ChronoTimer Use Cases:

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| Use Case: RecordAnIndividualRun |
| Primary Actor: User and Racer |
| Brief: Record a single individual run |
| Preconditions:   1. System is on 2. Event type is IND 3. Channels 1 & 2 are in the on state (toggled on) |
| Postconditions:   1. The racer has a recorded start and end time as well as a duration for the race. 2. The racer’s time is displayed after the PRINT command is issued. |
| Triggers:   1. Either the sensor triggers the corresponding channel or the user manually triggers the channel (1 | 2). |
| Basic flow:   1. User issues the NEWRUN command. 2. User adds the Racer to the current run via the NUM command. 3. User triggers channel 1 via the TRIG command or START (sensor can trigger event). 4. User triggers channel 2 via the TRIG command or FINISH (sensor can trigger event). |

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| Use Case: Power (ON & OFF) |
| Primary Actor: User |
| Brief: The user turns the system on or off |
| Preconditions:   1. The user has selected either file, console, or GUI mode. 2. (ON) The system is off. 3. (OFF) The system is on. |
| Postconditions:   1. (ON) The system is in the initial state. 2. (OFF) The system is off. |
| Triggers:   1. User presses the power button |
| Basic flow:  (ON):   1. System is off 2. User presses power button 3. POWER command is issued 4. System is turned on   (OFF):   1. System is on 2. User presses power button 3. POWER command is issued 4. System is turned off |

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| Use Case: Reset |
| Primary Actor: User |
| Brief: The system is reset to the initial state |
| Preconditions:   1. system is on |
| Postconditions:   1. system is in the initial state (quiescent state). 2. Any data for the current run is lost (not exported). |
| Triggers:   1. The reset command is issued. |
| Basic flow:   1. RESET command is issued. 2. System is reset to the initial state. |

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| Use Case: SetSystemTime |
| Primary Actor: User |
| Brief: Resets the system time to what is specified by the User. |
| Preconditions:   1. System is on. |
| Postconditions:   1. The system’s internal clock is set to the specified time. |
| Triggers:   1. The TIME <hh:mm:ss> is read where “hh:mm:ss” is the new time as a string. |
| Basic flow:   1. User issues the TIME command with a specified time as a string in the form “hh:mm:ss”. 2. The system clock is updated (set) to that time. |

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| Use Case: ToggleChannelState (ON & OFF) |
| Primary Actor: User |
| Brief: The User toggles an input channel. |
| Preconditions:   1. The system is on. |
| Postconditions:  (Toggle ON):   1. The channel which the user selected is activated.   (Toggle OFF):   1. The channel which the user selected is deactivated. |
| Triggers:   1. User presses the toggle channel on/off button. |
| Basic flow:   1. User presses channel on/off button. 2. The channel is toggled on or off. |

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| Use Case: TriggerChannel |
| Primary Actor: User & Racer |
| Brief: The User triggers an input channel associated with the current run. |
| Preconditions:   1. The system is on. 2. The channel selected is in the on state (activated). |
| Postconditions:   1. The channel which the user selected is triggered and has generated an event for the current run. 2. The Racer’s start/finish time is recorded. |
| Triggers:   1. User presses the trigger channel button or the sensor connected to the channel is tripped which results in the channel being triggered. |
| Basic flow:   1. User presses trigger button for the selected channel or Racer trips a sensor which triggers the connected channel. 2. The Racer’s start or finish time is recorded. |

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| Use Case: ExitSimulator |
| Primary Actor: User |
| Brief: The User ends the entire simulation. |
| Preconditions:   1. Simulation is running. |
| Postconditions:   1. Simulation is no longer running. |
| Triggers:   1. User calls the EXIT command from within the simulator. |
| Basic flow:   1. User selects the EXIT command from the simulator. 2. Chronotimer ends all current runs and closes gracefully, recording events up until the EXIT command is called. 3. Simulator ceases. |

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| Use Case: ConnectSensorToChannel |
| Primary Actor: User |
| Brief: User connects a type of sensor to an indicated channel. |
| Preconditions:   1. Power is ON. 2. The desired channel does not have a sensor already attached to it |
| Postconditions:   1. Sensor of type <TYPE> is connected to channel <NUM>. |
| Triggers:   1. User triggers the CONN <SENSOR> <TYPE> command by clicking on a channel and selecting a sensor type |
| Basic flow:   1. A user clicks on the desired channel and selects a sensor type from the drop down list. This triggers the CONN command and a Sensor<TYPE> is connected to the channel. |

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| Use Case: DisconnectASensorFromChannel |
| Primary Actor: User |
| Brief: User disconnects a sensor from a channel. |
| Preconditions:   1. Power is ON. 2. The desired channel has a sensor connected to it. |
| Postconditions:   1. The channel has no sensor connected to it. |
| Triggers:   1. User triggers the DiSC command by clicking on the channel. |
| Basic flow:   1. A user clicks on the desired channel and the sensor is disconnected from the channel. |

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| Use Case: SetEventType |
| Primary Actor: User |
| Brief: Set future type of run to be of a specific race type. |
| Preconditions:   1. Power is ON. |
| Postconditions:   1. Event type is set based on indicated <TYPE> parameter. |
| Triggers:   1. User calls the EVENT <TYPE> command with a valid event type. |
| Basic flow:   1. User calls the EVENT command with a valid <TYPE> parameter. 2. Chronotimer event type is set to <TYPE>. |

