ChronoTimer Master Test Plan

Team JuggerNOT

Project Name	ChronoTimer
Team Name	JuggerNOT
Last Updated	4/18/2018

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Document Version: 1.0
Prepared by: Catelyn Scholl, Keira Skenandore

Overview

This document covers all testing features, requirements, and test planning for our ChronoTimer software. It includes a baseline test plan to track our progress and define the scope of testing. Our objective is to thoroughly test our ChronoTimer's implementation and how we handle various events and scenarios.

Scope

We have four main test scenarios that will be evaluated: individual runs, parallel individual runs, group runs, and parallel group runs. We will also be performing more specific tests on functions that are used across all four of these scenarios.

Roles

Primary Developers: Adam Dunn, Catelyn Scholl
Primary Testers: Alex Mitchell, Keira Skenandore

Responsibilities

- **Catelyn Scholl**: primary development, verifying required elements are in place for testing, setting strategy for test plan, defining risks
- **Adam Dunn**: primary development, verifying required elements are available for testing, making critical decisions involving testing, mitigating risks
- **Alex Mitchell**: supporting development, verifying functionality of elements selected for testing, supporting testing, mitigating risks
- **Keira Skenandore**: primary testing, selecting features to be tested, delivering test plan items, setting strategy for test plan

References

- GitHub Repository: https://github.com/CompSci-361/ChronoTimer
- Sprint Backlog: https://github.com/CompSci-361/ChronoTimer/projects/1
- Travis CI Build Output
- Sprint 1-3 Requirements – D2L
- CS 361 Project Sprint 0 Requirements – D2L

Features

- Power and Reset
- Setting System time
- Selecting event type: *IND, PARIND, GRP, PARGRP*
- Start run
- End run
- Connect/Disconnect Sensors
- Toggle Channel
- Trigger Channel
- Adding racer(s)
- Printing run data
- Exporting run data
- Swapping racers
- Clearing racers
- Cancelling racer
- DNF racer
- Results of Event types

Approach

- Black box testing
- White box testing
- Regression testing

Dependencies

JUnit testing and Window Builder are required.

Schedule

Sprint 1	
Features Tested	Date Tested
- Individual run race type	2/23/2018
Sprint 2	
Features Tested	Date Tested
- Parallel individual run race type - Exporting data	3/13/2018
Sprint 3	
Features Tested	Date Tested
- Group run race type - GUI interface	4/17/2018
Spring 4	
Features Tested	Date Tested
- Parallel group run race type	5/3/2018

Test Deliverables

- **Test Plan**
- **Test Cases**
- **Test Reports**: the report will be included at the end of this document. It will outline the test case descriptions, input values, output values, pass/fail, and the individuals involved.
- **Test Outputs**: outputs are delivered at the end of each sprint and included in the documents turned into D2L. These will include the outputs of the test runs as well as the unit testing.

Test Report

The report attached to this document will outline each test case, its description, input values, expected outputs, item pass/fail criteria, and the individuals responsible for the deliverables. It will describe all test cases for the different event types as well as the more specific tests on functions that are used across all four of these scenarios.

ChronoTimer Test Plan

Contributors
Keira Skenandore
Catelyn Scholl
Adam Dunn
Alex Mitchell

Test Files
TestChronoTimer1.java
TestChronoTimer2.java
TestChronoTimer3.java
TestChronoTimerUnitTest.java

Test Plan ID	1
Author	Keira Skenandore
Features	
1	Unit Tests
Resources:	ChronoTimer Project Files
Testers:	Keira Skenandore
Scheduling:	Sprint 4 deadline
Data/Test files:	TestChronoTimerUnitTest.java
Initial state:	Power off
Components:	

Test Plan ID	2
Author	Catelyn Scholl
Features	
2	Ind
Resources:	Run Class, ChronoTimer, Timer, Channel
Testers:	Catelyn Scholl
Scheduling:	Sprint 4 deadline
Data/Test files:	TestChronoTimer1.java
Initial state:	Power off
Components:	

Test Plan ID	3
Author	Adam Dunn
Features	
3	ParInd
Resources:	Run Class, ChronoTimer, Timer, Channel
Testers:	Adam Dunn
Scheduling:	Sprint 4 deadline
Data/Test files:	TestChronoTimer2.java
Initial state:	Power Off
Components:	Simulator, Gui

Test Plan ID		4
Author	Catelyn Scholl	
Features		
	4 Group	
Resources:	Run Class, ChronoTimer, Timer, Channel	
Scheduling:	Sprint 4 deadline	
Data/Test files:	TestChronoTimer3.java	
Initial state:	Power Off	
Components:	Simulator, Gui	

