Project Title: ClockWork

Team Members:

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- Christian Ott cott2020@my.fit.edu
- Pierson Hendricks phendricks2023@my.fit.edu
- Peter Stelzer pstelzer2023@my.fit.edu

Faculty Advisor: Dr. David Luginbuhl dluginbuhl@fit.edu

Client: Dr. David Luginbuhl CSE Professor & Faculty Advisor

Progress of Current Milestone:

Task	Completion %	Anthony	Christian	Peter	Pierson	To do
1. Task session markers	100%	0%	0%	100%	0%	
2. Save task session user estimate	100%	0%	0%	20%	80%	
3. Task profiles	95%	0%	0%	100%	0%	Profile deletion
4. Completed sessions	100%	0%	95%	5%	0%	
5. Finish live timer notification	100%	0%	0%	70%	30%	
6. 1st iteration auto estimator	80%	50%	0%	50%	0%	Tune weights, test with more data
7. Task session deletion	40%	0%	0%	0%	100%	Complete backend

Discussion of Current Milestone Tasks:

- Task 1: Although the current state of the marker feature does not meet the baseline requirements, the acceptance criteria for this milestone was only that the marker button

on the timer page should save a marker record to the database. This criteria has been met. Work on the task began September 17th and concluded September 21st. As explained in the milestone plan, this task would be trivial, especially since markers had already been incorporated into the database schema, and no issues occurred during implementation. Additionally, a small popup appears at the bottom of the screen when a marker is saved that alerts the user that a marker—named by default "Marker #" where # is the current number of markers in the timeline—has been added at the current time.

- Task 2: As was written in the milestone plan, the goal for this task was to 1) save the estimates the user inputs during session creation and editing into the database, 2) recall saved estimates from the database when the user enters the editing form for the session, and 3) alter the estimation field in the session details form to enable the user to forgo setting an estimate. All three goals have been satisfied. Progress began on September 6th and concluded on September 22nd. Implementing user estimate serialization involved altering the schema, which Pierson completed, as well as altering Repository, DAO, and mapper functions in between the database and the UI layer. The necessitated changes to the UI were to move the existing user estimate selector to a popup modal that is opened by tapping a new text field—like the one for the due date—that displays either the user estimate or "No estimate selected" if the user taps the clear button on the right of the field.

- Task 3: The app is best suited to tracking tasks that are performed regularly. Profiles are intended to facilitate this by filling fields of new task sessions with default values and grouping these sessions together. The goals for this task are 1) edit the database schema to support profile serialization, 2) add a UI page that lists all profiles, 3) add a UI page for profile creation, 4) add a UI page for profile editing, 5) add the ability to delete a profile, and 6) add a UI page that lists all of the sessions made with the profile. All goals except 5 have been implemented completely. The plan neglected to mention that this task also included enabling the user to create sessions with a profile, which has also been completely implemented. Work on this task began September 7th and is still ongoing.

- Task 4: Completion is now implemented for running and paused tasks. Disengaging a session from the timer occurs, the loaded session instances are closed, and the record is updated in the app's database. A task completion screen (after action report) shows the user's estimate, realized task time, work time, break time, and an accuracy calculation. Initially, completed tasks were displayed on the same screen as other tasks, however as of 9/23/25, all completed tasks are displayed in the user stats screen. Completed tasks associated with a profile are displayed under a tab in the profile screen.

- Task 5: As written in the milestone plan, the objective of this task is to make the notification more substantial with more controls and a more refined presentation including 1) content formatting, 2) higher priority in the notification center, and 3)

visibility on the lock screen. Goal 1 was completed; the elapsed time is now formatted as HH:MM, the icon adopts the color of the active task, and the name of the task appears beneath the elapsed time. Goal 3 was already satisfied at the time of writing the plan. Goal 2 was abandoned because the position of the notification in the notification center was already acceptable and no greater priority could be achieved without introducing a sound. Additionally, tapping the notification opens the app to the timer page for the active task, and an "Add Marker" button now exists when the timer is running.

