

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

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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 typeExporting data	3/13/2018
Sprint 3	
Features Tested	Date Tested
Group run race typeGUI 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

Keira Skenandore Author

Features

1 Unit Tests

Resources:

ChronoTimer Project Files

Testers: Scheduling: Keira Skenandore Sprint 4 deadline

Data/Test files:

TestChronoTimerUnitTest.java

Initial state:

Power off

Components:

Test Plan ID

Author

Catelyn Scholl

Features

2 Ind

Run Class, ChronoTimer,

Resources: Testers:

Timer, Channel Catelyn Scholl Sprint 4 deadline

Scheduling:

TestChronoTimer1.java

Data/Test files: Initial state:

Power off

Components:

Test Plan ID

Author

Adam Dunn

Features

3 ParInd

Run Class, ChronoTimer,

Resources:

Timer, Channel Adam Dunn

Testers: Scheduling:

Sprint 4 deadline

Data/Test files:

TestChronoTimer2.java

Initial state:

Power Off

Components:

Simulator, Gui

Test Plan ID 4 Author

Features

Catelyn Scholl

4 Group

Run Class, ChronoTimer,

Resources: Timer, Channel

Scheduling: Sprint 4 deadline

Data/Test files: TestChronoTimer3.java

Initial state: Power Off Components: Simulator, Gui

5 Test Plan ID

Author **Features** Alex Mitchell

5 ParGrp

Run Class, ChronoTimer,

Resources: Timer, Channel Testers: Alex Mitchell Scheduling: Sprint 4 deadline

Data/Test files: TestChronoTimer2.java

Initial state: Power Off Components: Simulator, Gui

	Description	Input Values	Expected Output	Actual Output	Pass/F
estPower estPower	Testing power command from "off" Testing power command from "on"	None None	System on System off	System on System off	PASS PASS
Those cases test the	functionality of the methods involving: Channels				
		Input Values	Expected Output	Actual Output	Pass/F
Fest Case Name estChannels	Description Test toggling all channels from "off"	Input Values TOG <channel #=""></channel>	Expected Output Channel is enabled	Actual Output Channel is enabled	PASS
estChannels	Test toggling all channels from "off"	TOG <channel #=""></channel>	Channel is disabled	Channel is disabled	PASS
estChannels	Test toggling one random channel	TOG<3>	Channel 3 is enabled There is a racer in current racer queue, racer start time is	Channel 3 is disabled There is a racer in current racer queue, racer start time is	PASS
estTrigger	Test trigger channel 1	TRIG<1>	recorded	recorded The racer in the run is in finished	PASS
estTrigger	Test trigger channel 2	TRIG<2>	queue	queue	PAS
These cases test the	functionality of the methods regarding: Adding Racers				
Test Case Name estAddRacer	Description Test adding a racer	Input Values NUM<123>	Expected Output Racer 123 added to queue	Actual Output Racer 123 added to queue	Pass/F
esiAddracei	rest adding a racer	NOW 123	Racer 123 added to quede Racer 123 not duplicated to	Racer 123 not duplicated in	PAS
estAddRacer	Makes sure duplicate racer is not added to queue	NUM<123>	queue	queue	
estAddRacer	Test adding second racer	NUM<134> NUM<175>	Racer 132 added to queue Racers 175 and 189 added to	Racer 134 added to queue Racers 175 and 189 added to	PAS
estAddRacer	Test adding third and fourth racer	NUM<189>	queue	queue	PAS
estAddRacer	Test length of queue is the number of racers added	None	4	4	PAS
These cases test the	functionality of the method: Run				
Test Case Name	Description Makes sure run is null until newRun is called	Input Values	Expected Output	Actual Output	Pass/
estRun	Makes sure run is null until newkun is called Makes sure if there is a current run after newRun is called;	None	Null	Null	PAS
estRun	should not be null	None	Instance of IndRun	IndRun	PAS
estRun	Test run number is equal to number of runs	None	2	2	PAS
hese cases test the	functionality of the methods regarding: Connect Sensors				
est Case Name	Description	Input Values	Expected Output	Actual Output	Pass/
estSensors estSensors	Connect sensor type eye Connect sensor type pad	SesorType.EYE SesorType.PAD	Sensor type equals EYE Sensor type equals PAD	Sensor type equals EYE Sensor type equals PAD	PAS PAS
estSensors	Connect sensor type pad Connect sensor type trip	SesorType.TRIP	Sensor type equals TRIP	Sensor type equals TRIP	PAS
estSensors	Disconnect trip sensor	None	Sensor type equals NONE	Sensor type equals NONE	PAS
These cases test the	functionality of the methods regarding: Time				
Test Case Name	Description Setting system time manually	Input Values 10:10:10.0	Expected Output "10:10:10:0"	Actual Output "10:10:10.0"	Pass/F
	,				
These cases test the	functionality of the method: Start				
Test Case Name testStart	Description Test starting a individual run with a racer	Input Values None	Expected Output Racer is added to running queue	Actual Output Racer is added to running queue	
estStart					
estStart These cases test the Test Case Name	Test starting a individual run with a racer functionality of the method: Finish Description	None Input Values	Racer is added to running queue Expected Output	Racer is added to running queue Actual Output	PAS Pass/l
estStart These cases test the Test Case Name	Test starting a individual run with a racer functionality of the method: Finish	None	Racer is added to running queue	Racer is added to running queue	PAS Pass/l
estStart These cases test the Test Case Name estFinish	Test starting a individual run with a racer functionality of the method: Finish Description	None Input Values	Racer is added to running queue Expected Output	Racer is added to running queue Actual Output	PAS Pass/l
estStart These cases test the Fest Case Name estFinish These cases test the	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description	None Input Values	Racer is added to running queue Expected Output	Racer is added to running queue Actual Output	Pass/I