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| Use Case: StartANewRun |
| Primary Actor: User |
| Brief: Begins a new run of predetermined type. |
| Preconditions:   1. Power is ON. 2. A Run type is determined (defaulted to IND). |
| Postconditions:   1. The current run is updated with a run of the predetermined type. |
| Triggers:   1. User calls the NEWRUN command. |
| Basic flow:   1. A new run of predetermined type is generated. |

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| Use Case: EndCurrentRun |
| Primary Actor: User |
| Brief: The currently existing run is ended in a graceful manner. |
| Preconditions:   1. Power is ON 2. There exists a current run. |
| Postconditions:   1. Results of completed races are stored. 2. Any in-progress runs are gracefully ceased. 3. There is no current run. |
| Triggers:   1. User calls the ENDRUN command while there is a current run. |
| Basic flow:   1. Any unfinished races are ended gracefully. 2. Results of all racers within the run are recorded. 3. The current run is emptied. |

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| Use Case: AddARacerToCurrentRun |
| Primary Actor: User |
| Brief: A racer specified by <NUMBER> is placed at the front of the queue of racers for the current race. |
| Preconditions:   1. Power is ON. 2. There must be a current race. |
| Postconditions:   1. Racer known as <NUMBER> is located at the front of the queue of racers waiting to race in the current run. |
| Triggers:   1. User calls the NUM <NUMBER> command with a valid <NUMBER> (001-999) while there is a current run. |
| Basic flow:   1. A racer with the associated <NUMBER> is created. 2. The new racer is added to the front of the queue of racers waiting to start in the current run. |

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| Use Case: SwapRacers |
| Primary Actor: User |
| Brief: Switches the position of the two leading racers in a specified lane in the race. |
| Preconditions:   1. Power is ON. 2. A current run exists. 3. The race type is IND 4. Two racers are in progress in the same lane. |
| Postconditions:   1. The two leading racers’ positions in the in-progress queue are switched. |
| Triggers:   1. User calls the SWAP command while there are two racers in progress specifying the lane by the <NUMBER> parameter. |
| Basic flow:   1. User enters the swap command along with a run number 2. The two leading racers are swapped |

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| Use Case: PrintRun |
| Primary Actor: User |
| Brief: The User enters a valid run number and the run times are printed |
| Preconditions:   1. Power is On. 2. There is a finished run matching the given run number |
| Postconditions:   1. The race is printed. |
| Triggers:   1. User enters the print command along with a number corresponding to a race |
| Basic flow:   1. Users enters Num command 2. User enters print command 3. If race exists it is printed |

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| Use Case: ExportRun |
| Primary Actor: User |
| Brief: The User enters a valid run number and the race times are exported. |
| Preconditions:   1. Power is On. 2. There is a finished run matching the given run number |
| Postconditions:   1. The run is printed. |
| Triggers:   1. User enters the export command along with a number corresponding to a run |
| Basic flow:   1. Users enters Num command 2. User enters export command 3. If race exists it is exported |

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| Use Case: RacerDoesNotFinish |
| Primary Actor: User |
| Brief: Leading racer in the lane specified by <NUMBER> is flagged with a DNF and exits the race. |
| Preconditions:   1. Power is ON. 2. A current run must exist. 3. There must be an in progress racer. |
| Postconditions:   1. The leading in-progress racer does not finish and is taken from the in-progress queue and placed in the finished queue. |
| Triggers:   1. User calls DNF command with a <NUMBER> specifying the lane to DNF from. |
| Basic flow:   1. User enters the DNF <NUMBER> command. 2. Leading racer in the lane specified by <NUMBER> is flagged DNF. 3. DNF flagged racer is moved to finished queue. |

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| Use Case: RecordAParallelRun |
| Primary Actor: User and Racer |
| Brief: Record a Parallel run |
| Preconditions:   1. System is on 2. Event type is PARIND 3. Channels 1,2,3,4 are in the on state (toggled on) |
| Postconditions:   1. The racers have recorded start and end times as well as a duration for the races. 2. The racers time is displayed after the PRINT command is issued. |
| Triggers:   1. Either the sensor triggers the corresponding channels or the user manually triggers the channel (1 | 3). |
| Basic flow:   1. User issues the NEWRUN command. 2. User adds Racers to the current run via the NUM command. 3. User triggers channels 1 or 3 via the TRIG command or START (sensor can trigger event). 4. User triggers channel 2 or 4 via the TRIG command or FINISH (sensor can trigger event). |

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| Use Case: RecordAGroupRun |
| Primary Actor: User and Racer |
| Brief: Record a Group run |
| Preconditions:   1. System is on 2. Event type is GRP 3. Channels 1,2 are in the on state (toggled on) |
| Postconditions:   1. The racers have recorded start and end times as well as a duration for the races. 2. The display has the finish time of the last racer displayed. |
| Triggers:   1. Either the sensor triggers the corresponding channels or the user manually triggers the channel (1). |
| Basic flow:   1. User issues the NEWRUN command. 2. User adds Racers to the current run via the NUM command. 3. User triggers channels 1 via the TRIG command or START (sensor can trigger event). 4. User triggers channel 2 via the TRIG command or FINISH (sensor can trigger event) for each racer until all racers have finished. |

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| Use Case: CancelRacer |
| Primary Actor: User |
| Brief: The User cancels an in-progress racer |
| Preconditions:   1. power is on 2. There is a single run active 3. A racer has been started |
| Postconditions:   1. power is on 2. There is an active racer 3. The racer has been reset and is back in the queue to start |
| Triggers:   1. The user presses the cancel button |
| Basic flow:   1. The user presses the cancel button 2. The racer is reset and is next to start |

