ChronoTimer Use Cases:

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).

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

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.

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.

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.

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.

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.

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.

Use Case: DisconnectASensorFromChannel
Primary Actor: User
Brief: User disconnects a sensor from a channel.
Preconditions: 3. Power is ON. 4. The desired channel has a sensor connected to it.
Postconditions: 2. The channel has no sensor connected to it.
Triggers: 2. User triggers the DiSC command by clicking on the channel.
Basic flow: 2. A user clicks on the desired channel and the sensor is disconnected from the channel.

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>.

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.

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.

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.

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

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

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

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.

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).

Use Case: RecordAGroupRun
Primary Actor: User and Racer
Brief: Record a Group run
Preconditions: 4. System is on 5. Event type is GRP 6. Channels 1,2 are in the on state (toggled on)

Postconditions:

3. The racers have recorded start and end times as well as a duration for the races.
4. The display has the finish time of the last racer displayed.

Triggers:

2. Either the sensor triggers the corresponding channels or the user manually triggers the channel (1).

Basic flow:

5. User issues the NEWRUN command.
6. User adds Racers to the current run via the NUM command.
7. User triggers channels 1 via the TRIG command or START (sensor can trigger event).
8. User triggers channel 2 via the TRIG command or FINISH (sensor can trigger event) for each racer until all racers have finished.

Use Case: CancelRacer

Primary Actor: User

Brief: The User cancels an in-progress racer

Preconditions:

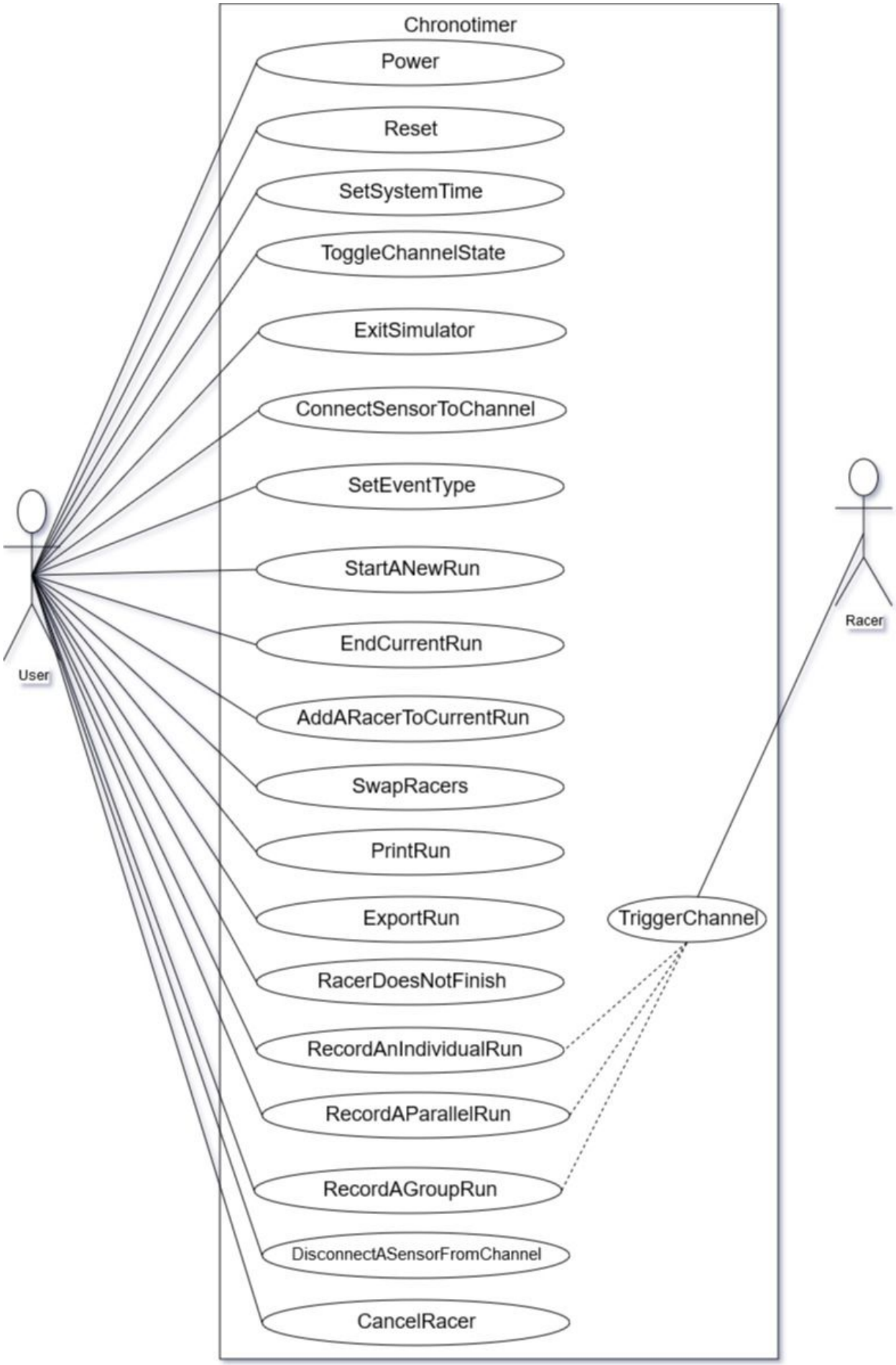
1. power is on
2. There is a single run active
3. A racer has been started

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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