rhese cases test the Test Case Name estFinish These cases test the Test Case Name	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear	None Input Values None	Racer is added to running queue Expected Output Racer is in end queue Expected Output	Racer is added to running queue Actual Output Racer is in end queue	Pass/I
rhese cases test the rest Case Name estFinish rhese cases test the rest Case Name estClear	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new	Input Values None Input Values	Racer is added to running queue Expected Output Racer is in end queue Expected Output	Racer is added to running queue Actual Output Racer is in end queue Actual Output	Pass/Pass/
These cases test the Test Case Name testFinish These cases test the Test Case Name testClear These cases test the	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description	Input Values None Input Values None Input Values	Racer is added to running queue Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue Expected Output	Actual Output Racer is in end queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output	Pass/F PASS/F PASS/F PASS/F
These cases test the Test Case Name testFinish These cases test the Test Case Name testClear These cases test the	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset	Input Values None Input Values None	Racer is added to running queue Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue	Pass/F PAS:
rhese cases test the rest Case Name estFinish rhese cases test the rest Case Name estClear rhese cases test the rest Case Name estClear rhese cases test the rest Case Name estReset2	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description Testing the reset command Testing the reset command Testing the reset command after initiated run	Input Values None Input Values None Input Values None	Racer is added to running queue Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue Expected Output Variables reset	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset	Pass/II Pass/II Pass/II Pass/II Pass/II
rhese cases test the rest Case Name estFinish These cases test the rest Case Name estClear These cases test the rest Case Name estReset test Reset estReset estReset2	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description Testing the reset command Testing the reset command after initiated run functionality of the method: Swap	Input Values None Input Values None Input Values None None	Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue Expected Output Variables reset Variables reset	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset Variables reset	Passil PAS Passil PAS Passil PAS
rhese cases test the fest Case Name estFinish fhese cases test the fest Case Name estClear fhese cases test the fest Case Name estReset test the fest Case Name finese cases test the fest Case Name finese cases test the finese cases test the	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description Testing the reset command Testing the reset command after initiated run functionality of the method: Swap Description	Input Values None Input Values None Input Values None None Input Values Input Values	Expected Output Racer is in end queue Expected Output Racer is in olonger in wait queue Expected Output Variables reset Variables reset Expected Output	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset Variables reset Actual Output	Pass/Pass/Pass/Pass/Pass/Pass/Pass/Pass
rinese cases test the rest Case Name estFinish rinese cases test the rest Case Name estClear rinese cases test the rest Case Name estReset estReset estReset rinese cases test the rest Case Name estClear	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description Testing the reset command Testing the reset command after initiated run functionality of the method: Swap	Input Values None Input Values None Input Values None None	Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue Expected Output Variables reset Variables reset	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset Variables reset	Pass/Pass/Pass/Pass/Pass/Pass/Pass/Pass
rhese cases test the rest Case Name estFinish rhese cases test the rest Case Name estClear rhese cases test the rest Case Name estReset estReset estReset2 rhese cases test the rest Case Name estSwap estSwap estSwap2	Test starting a individual run with a racer functionality of the method: Finish Pescription Testing an individual run finish with one racer functionality of the method: Clear Pescription Test clearing a run after a racer has been added to a new run functionality of the method: Reset Pescription Testing the reset command Testing the reset command after initiated run functionality of the method: Swap Pescription Swap racers of type IND	Input Values None Input Values None Input Values None Input Values SWAP<>	Expected Output Racer is in end queue Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue Expected Output Variables reset Variables reset Variables reset Racers positions switched	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset Variables reset Actual Output Racers positions switched	Pass/Pass/Pass/Pass/Pass/Pass/Pass/Pass
rhese cases test the rest Case Name estFinish rhese cases test the rest Case Name estClear rhese cases test the rest Case Name estReset estReset estReset2 rhese cases test the rest Case Name estStReset2	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description Testing the reset command Testing the reset command after initiated run functionality of the method: Swap Description Swap racers of type IND Swap racers of type IND multiple times	Input Values None Input Values None Input Values None Input Values SWAP<>	Expected Output Racer is in end queue Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue Expected Output Variables reset Variables reset Variables reset Racers positions switched	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset Variables reset Actual Output Racers positions switched	Pass/Pass/Pass/Pass/Pass/Pass/Pass/Pass
