req_ID	Req_PO2_DGW_SRS_06_V01.2	**Covers**	Req_PO2_DGW_CYRS_04_V01.1
Author	Yosuf Ahmad	**Date**	16/2/2023
Description:	If(the user press stop button) {The SW shall save the last values of the Stopwatch and displays it on the LCD without incrementing of any variable}		
inputs	Sig_Hr, Sig_Min, Sig_Sec	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec

Req_ID	Req_PO2_DGW_SRS_07_V01.2	**Covers**	Req_PO2_DGW_CYRS_04_V01.1
Author	Abdollah Mahmoud	**Date**	16/2/2023
Description:	The SW shall save the last values of the Stopwatch and Continue increment it when the user press to Play the Stopwatch again.		
inputs	Sig_Hr, Sig_Min, Sig_Sec	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec

Req_ID	Req_PO2_DGW_SRS_08_V01.2	**Covers**	Req_PO2_DGW_CYRS_05_V01.1
Author	Abdollah Mahmoud	**Date**	16/2/2023
Description:	If (the user press to reset the Stopwatch) { SwHoursVar = 0, SwMinutesVar = 0, SwSecondsVar = 0 and display them on the LCD}		
inputs	Sig_Hr, Sig_Min, Sig_Sec	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec

3.4 System components (buttons) requirements

Req_ID	Req_PO2_DGW_SRS_09_V01.2	**Covers**	Req_PO2_DGW_CYRS_07_V01.2
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall start Current_Mode with zero		
inputs	Sig_Button1	**Outputs**	Sig_Button1

Req_ID	Req_PO2_DGW_SRS_10_V01.2	**Covers**	Req_PO2_DGW_CYRS_08_V01.2
Author	Samira Saeed	**Date**	16/3/2023
Description:	The SW shall start SetCell with zero in Time display mode.		
inputs	Sig_SetCell, Sig_Button2	**Outputs**	Sig_SetCell

Req_ID	Req_PO2_DGW_SRS_11_V01.2	**Covers**	Req_PO2_DGW_CYRS_08_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall compare the SetCell variable and If equal 0, the position on LCD will be in hours' cell		
inputs	Sig_SetCell	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec, Sig_CL

Req_ID	Req_PO2_DGW_SRS_12_V01.2	**Covers**	Req_PO2_DGW_CYRS_08_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall compare the SetCell variable and If equal 1, the position on LCD will be in minutes' cell.		
inputs	Sig_SetCell	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec, Sig_CL

Req_ID	Req_PO2_DGW_SRS_13_V01.2	**Covers**	Req_PO2_DGW_CYRS_08_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall compare the SetCell variable and If equal 2, the position on LCD will be in seconds cell.		
inputs	Sig_SetCell	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec, Sig_CL

Req_ID	Req_PO2_DGW_SRS_14_V01.2	**Covers**	Req_PO2_DGW_CYRS_08_V01.1
Author	Samira Saeed	**Date**	16/2/2023

Description:	The SW shall check SetCell value in Time display mode.
	If(Sig_Button3 pressed)
	If(SetCell == 0) {HoursVar++}
	If(SetCell == 1) {MinutesVar++}
	If(SetCell == 2) {SecondsVar++}		

inputs	Sig_SetCell, Sig_Button3	**Outputs**	Sig_Hr, Sig_Min, Sig_Sec, Sig_CL

Req_ID	Req_PO2_DGW_SRS_15_V01.2	**Covers**	Req_PO2_DGW_CYRS_09_V01.2
Author	Samira Saeed	**Date**	16/3/2023
Description:	The SW shall start AlSetCell with zero in Alarm mode.		
inputs	Sig_SetCell, Sig_Button2	**Outputs**	Sig_SetCell

Req_ID	Req_PO2_DGW_SRS_16_V01.2	**Covers**	Req_PO2_DGW_CYRS_09_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall compare the AlSetCell variable and If equal 0, the position on LCD will be in hours' cell.		
inputs	Sig_SetCell	**Outputs**	Sig_Hr, Sig_Min, Sig_CL