Test Plan ID		5
Author	Alex Mitchell	
Features		
	5 ParGrp	
Resources:	Run Class, ChronoTimer, Timer, Channel	
Testers:	Alex Mitchell	
Scheduling:	Sprint 4 deadline	
Data/Test files:	TestChronoTimer2.java	
Initial state:	Power Off	
Components:	Simulator, Gui	

These cases test the functionality of the method: Power

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testPower	Testing power command from "off"	None	System on	System on	PASS
testPower	Testing power command from "on"	None	System off	System off	PASS

These cases test the functionality of the methods involving: Channels

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testChannels	Test toggling all channels from "off"	TOG<channel #>	Channel is enabled	Channel is enabled	PASS
testChannels	Test toggling all channels from "off"	TOG<channel #>	Channel is disabled	Channel is disabled	PASS
testChannels	Test toggling one random channel	TOG<3>	Channel 3 is enabled	Channel 3 is disabled	PASS
testTrigger	Test trigger channel 1	TRIG<1>	There is a racer in current racer queue, racer start time is recorded	There is a racer in current racer queue, racer start time is recorded	PASS
testTrigger	Test trigger channel 2	TRIG<2>	The racer in the run is in finished queue	The racer in the run is in finished queue	PASS

These cases test the functionality of the methods regarding: Adding Racers

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testAddRacer	Test adding a racer	NUM<123>	Racer 123 added to queue	Racer 123 added to queue	PASS
testAddRacer	Makes sure duplicate racer is not added to queue	NUM<123>	Racer 123 not duplicated to queue	Racer 123 not duplicated in queue	PASS
testAddRacer	Test adding second racer	NUM<134>	Racer 132 added to queue	Racer 134 added to queue	PASS
testAddRacer	Test adding third and fourth racer	NUM<175> NUM<189>	Racers 175 and 189 added to queue	Racers 175 and 189 added to queue	PASS
testAddRacer	Test length of queue is the number of racers added	None	4	4	PASS

These cases test the functionality of the method: Run

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testRun	Makes sure run is null until newRun is called	None	Null	Null	PASS
testRun	Makes sure if there is a current run after newRun is called; should not be null	None	Instance of IndRun	IndRun	PASS
testRun	Test run number is equal to number of runs	None	2	2	PASS

These cases test the functionality of the methods regarding: Connect Sensors

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testSensors	Connect sensor type eye	SesorType.EYE	Sensor type equals EYE	Sensor type equals EYE	PASS
testSensors	Connect sensor type pad	SesorType.PAD	Sensor type equals PAD	Sensor type equals PAD	PASS
testSensors	Connect sensor type trip	SesorType.TRIP	Sensor type equals TRIP	Sensor type equals TRIP	PASS
testSensors	Disconnect trip sensor	None	Sensor type equals NONE	Sensor type equals NONE	PASS

These cases test the functionality of the methods regarding: Time

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testTime	Setting system time manually	10:10:10.0	"10:10:10.0"	"10:10:10.0"	PASS

These cases test the functionality of the method: Start

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testStart	Test starting a individual run with a racer	None	Racer is added to running queue	Racer is added to running queue	PASS

These cases test the functionality of the method: Finish

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testFinish	Testing an individual run finish with one racer	None	Racer is in end queue	Racer is in end queue	PASS

These cases test the functionality of the method: Clear

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testClear	Test clearing a run after a racer has been added to a new run	None	Racer is no longer in wait queue	Racer is no longer in wait queue	PASS

These cases test the functionality of the method: Reset

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testReset	Testing the reset command	None	Variables reset	Variables reset	PASS
testReset2	Testing the reset command after initiated run	None	Variables reset	Variables reset	PASS

These cases test the functionality of the method: Swap

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testSwap	Swap racers of type IND	SWAP<>	Racers positions switched	Racers positions switched	PASS
testSwap2	Swap racers of type IND multiple times	SWAP<> x2	Racers positions switched	Racers positions switched	PASS

These cases test the functionality of the method: Cancel

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testCancelIND	Testing cancel after channel 1 has been triggered during IND run	None	Racer in running queue is moved to waiting queue	Racer in running queue is moved to waiting queue	PASS
testCancelPARIND	Testing cancel after channel 1 has been triggered during PARIND run	None	Racer in running queue is moved to waiting queue	Racer in running queue is moved to waiting queue	PASS

These cases test the functionality of the method: DNF

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testDNF	Test DNF method after channel has been triggered	None	Current racers are in end queue	Current racers are in end queue	PASS