rhese cases test the rest Case Name estClear These cases test the rest Case Name estSwap estSwap These cases test the rest Case Name estSwap These cases test the rest Case Name estSwap These cases test the rest Case Name	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description Testing the reset command Testing the reset command after initiated run functionality of the method: Swap Description Swap racers of type IND Swap racers of type IND multiple times functionality of the method: Cancel Description Testing cancel after channel 1 has been triggered during	Input Values None Input Values None Input Values None None Input Values SWAP<> SWAP<> SWAP<> x2 Input Values	Expected Output Racer is in end queue Expected Output Racer is no longer in wait queue Expected Output Variables reset Variables reset Variables reset Expected Output Racers positions switched Racers positions switched Racers positions switched Expected Output Racer in running queue is moved	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset Variables reset Variables reset Actual Output Racers positions switched Racers positions switched Actual Output Racers in running queue is moved	Passi Passi Passi Passi Passi Passi Passi
estStart These cases test the est Case Name estFinish These cases test the est Case Name estClear These cases test the est Case Name estReset test Reset estReset2 These cases test the est Case Name estReset2 These cases test the est Case Name estSwap estSwap estSwap estSwap est Case Name	Test starting a individual run with a racer functionality of the method: Finish Description Testing an individual run finish with one racer functionality of the method: Clear Description Test clearing a run after a racer has been added to a new run functionality of the method: Reset Description Testing the reset command Testing the reset command after initiated run functionality of the method: Swap Description Swap racers of type IND Swap racers of type IND multiple times functionality of the method: Cancel Description	Input Values None Input Values None Input Values None Input Values SWAPS SWAPS SWAPS SWAPS SWAPS SWAPS	Expected Output Racer is no longer in wait queue Expected Output Racer is no longer in wait queue Expected Output Variables reset Variables reset Variables reset Expected Output Racers positions switched Racers positions switched Racers positions switched Expected Output Racers positions switched Racers positions switched	Racer is added to running queue Actual Output Racer is in end queue Actual Output Racer is no longer in wait queue Actual Output Variables reset Variables reset Variables reset Variables reset Actual Output Racers positions switched Racers positions switched Actual Output Actual Output	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
	Tests setting time, power, connecting gate sensor, toggling				
	changels 1 and 2, and triggering channels. This test does			chrono1.txt output values with	PASS
testChrono1	not involve a run.	chrono1.txt	chrono1.txt output values	proper exceptions thrown	
	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
			Channel 1: Gate	Channel 1: Gate	
			Channel 2: Eye	Channel 2: Eye	
	Connect sensor types (Gate, Eye, Pad, Trip) to	Channel Number	Channel 3: Gate	Channel 3: Gate	PASS
	corresponding channels	Gate Types: Gate, Eye	Channel 4: Eye	Channel 4: Eye	
	corresponding enamicies	Gute Types. Gute, Lye	Channel 1: Enabled, true	Channel 1: Enabled, true	
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: Enabled, true	Channel 2: Enabled, true	PASS
	Check that there is not a current run since newrun wasn't	Charine Number	Charmer 2. Enabled, true	Onamier 2. Enabled, true	
	selected	N/A	Null	Null	PASS
		Channel Number			
	Test triggering of channels	Charinei Number	Error message	Error message	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS
	Tests setting time, power, connecting gate sensor, toggling	g			
	changels 1 and 2, and triggering channels, initiating a run,			chrono1.txt output values with	PASS
testChrono1WithRun	adding racers, ending the run.	chrono1.txt	chrono1.txt output values	proper exceptions thrown	
	Turns on the power to the system	N/A	System on	System power enabled	PASS
			Channel 1: Gate	Channel 1: Gate	
			Channel 2: Eye	Channel 2: Eye	
	Connect sensor types (Gate, Eye, Pad, Trip) to	Channel Number	Channel 3: Gate	Channel 3: Gate	PASS
	corresponding channels	Gate Types: Gate, Eye	Channel 4: Eye	Channel 4: Eye	
	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
			Channel 1: Enabled, true	Channel 1: Enabled, true	
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: 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
	Tests power, starting a new run, toggling channels, adding		System on	Oystern power disabled	1 700
	racers, triggering channels, printing run data, ending a run			chrono2.txt output values with	PASS
testChrono2	testing a second run while the power is still on.	, chrono2.txt	chrono2.txt output values	proper exceptions thrown	FAGG
testChionoz		N/A	·		PASS
	Turns on the power to the system	N/A N/A	System on	System power enabled	PASS
	Turns off the power to the system		System off	System power disabled	PASS
	Turns on the power to the system	N/A	System on	System power enabled	
	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
			Channel 1: Enabled, true	Channel 1: Enabled, true	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: Enabled, true	Channel 2: Enabled, true	
			Wait Queue contains Racer 234	Wait Queue contains Racer 234	PASS
	Add racer to the run	Bib Number	and 315	and 315	
	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.	g 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 Racers 272, 123, 111, 711 will be	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	in the wait queue of the current	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

