TRACEABILITY MATRIX

ID	Requirement Description	Related Use Case	Implemented By	Fulfilled By	Test Description
1	MainWindow class will handle the power On of the AED	Power On and Self-Test	deviceOn()	MainWindow	Using the UI built in QT, the user presses the “On” button to turn the simulation On
2	MainWindow class will handle the self-test once the AED is turned On.	Power On and Self-Test	deviceOn() and outOfBattery()	MainWindow	Once the user presses the “On” button the code runs a basic check and shows a tick mark in the self-test if it passes and a red cross if it fails.
3	MainWindow class will handle the first five states where the user checks the patient's responsiveness, calls for help, and use pass.	Using AED	handleStateSwitch()	MainWindow	After the self-test, the code will display each message on the text box based on the time elapsed
4	The Electrode pads will be attached to the patient.	Applying Electrode Pads	selectPadType(), padsAttached()	MainWindow	The user chooses the pad type from the drop-down menu and they will be attached
5	AED will analyze the heartbeat of the patient	Using AED	analzyeHB(), handleAnalysing()	aed, MainWindow	The code will randomly select a heartbeat to simulate the real-life scenario and display the cardiogram on the display
6	AED will deliver a shock to the patient if the heartbeat is determined to be shockable	Using AED	shockDelivery()	MainWindow	Once the heartbeat is chosen randomly and if it is a shockable rhythm then a message is displayed to say the shock was delivered and the battery reduces accordingly.
7	If the heartbeat is not determined to be shockable AED will instruct the user to give CPR	Administer CPR	startCPR()	MainWindow	Once the heartbeat is chosen at random and it is not shockable and not sinus rhythm then the message displayed says to start CPR
8	The cycle of giving shock and CPR will be continued until the patient’s heartbeat is stable or flatlined.	Using AED	analzyeHB(), handleAnalysing(), shockDelivery(), startCPR()	MainWindow	The entire process continues until the patient has a sinus rhythm or a flatline

9	While giving CPR the AED will check if the compressions are of sufficient depth	Administer CPR	checkCompressions()	MainWindow	After the CPR step has started, the user chooses what compression depth he wants the CPR to be and presses the “Compression” button to simulate it, displaying an appropriate message.
10	If the user presses the analyze button then the AED will analyze the heartbeat to determine the condition of the patient	Using AED	analzyeHB(), handleAnalysing()	aed, MainWindow	AED will check for the heartbeat before giving a shock but the user can check the heartbeat any time once the pads are attached by pressing the “Analyse” button on the GUI.
11	If the electrode pads are detached for any reason while using AED, the user will be prompted to attach them again to resume the operation	Using AED	selectPadType()	MainWindow	If the user selects detach pads from the drop-down menu, it will simulate the pads that have been detached from the patient.
12	The user presses the off button to turn the AED off	Using AED	deviceOff()	MainWindow	The user can press the “OFF” button once all the steps for the AED are over.
13	The user presses the off button in the middle of any step then AED will wait for 5 seconds for the user to press the On button again to resume the process	Using AED	deviceOff(), onPowerOffTimeout()	MainWindow	If for some reason the user presses the “OFF” button while doing any of the steps, a timer keeps track of how long has it been, if before 5 seconds the user turns it back on the state resumes, if not then the GUI restarts.
14	If the battery is low while the AED simulation is running, the user can replace the battery.	Using AED	getBattery()	Battery	If the battery runs low while the simulation is running, a message is displayed to show low battery and it can be replaced by a button provided on the GUI.