These cases test the functionality of a run with the event type: IND run

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testChrono1	Tests setting time, power, connecting gate sensor, toggling changels 1 and 2, and triggering channels. This test does not involve a run.	chrono1.txt	chrono1.txt output values	chrono1.txt output values with proper exceptions thrown	PASS
	Sets the chronotimer system clock	Time 12:00:01	"12:00:01"	"12:00:01"	PASS
	Turns on the power to the system	N/A	System on	System power enabled	PASS
	Connect sensor types (Gate, Eye, Pad, Trip) to corresponding channels	Channel Number Gate Types: Gate, Eye	Channel 1: Gate Channel 2: Eye Channel 3: Gate Channel 4: Eye	Channel 1: Gate Channel 2: Eye Channel 3: Gate Channel 4: Eye	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	Check that there is not a current run since newrun wasn't selected	N/A	Null	Null	PASS
	Test triggering of channels	Channel Number	Error message	Error message	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS
testChrono1WithRun	Tests setting time, power, connecting gate sensor, toggling changels 1 and 2, and triggering channels, initiating a run, adding racers, ending the run.	chrono1.txt	chrono1.txt output values	chrono1.txt output values with proper exceptions thrown	PASS
	Turns on the power to the system	N/A	System on	System power enabled	PASS
	Connect sensor types (Gate, Eye, Pad, Trip) to corresponding channels	Channel Number Gate Types: Gate, Eye	Channel 1: Gate Channel 2: Eye Channel 3: Gate Channel 4: Eye	Channel 1: Gate Channel 2: Eye Channel 3: Gate Channel 4: Eye	PASS
	Start new run	N/A	Instance of IndRun	IndRun	PASS
	Add racer to the run	Bib Number	Wait Queue contains Racer 111	Wait Queue contains Racer 111	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	Trigger channel with start	N/A	Triggered channel 1	Triggered channel 1	PASS
	Trigger channel 2	Channel Number	Triggered channel 2	Triggered Channel 2	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS
testChrono2	Tests power, starting a new run, toggling channels, adding racers, triggering channels, printing run data, ending a run, testing a second run while the power is still on.	chrono2.txt	chrono2.txt output values	chrono2.txt output values with proper exceptions thrown	PASS
	Turns on the power to the system	N/A	System on	System power enabled	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS
	Turns on the power to the system	N/A	System on	System power enabled	PASS
	Sets event type to IND	Ind	RaceType.IND	RaceType.IND	PASS
	Start new run	N/A	Instance of IndRun	IndRun, current run not null	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	Add racer to the run	Bib Number	Wait Queue contains Racer 234 and 315	Wait Queue contains Racer 234 and 315	PASS
	Trigger channel 1	Channel Number	Triggered channel 1	Triggered channel 1	PASS
	Trigger channel 3	Channel Number	Channel 3 not enabled	Channel 3 not enabled	PASS
	Trigger channel 2	Channel Number	Triggered channel 2	Triggered channel 2	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS

These cases test the functionality of a run with the event type: PARIND run

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testParInd	Tests setting time, power, connecting gate sensor, toggling changels 1 - 2, and triggering channels, initiating a run, adding racers, printing the run data, and ending the run.	chrono3.txt	chrono3.txt output values	chrono3.txt output values with proper exceptions thrown	PASS
1	Tests setting the time while create	12:1:30.0	12:1:30.1	12:1:30.2	PASS
	Set run type before creating new run	PARIND	PARIND	PARIND	PASS
	Start a new run of currently selected racetype(PARIND)	N/a	There should be a new run created of type PARIND	A new race of Type PARIND	PASS
	Test toggleing channels 1-4 to prepare for race	Toggle 1,2,3,4	Channels 1,2,3,4 should be enabled	Channels 1,2,3,4 are enabled	PASS
	Add four racers with numbers 272, 123, 111, 711 to the current racer making sure that they are in the wait queue	AddRacers 272, 123, 111, 711	Racers 272, 123, 111, 711 will be in the wait queue of the current run	Racers 272, 123, 111, 711 are in the wait queue	PASS
	Test triggering channels 1 and 3 which starts racers 123 and 272's running time	Trig channel 1,3	Racers 123 and 272 should now be running and have start times	Racers 123 and 272 are running and have start times	PASS
	Trigger channels 2 and 4 which ends the race for 123 and 272 giving them an end time, a final time, and moving them to the finished queue	Trig channel 2,4	Racers 123 and 272 should now be finished and have end and total times	Racers have end times and are finished	PASS