Test Case Name	Description	Input Values	Expected Output	Actual Output	Pass/Fail
	Tests setting time, power, connecting gate sensor, togglin	g			_
	changels 1 and 2, triggering channels, setting the race				PASS
	type, initiating a run, adding racers, printing run data, and			chrono4.txt output values with	1 700
testGrpRun	ending the run.	chrono4.txt	chrono4.txt output values	proper exceptions thrown	
	Turns on the power to the system	N/A	System on	System power enabled	PASS
			Channel 1: Enabled, true	Channel 1: Enabled, true	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: Enabled, true	Channel 2: Enabled, true	
	Set racetype to GRP	RaceType	RaceType.GRP	RaceType.GRP	PASS
			Channel 1: Enabled, true	Channel 1: Enabled, true	PASS
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: Enabled, true	Channel 2: Enabled, true	
	New run	N/A	Instance of GrpRun	GrpRun	PASS
			Triggered channel 1	Triggered Channel 2	PASS
	Trigger channel 1	Channel Number	GroupStart set	GroupStart set	
	Turns off the power to the system	N/A	System off	System power disabled	PASS
			Triggered channel 2	Triggered channel 2	PASS
	Trigger channel 2	Channel Number	Finish time recorded for	Finish time recorded for	
			Triggered channel 2	Triggered channel 2	PASS
	Trigger channel 2	Channel Number	Finish time recorded for	Finish time recorded for	
			Triggered channel 2	Triggered channel 2	PASS
	Trigger channel 2	Channel Number	Finish time recorded for	Finish time recorded for	
			Racer 123 corresponds to	Racer 123 corresponds to	PASS
	Add racer	BibNumber	placeholder 1	placeholder 1	
			Racer 456 corresponds to	Racer 456 corresponds to	PASS
	Add racer	BibNumber	placeholder 2	placeholder 2	
			Racer 789 corresponds to	Racer 789 corresponds to	PASS
	Add racer	BibNumber	placeholder 3	placeholder 3	5.00
	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
lesiGipixuiiz	runs on the power to the system	N/A	Channel 1: Enabled, true	Channel 1: Enabled, true	FAGG
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: Enabled, true	Channel 2: Enabled, true	PASS
	Set racetype to GRP	RaceType	RaceType.GRP	RaceType.GRP	PASS
	Set racetype to Citi	reace rype	Channel 1: Enabled, true	Channel 1: Enabled, true	
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: Enabled, true	Channel 2: Enabled, true	PASS
	New run	N/A	Instance of GrpRun	GrpRun	PASS
	New Iuli	14/2	Racer 123 corresponds to	Racer 123 corresponds to	
	Add racer	BibNumber	placeholder 1	placeholder 1	PASS
	Add facel	Dibitatribei	Racer 456 corresponds to	Racer 456 corresponds to	
	Add racer	BibNumber	placeholder 2	placeholder 2	PASS
	Add 14001	Bibitamber	Racer 789 corresponds to	Racer 789 corresponds to	
	Add racer	BibNumber	placeholder 3	placeholder 3	PASS
	Add 14001	Bibitamber	Triggered channel 2	Triggered channel 2	
	Trigger channel 2	Channel Number	Finish time recorded for	Finish time recorded for	PASS
	ringger onarmer z	Gridinio i Varibei	Triggered channel 2	Triggered channel 2	
	Trigger channel 2	Channel Number	Finish time recorded for	Finish time recorded for	PASS
	ringger onarmer z	Gridinio i Varibei	Triggered channel 2	Triggered channel 2	
	Trigger channel 2	Channel Number	Finish time recorded for	Finish time recorded for	PASS
	55		Racer 123 corresponds to	Racer 123 corresponds to	
	Add racer	BibNumber	placeholder 1	placeholder 1	PASS
	,	S.S. turnbor	Racer 456 corresponds to	Racer 456 corresponds to	
	Add racer	BibNumber	placeholder 2	placeholder 2	PASS
			Racer 789 corresponds to	Racer 789 corresponds to	
	Add racer	BibNumber	placeholder 3	placeholder 3	PASS
	Turns off the power to the system	N/A	System off	System power disabled	PASS
	ramo on the power to the system	IVO.	Gystem on	Cystem power disabled	1 700