Req_ID	Req_PO2_DGW_SRS_17_V01.2	**Covers**	Req_PO2_DGW_CYRS_09_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall compare the AlSetCell variable and If equal 1, the position on LCD will be in minutes' cell.		
inputs	Sig_SetCell	**Outputs**	Sig_Hr, Sig_Min, Sig_CL

Req_ID	Req_PO2_DGW_SRS_18_V01.2	**Covers**	Req_PO2_DGW_CYRS_09_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall compare the AlSetCell variable and If equal 2, the position on LCD will be in seconds cell.		
inputs	Sig_SetCell	**Outputs**	Sig_Hr, Sig_Min, Sig_CL

Req_ID	Req_PO2_DGW_SRS_19_V01.2	**Covers**	Req_PO2_DGW_CYRS_09_V01.1
Author	Samira Saeed	**Date**	16/2/2023

Description:	The SW shall check AlSetCell value in Alarm mode.
	If(Sig_Button3==1)
	If(AlSetCell == 0) {AlHoursVar++}
	If(AlSetCell == 1) {AlMinutesVar++}
	If(AlSetCell == 2) {AlSecondsVar++}		

inputs	Sig_SetCell, Sig_Button3	**Outputs**	Sig_Hr, Sig_Min, Sig_CL

Req_ID	Req_PO2_DGW_SRS_20_V01.2	**Covers**	Req_PO2_DGW_CYRS_09_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall turn the Buzzer_Signal to zero if Current_Mode button is pressed		
inputs	Sig_Button1	**outputs**	Sig_Buzzer

Req_ID	Req_PO2_DGW_SRS_21_V01.2	**Covers**	Req_PO2_DGW_CYRS_10_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall check Sig_Button2 First Press at Button2 -> Start Stopwatch mode -> Sig_SwStatus = 1 Second Press at Button2 -> Stop Stopwatch -> Sig_SwStatus = 0		
inputs	Sig_Button2	**outputs**	Sig_SwStatus

Req_ID	Req_PO2_DGW_SRS_22_V01.2	**Covers**	Req_PO2_DGW_CYRS_10_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	If (Sig_SWStatus == 1) {The SW shall start incrementing its values (SwHoursVar, SwMinutesVar, SwSecondsVar) and displays it on LCD.} in case of Stopwatch mode		
inputs	Sig_SWStatus	**outputs**	Sig_Hr, Sig_Min, Sig_Sec

Req_ID	Req_PO2_DGW_SRS_23_V01.2	**Covers**	Req_PO2_DGW_CYRS_10_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	If (Sig_Button2 == 1 && Sig_SWStatus == 1) {The SW shall stop incrementing its values (SwHoursVar, SwMinutesVar, SwSecondsVar) and keep it saved } in case of Stopwatch mode		
inputs	Sig_Button2 ,Sig_SWStatus	**outputs**	_____

Req_ID	Req_PO2_DGW_SRS_24_V01.2	**Covers**	Req_PO2_DGW_CYRS_10_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW will save SwHoursVar, SwMinutesVar and SwSecondsVar If (Sig_Button2 == 1) {resume incrementing}		
inputs	Sig_Button2, Sig_Button3	**outputs**	Sig_SwReset, Sig_Hr, Sig_Min, Sig_Sec

Req_ID	Req_PO2_DGW_SRS_25_V01.2	**Covers**	Req_PO2_DGW_CYRS_10_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	If (Sig_Button3 == 1) { Sig_SwReset=1}		
inputs	Sig_Button3	**outputs**	Sig_Hr, Sig_Min, Sig_Sec

Req_ID	Req_PO2_DGW_SRS_26_V01.2	**Covers**	Req_PO2_DGW_CYRS_10_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	If (Sig_SwReset == 1) {SwHoursVar=0, SwMinutesVar=0 and SwSecondsVar = 0, Sig_SwReset=0}		
inputs	Sig_SwReset	**outputs**	Sig_Hr, Sig_Min, Sig_Sec. Sig_SwReset

Req_ID	Req_PO2_DGW_SRS_27_V01.2	**Covers**	Req_PO2_DGW_HSI_01_V01.1
Author	Samira Saeed	**Date**	16/2/2023
Description:	The SW shall configure the pins according to the mapping of the configuration pins on the microcontoller		
inputs	---	**outputs**	---