- Task 6: As was written in the milestone plan, the goal for this task was to have implemented a machine learning model which estimates the error of a user's estimate for a new session based on historical estimate error. However as the milestone drew to a close, it became evident that the ML implementation would not be complete in time for the user evaluations of the following milestone. Instead of machine learning, this goal was accomplished with a statistical analysis solution using Gower's similarity formula, a recency bias, weighted mean, and weighted standard deviation. This solution produces the same information as was planned for the ML model: an error range of the user's estimate.

- Task 7: The task deletion is not quite fully underway, but requires a bit more time to be fully completed. The concepts and architecture decisions are out of the way. Completion is a minor concern.

Discussion of Contribution:

- Anthony: I worked primarily on the complete redesign of our website and the implementation of the first iteration of the time estimation algorithm. The website now has a more user-friendly timeline view for each milestone containing all the relevant documentation and available demos. As for the time estimation algorithm, I helped Peter implement the logic into the application and display the estimates in the appropriate locations.

- Christian: I worked on the view model, navigation, and ui states for the task completion page. This also required modification of the app's navigation in addition to the view model and ui states of the timer screen. The task completion page was renovated to up to specifications. For the timer disengagement, I wrote the function and utilized methods already implemented for task suspension.

- Peter: I worked on task profiles, saving task timeline markers from the timer page, enhancing the edit task session form to specify no user estimate, timer notification formatting, navigating to the active timer on notification tap, the completed session lists, and the app task session duration estimator based on statistical analysis. The estimator was completed in collaboration with Anthony, and included implementing Gower's

similarity formula, a recency bias curve, weighted mean, and weighted standard deviation. All the other tasks listed were completed without collaboration.

- Pierson: I completed the necessary architectural decisions for properly saving task session estimates and implemented database access and implementation for it. I assisted with the development of extended live notifications in particular offering the add marker button and its dynamic existence, implementing service-based database access. I also began work in regards to task deletion with strides toward the front-end visibility and basic implementation of the database access.

Task Matrix for Next Milestone:

Task	Anthony	Christian	Peter	Pierson
1. Finish session deletion	0%	0%	0%	100%
2. Finish profile deletion	0%	0%	100%	0%
3. Completed session timeline visualization	0%	0%	0%	100%
4. Completed session execution event editing	0%	0%	75%	25%
5. User history and statistics page	0%	100%	0%	0%
6. Custom profile fields	50%	0%	50%	0%
7. Next auto estimate iteration	75%	0%	25%	0%
8. Conduct evaluation and analyze results	25%	25%	25%	25%
9. Create poster for Senior Design Showcase	25%	25%	25%	25%

Discussion of Next Milestone Tasks:

- Task 1: As written above, session deletion is already underway and will be completed early in milestone 5. The user interface is currently being worked on; what remains is defining UI behavior on session deletion—specifically a confirmation pop-up and ensuring everything is safely unloaded before the session is purged—and implementing database operations to delete sessions.

- Task 2: Deleting profiles is in a similar state as session deletion; The user interface is currently being worked on; what remains is defining UI behavior on session deletion—specifically a confirmation pop-up and ensuring everything is safely unloaded

before the session is purged—and implementing database operations to delete sessions. It will be completed early into milestone 5.

- Task 3: This particular task already has a place within the Task Completion page, that being the View Details button. This button will open a new page to the user displaying a scrolling page of a timeline for the now-completed session. This page will also be viewable from any individual task in the Task History page. The timeline will include all events that occurred over the course of the task's execution: starting, pausing, suspending, and all the markers the user added.

- Task 4: This task may or may not rely on the first, hinging on if we choose to embed the editing within the scrolling timeline. The goal is to allow the user to edit a session's timeline in case they believe they've made a mistake and to offer the user more freedom with our tool. The user can change marker times and durations at will. Users will be allowed to adjust the times that events occurred, add new events, and delete events.