These cases test the functionality of a run with the event type: GRP run

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testGrpRun	Tests setting time, power, connecting gate sensor, toggling changels 1 and 2, triggering channels, setting the race type, initiating a run, adding racers, printing run data, and ending the run.	chrono4.txt	chrono4.txt output values	chrono4.txt output values with proper exceptions thrown	PASS
	Turns on the power to the system	N/A	System on	System power enabled	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	Set racetype to GRP	RaceType	RaceType.GRP	RaceType.GRP	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	New run	N/A	Instance of GrpRun	GrpRun	PASS
	Trigger channel 1	Channel Number	Triggered channel 1 GroupStart set	Triggered Channel 2 GroupStart set	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS
	Trigger channel 2	Channel Number	Triggered channel 2 Finish time recorded for	Triggered channel 2 Finish time recorded for	PASS
	Trigger channel 2	Channel Number	Triggered channel 2 Finish time recorded for	Triggered channel 2 Finish time recorded for	PASS
	Trigger channel 2	Channel Number	Triggered channel 2 Finish time recorded for	Triggered channel 2 Finish time recorded for	PASS
	Add racer	BibNumber	Racer 123 corresponds to placeholder 1	Racer 123 corresponds to placeholder 1	PASS
	Add racer	BibNumber	Racer 456 corresponds to placeholder 2	Racer 456 corresponds to placeholder 2	PASS
	Add racer	BibNumber	Racer 789 corresponds to placeholder 3	Racer 789 corresponds to placeholder 3	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS
testGrpRun2	Turns on the power to the system	N/A	System on	System power enabled	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	Set racetype to GRP	RaceType	RaceType.GRP	RaceType.GRP	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	New run	N/A	Instance of GrpRun	GrpRun	PASS
	Add racer	BibNumber	Racer 123 corresponds to placeholder 1	Racer 123 corresponds to placeholder 1	PASS
	Add racer	BibNumber	Racer 456 corresponds to placeholder 2	Racer 456 corresponds to placeholder 2	PASS
	Add racer	BibNumber	Racer 789 corresponds to placeholder 3	Racer 789 corresponds to placeholder 3	PASS
	Trigger channel 2	Channel Number	Triggered channel 2 Finish time recorded for	Triggered channel 2 Finish time recorded for	PASS
	Trigger channel 2	Channel Number	Triggered channel 2 Finish time recorded for	Triggered channel 2 Finish time recorded for	PASS
	Trigger channel 2	Channel Number	Triggered channel 2 Finish time recorded for	Triggered channel 2 Finish time recorded for	PASS
	Add racer	BibNumber	Racer 123 corresponds to placeholder 1	Racer 123 corresponds to placeholder 1	PASS
	Add racer	BibNumber	Racer 456 corresponds to placeholder 2	Racer 456 corresponds to placeholder 2	PASS
	Add racer	BibNumber	Racer 789 corresponds to placeholder 3	Racer 789 corresponds to placeholder 3	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS

*These cases test the functionality of a run with the event type: PARGRP run ***may be modified prior to submitting Sprint 4*

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
testParGrpRun	Tests setting time, power, connecting gate sensor, toggling channels, triggering channels, setting the race type, initiating a run, adding racers, printing run data, and ending the run.	chrono5.txt	chrono5.txt output values	chrono5.txt output values with proper exceptions thrown	PASS
	Turns on the power to the system	N/A	System on	System power enabled	PASS
	Connect sensor types (Gate, Eye, Pad, Trip) to corresponding channels	Channel Number Gate Types: Gate, Eye, Pad, Trip	Channel 1: Type Channel 2: Type Channel 3: Type Channel 4: Type Channel 5: Type Channel 6: Type Channel 7: Type Channel 8: Type	Channel 1: Type Channel 2: Type Channel 3: Type Channel 4: Type Channel 5: Type Channel 6: Type Channel 7: Type Channel 8: Type	PASS
	Start new run	N/A	Instance of ParGrpRun	ParGrpRun	PASS
	Add racer to the run	Bib Number	Wait Queue contains Racer 111, 112, 113, 114, 115, 116, 117, 118	Wait Queue contains Racer 111, 112, 113, 114, 115, 116, 117, 118	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 1: Enabled, true Channel 2: Enabled, true	Channel 1: Enabled, true Channel 2: Enabled, true	PASS
	Trigger channel with start	N/A	Triggered channel 1	Triggered channel 1	PASS
	Trigger channel 2	Channel Number	Triggered channel 2	Triggered Channel 2	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS