SFWRENG 3K04
Assignment 1 Part 2
Documentation

Lab 1 Group 7
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Contents

1 Requirements

1.1 Welcome Screen

All required aspects of the welcome screen are implemented in the current software revision:

- Register a new user
- Login as an existing user
- Maximum of 10 users stored locally

All requirements will remain in future software revisions.

1.2 User Interface Essential Aspects

All required essential aspects of the user interface have been implemented in the current software revision:

- User interface is capable of utilizing and managing windows for display of text and graphics
- User interface is capable of processing user positioning and input buttons
- User interface is capable of displaying all programmable parameters for review and modification
- User interface is capable of visually indicating when the DCM and the device are communicating
- User interface is capable of visually indicating when a different PACEMAKER device is approached than was previously interrogated

All requirements will remain in future software revisions.

1.3 DCM Utility Functions

1.3.1 About

All required aspects of the About function are implemented in the current software revision:

- Application model number
- Application software revision
- DCM serial number
- Institution name

All requirements will remain in future software revisions.

1.3.2 Set Clock

The Set Clock function is not implemented, but has been allocated a window and a button on the DCM main window. This function will likely be removed in a future revision of the software depending on the feasibility of implementing the feature.

1.3.3 New Patient

The New Patient function is implemented in the current software revision. The function will remain in future software revisions.

1.3.4 Quit

The Quit function is implemented in the current software revision. The function will remain in future software revisions.

1.4 Pacing Mode Interfaces

Interfaces for pacing modes and pacing mode selection for the following pacing modes are implemented in the current software revision:

- AOO
- AAI
- VOO
- VVI

Additional pacing modes will be added to the requirements and implemented in future software revisions including:

- DOO
- AOOR
- VOOR
- AAIR
- VVIR
- DOOR

1.5 Printed Reports

All common requirements for printed reports are implemented in the current software revision:

- Header Information
  - Application model and version number

- Device model and serial number
- DCM serial number
- Date and time of report printing
- Report name

All common requirements for printed reports will remain in future software revisions.

1.5.1 Bradycardia Parameters

The feature is implemented in the current software revision. The feature will remain in future software revisions.

1.5.2 Temporary Parameters

The feature has been allocated a button in the reports window in the current software revision. This feature will likely be removed in a future revision of the software as it is unlikely that a temporary pacing mode is introduced.

1.6 Programmable Parameters

Provisions for storing programmable parameter data have been implemented in the current software revision for the following programmable paramters:

- Lower Rate Limit
- Upper Rate Limit
- Atrial Amplitude
- Atrial Pulse Width
- Atrial Refractory Period (ARP)
- Ventricular Amplitude
- Ventricular Pulse Width
- Ventricular Refractory Period (VRP)

These programmable parameters will remain in future software revisions. Additional programmable parameters will be implemented in future software revisions which will depend on future requirements.

1.7 Real-time Electrograms

The following requirements of real-time electrograms and the displaying of electrograms have been implemented in the current software revision:

- Real-time internal electrograms shall be made available from atrial and ventricular sense/pace leads
- Electrogram viewing
  - The user shall have the option of viewing electrograms on the screen
  - The user shall have the option of selecting which electrograms are viewed
- The system is capable of displaying real-time traces in a scrollable fashion

These features will remain in future software revisions.

Requirements that will be implemented in future software revisions include:

- The DCM shall be capable of printing real time telemetered data
  - will be implemented after serial communication with pacemaker for telemetry has been implemented

Requirements that involve the surface ECG will not be implemented in future requirements due to the lack of a surface ECG on the pacemaker.

1.8 Future Requirements

Future requirements that will be implemented include:

- Serial communication between DCM and Pacemaker
  - Sending programmable parameters to Pacemaker
  - Receiving telemetry data from Pacemaker
- Input validation for safety critical Pacemaker systems operated by DCM

2 Software

2.1 Welcome Screen

Push Button	Function
welcome_ui.reg_btn	welcome_gui.setCurrentIndex(1)
welcome_ui.log_btn	welcome_gui.setCurrentIndex(2)

Table 1: Welcome Screen

2.2 DCM Main Window

UI Element		Function
dcm_ui.about_btn		about_gui.exec_
dcm_ui.parameters_btn		params_gui.exec_
dcm_ui.reports_btn		reports_gui.exec_
dcm_ui.set_clock_btn		set_clock_gui.exec_
dcm_ui.new_patient_btn		conn.register_device
dcm_ui.quit_btn		dcm_gui.close
dcm_ui.pace_box	isChecked()	graphs.pace_show()
	!isChecked()	graphs.pace_hide()
dcm_ui.sense_box	isChecked()	graphs.sense_show()
	!isChecked()	graphs.sense_hide()

Table 2: DCM Main Window

2.3 Reports

Push Button	Function
reports_ui.egram_btn	reports.generate_egram(get_pace_mode_params())
reports_ui.brady_btn	reports.generate_brady(get_pace_mode_params())
reports_ui.temp_btn	reports.generate_temp(get_pace_mode_params())

Table 3: DCM Reports

2.4 Parameters

2.5 About

2.6 New Patient

2.7 Quit

3 Testing

3.1