- Task 5: The goal of this task is to create a page in the app that shows the user their performance over time, whether they have improved over time or not, percentages, highs and lows for task profiles or categories. This will involve a graphical representation in the form of a line graph. Some of the information presented to the user on this page includes tasks completed, estimate accuracy, and time spent working.

- Task 6: The goal of this task is to enable the user to define custom fields when creating profiles. The fields will include a name and a type such as number or string. The user can then fill these fields when they create sessions from these profiles. The main challenge of this task is handling heterogeneous records. Most likely the values of custom fields will be serialized as json objects in the database and parsed on retrieval to reconstruct their values. This feature has two purposes: 1) to enable the user to better represent the tasks they perform and 2) to provide additional parameters to the app's task duration estimator.

- Task 7: This iteration of the estimator will seek to include more variables to account for in the estimate calculation and tune the weights for each according to what the team determines is most relevant. Moreover, we plan to do more statistical research on algorithms to identify which fields have the greatest impact on session duration and extrapolate a more accurate estimate based on those fields.

- Task 8: At this point in the project, the most mission critical features of the baseline have been completed, those being session creation, execution, and completion. As such, we will conduct the first round of user evaluations to see how well the app fulfills our customer's goal: improving users' time estimation skills and work habits. Additionally, the customer wanted the app to be able to estimate task duration alongside the user. An early iteration of that functionality has been completed so that its accuracy can be

included in the evaluation. We will approach candidates with Android phones and ask that they use the app to track their tasks over 2 to 3 weeks. Afterward, we will ask them questions to gauge the app's effectiveness at improving their time estimation abilities and work habits as well as obtain the app's task duration estimator's output from their tasks.

- Task 9: Although there is not a senior design showcase this semester, we will create a poster that includes 1) the project's goal and motivation, 2) the approach we took to address the goal and the features we designed, 3) the mechanisms, strategies, and tools we used to implement the features, 4) the results from this evaluation and the next, and 5) where the app falls short and how it can be improved.

Meeting Dates with Client During Current Milestone:

- Meeting 1: Sep 12, 2025
- Meeting 2: Sep 26, 2025

Client Feedback on Each Task of Current Milestone:

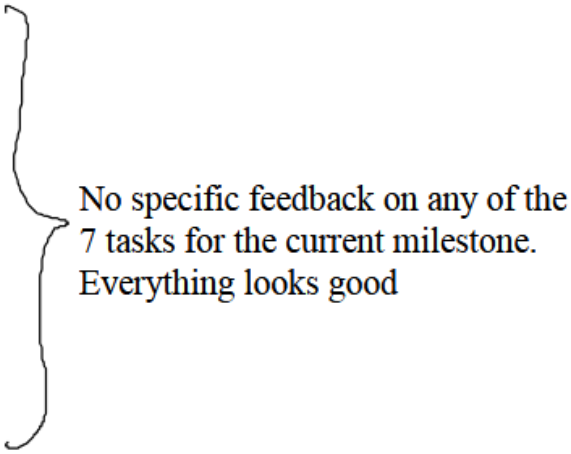
- see Faculty Advisor Feedback below

Meeting Dates with Faculty Advisor During Current Milestone:

- Meeting 1: Sep 12, 2025
- Meeting 2: Sep 26, 2025

Faculty Advisor Feedback on Each Task of Current Milestone:

- Task 1:
- Task 2:
- Task 3:
- Task 4:
- Task 5:
- Task 6:
- Task 7:



Faculty Advisor Signature: _____ **Date:** _____

Evaluation by Faculty Advisor

- Faculty Advisor: detach and return this page to Dr. Chan (HC 209) or email the scores to pkc@cs.fit.edu
- Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

Anthony	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Christian	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Peter	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Pierson	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Faculty Advisor Signature: _____ Date: _____