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
	Tests setting time, power, connecting gate sensor, toggling	g			
	channels, triggering channels, setting the race type,				PASS
	initiating a run, adding racers, printing run data, and			chrono5.txt output values with	. 7.00
testParGrpRun	ending the run.	chrono5.txt	chrono5.txt output values	proper exceptions thrown	
	Turns on the power to the system	N/A	System on	System power enabled	PASS
			Channel 1: Type	Channel 1: Type	
			Channel 2: Type	Channel 2: Type	
			Channel 3: Type	Channel 3: Type	
			Channel 4: Type	Channel 4: Type	PASS
			Channel 5: Type	Channel 5: Type	PASS
			Channel 6: Type	Channel 6: Type	
	Connect sensor types (Gate, Eye, Pad, Trip) to	Channel Number	Channel 7: Type	Channel 7: Type	
	corresponding channels	Gate Types: Gate, Eye, Pad, Trip	Channel 8: Type	Channel 8: Type	
	Start new run	N/A	Instance of ParGrpRun	ParGrpRun	PASS
			Wait Queue contains Racer 111,	Wait Queue contains Racer 111,	
			112, 113, 114, 115, 116, 117,	112, 113, 114, 115, 116, 117,	PASS
	Add racer to the run	Bib Number	118	118	
			Channel 1: Enabled, true	Channel 1: Enabled, true	DACC
	Toggle channel 1 and toggle channel 2	Channel Number	Channel 2: 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